Housing deprivation in Europe

On the role of rental tenure types

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Abstract

Housing deprivation is an important dimension of poverty. It is thus a key challenge of policy makers to secure decent housing. The purpose of this paper is to analyze the link between housing tenure types and housing deprivation in 24 European countries. Empirical analyses are based on EU-SILC 2007, enabling comparisons of deprivation across a large set of countries. A multilevel framework is employed. Two competing hypothesis are evaluated. First, whether a rental sector targeted towards low-income households, known as social housing, is successful in achieving adequate housing standards. Second, if a unified rental system covering broader income groups lowers the risk of housing deprivation. Housing deprivation is measured in terms of experiencing overcrowding and while also exhibiting any of the following deficits: a leaking roof; no bath/shower; no indoor toilet; or a dwelling considered too dark. Findings indicate a negative association between the size of the rental sector and the prevalence of housing deprivation. The organization of the rental sector appears most crucial and only the strategy of a rental sector encompassing broader parts of the population significantly reduces the prevalence of housing deprivation and its latent components. The association is robust in terms of confounding factors at the individual level and central country level contextual variables.

Key words

Housing deprivation, housing tenure types, housing policy, comparative analysis, EU-SILC, multilevel regression

Table of contents

1. Introduction	1
2. Previous research and theory	3
2.1 Poverty, deprivation and social exclusion	3
2.2 Housing deprivation	6
2.3 Social policy strategies and housing tenure types	8
2.4 Hypotheses	14
3. Data and methodology.....	15
3.1 Data	15
3.2 Measures.....	17
3.2.1 Housing deprivation.....	17
3.2.2 Tenure types	20
3.2.3 Other contextual variables.....	22
3.2.4 Confounding individual characteristics	23
3.3 Methodological considerations	24
4. Analysis and Results.....	27
5. Discussion	43
6. References	47
7. Appendix	55

1. Introduction

The size of the rental sector has declined quite dramatically in many European countries. In Sweden and the Netherlands, where the rental sector only a few decades ago accounted for around a third of the housing stock; the share has declined to about a fifth, while other tenure types such as home-owning has increased (Heijden & Boelhouwer, 1996). Political reforms such as deregulation of investments in housing and rent legislation contributed to a restructuring of the housing market, especially in Sweden (Lindbom, 2001). Meanwhile, concerns about housing deprivation have appeared on the European political agenda. Rental housing is at the EU level recognized as a crucial element in housing policies when combating poverty and social exclusion (European Commission, 2010). The recent policy shift towards privatization of the rental sector in many European countries makes it urgent to begin to unpack the causal processes related to housing deprivation.

The purpose of this study is to link housing tenure types to housing deprivation in Europe. The central question is to what extent the rental sector accounts for cross country differences in housing deprivation. As there are substantial differences in how the rental sector is organized and the levels of housing deprivation vary extensively across countries, a comparative framework is fruitful. The empirical analyses are based on European Union Statistics on Income and Living Condition (EU-SILC), which gives the possibility to study housing deprivation across a large number of countries while taking cross-country differences in tenure types into consideration. In doing so, I will employ multilevel regression techniques, where both micro- and macro-level variables on housing deprivation can be simultaneously estimated.

From a sociological perspective, the question posed in this study pinpoints how welfare states in general and housing tenure systems in particular may be organized to achieve adequate living conditions for its citizens. This type of distribution and redistribution of resources in society is at the core of sociological theory. The development of the welfare state in late 19th century and the recurrent question on how to best reduce poverty and deprivation has stimulated not only sociological research, but also scholars from related social sciences such as economics and political science. This study joins the tradition of analyzing linkages between welfare state effort and patterns of social stratification. Whereas the development of

social citizenship rights in the form of social benefits and transfers has been crucial to these analyses of social outcomes of welfare states, the role of tenure types and housing for individual vulnerabilities has been less recognized in comparative research. Nonetheless, housing is crucial for decent living conditions and affects individuals in various ways. Provision of basic housing amenities has in the Western world greatly contributed to improvements in health and life chances in general.

Only few previous studies have systematically analyzed the relationship between housing tenure types and housing standards (Norris & Shiels, 2007; Mandic & Cirman, 2011). In these studies, housing tenure systems finds support for explaining cross-country differences in housing standards. However, both studies use aggregate level data, leaving out the potential influence of individual confounders. Furthermore, previous studies do not account for the diversity within rental sectors across countries.

The restructuring of the housing market, the importance of adequate housing and the scarce evidence from previous research paves the way to explore the extent to which the organization of housing tenure types is interlinked to housing standard outcomes. In the following, I will discuss the consequences of different strategies to organize welfare states more broadly, show how these strategies are reflected in the organization of housing tenure systems, and from a comparative perspective analyze the consequences of these strategies on the prevalence of housing deprivation across Europe. It should already be noted that housing deprivation is an ambiguous concept as it involves different dimensions on housing. The most severe form of housing deprivation is probably homelessness, which is not at focus in this study. This study instead relates to inadequacies of the existing housing stock. I do not make a distinction between multi-dwelling buildings or single-family houses even if housing deprivation might vary along those lines as well. The aspect of housing type calls for in-depth analysis of each country's building production over time; such legislative issues are naturally not covered in this analysis. An additional aspect I am not discussing is the possible influence of a spatial differentiation in housing deprivation between rural and urban areas. The object of study in this analysis is set to national context and regional differences are not considered. Although such possible diversity may exist, the objectives of housing policy is commonly also set to a national context. Nevertheless, this study is a first step towards analyzing the linkage between housing tenure types and housing deprivation.

The study is organized as follows. The next section focuses on previous research in the field and the theoretical framework is outlined, followed by a presentation of the hypotheses.

Thereafter I discuss data and methodological considerations, followed by a presentation of the empirical results. The study concludes with a discussion.

2. Previous research and theory

In this section I will first discuss the conceptualization of poverty, deprivation and social exclusion and then present previous research on housing deprivation specifically. I will outline the link between tenure types and housing deprivation by placing the issue within the broader field of comparative welfare state and social policy research. Some potentially confounding factors for the relationship between tenure types and housing deprivation across countries are also discussed. At the end of the section I formulate two hypotheses on the relationship between housing tenure types and housing deprivation, which are subject to empirical tests in subsequent sections.

2.1 Poverty, deprivation and social exclusion

Adequate housing standards are important for individual well-being and constitute an essential dimension for decent living conditions. The conceptualization of individual well-being and living conditions is central to the assessment of distributive justice and the design and evaluation welfare states in general, and social policies in particular (Nelson, 2012).

There is no consensus how individual well-being should be conceived theoretically or measured empirically (Korpi, Nelson & Stenberg, 2007). There are a number of challenges that relates to the study of poverty and social exclusion. First, poverty and social exclusion can be conceptualized both in an absolute and in a relative sense. Secondly, individual well-being and the absence of resources can be observed indirectly via income or directly through material living conditions. And third, in the conceptualization of individual well-being an awareness of the differential meanings resources have for individuals may be required.

From an absolute point of conceptualizing individual well-being, there is a minimum set of requirements for physical existence, health and welfare. An absolute poverty approach means a fixed level which is applied across all potential resource distributions. In its purest form, an absolute perspective on well-being should not take overall standard of living into

consideration. For example, if comparing absolute poverty over time, the standard is not supposed to change even in the event of economic growth and general income growth. A relative approach on poverty does not require any absolute conditions; rather poverty is defined according to the experience and expectations of the society as a whole. Thus, the poverty threshold varies with the standard of living over time and contexts. The difference between the conceptualizations of poverty has been extensively debated and Sen (1979) has argued that relative and absolute perspectives on poverty complement each other. An important difference between the relative and absolute perspective on poverty is that the relative approach defines poverty as a result of economic and political processes. An absolute approach is more focused towards the material living conditions among the poor per se (Korpi, 1980). In this study, I will employ a relative understanding of poverty as what we view as necessities related to housing tend to be context specific. An illustrative example is provided in Townsend (1979) where an improvement in housing standards in the beginning of the last century meant several households sharing water taps or providing for an outhouse facility. A modern example is the view that children should have their own room.

The second controversy concerns the choice of poverty indicator, that is, whether poverty should be defined in terms of income or consumption. If we view poverty as multidimensional in the sense that people lack various kinds of resources, poverty should be conceptualized and measured in a multidimensional way. Nonetheless, most studies on poverty in affluent countries use income as the most common indicator of individual well-being (Atkinson, 1998; Ringen, 1988; Halleröd, 1995). Today, poverty in the European discourse is often framed in terms of an inability to participate in mainstream society due to inadequate personal resources. Poverty defined this way is no longer directly linked to income but to resources more broadly as well as to consumption and living conditions. Although there is no scholarly agreed conceptualization of material deprivation the indicators used in most empirical research includes goods and services that households can consume such as food and housing. To experience deprivation means not being capable to afford those basic goods. In this study, poverty and social exclusion is perceived as lack of resources of all kind and the particular interest here is lack of basic housing facilities. The difference between lack of income and inadequate material living conditions is important for social policy as it implies that economic resources does not necessarily prevents deprivation.

Once the poverty concept was complimented by a material deprivation dimension, a great deal of research has been devoted to describing the prevalence of deprivation across countries

and its relationship to income-based measures (Whelan, Layte & Maître, 2002, 2004; Boarini & d' Ercole, 2006; OECD, 2008; Guio, Fusco & Marlier, 2009; Nolan & Whelan, 2010; Fusco, Guio & Marlier, 2010; Guio, 2009). The overall pattern is that people that are relatively income poor are not always materially deprived (Nolan & Whelan, 2010). Measuring poverty with both income criteria and material living conditions inevitably leads to stricter interpretations on deciding who is poor and who is not.

Some work has been done on differentiating among the dimensions of deprivation, showing that the link between inadequate housing and household income is weak across a large number of countries (Layte, Whelan, Maître, et al., 2001). Adding a dynamic perspective on poverty, it is likely that housing deprivation is more influenced by long-term economic hardship than current household income. At the individual level, several factors related to labor market, demography, education and ethnicity are likely to be important. Household structure, marital status, number of children, stage of life-cycle, educational attainment, socio-economic position, migrant status are suggested to have an impact on the household's available resources and therefor the experience of material deprivation (Layte, Whelan, Maître, et al., 2001; Tsakloglou & Papadopoulos, 2002).

The third problem concerns the specific type of resources that are essential for poverty outcomes. Stressing the importance of solely monetary indicators implies somewhat of a moral judgment and it refrains from value judgments concerning the necessities of modern life in capitalist societies leaving among other things a great deal of individual choice of what types of goods and services to consume by the households. It is true that higher income or higher consumption may improve standards of living, but at the same time, people's abilities or preferences to convert monetary resources to valuable goods and services varies. Income does not always translate to desirable outcomes. For example, Sen (1988) argues that "[t]he value of the living standard lies in the living, and not in the possessing of commodities, which has derivative and varying relevance" (1988: 25). Thus, individual well-being is not only dependent upon resources, but of also of how resources enable people to act and be are important to take into consideration. This capability approach to the analysis of poverty has been further developed by Sen and Nussbaum (1993), proposing that welfare state arrangements should be evaluated according to the extent by which they succeed in achieving the functionings people value. The quality of housing is one such important functioning which determines the capabilities available to individuals.

2.2 Housing deprivation

Housing deprivation is often assumed to be an accumulation of insufficiencies in basic housing conditions. However, the conceptualization of housing deprivation has varied over time. Historically, three dimensions of housing deprivation has been in focus: inadequate construction, inadequate amenities and insufficient space in relation to the number of users (Townsend, 1979). Other relevant domains are the spatial and economical dimensions, such as a secure neighborhood and the household's financial burden of housing costs. Some of the indicators of housing deprivation are recurring, but there is a great deal of variety in how decent housing conditions are defined and measured, perhaps for the reason of the complexity of housing in the sense that it has a very large number of characteristics that are important for its consumers (Quigley, 1991).

In previous studies linking housing conditions to factors of housing policy, Norris and Shiels (2007) focuses on three aspects; housing quality, accessibility and affordability. Under the concept of housing quality they examined the size of dwellings and number of essential housing facilities in the household such as lack of toilet. Accessibility was measured in terms of number of dwellings per 1000 inhabitants, whereas affordability was measured was by share of household expenditure devoted to housing, water, electricity, gas and other fuels. Based on the dimensions of quality, access and affordability Norris and Shiels (2007) rated 25 EU countries according to housing conditions. Good housing conditions were observed in the Nordic countries. Intermediate housing conditions were found in the Southern European Countries, whereas poor housing conditions were observed in many of the new Central and Eastern European EU-member states. Mandic and Cirman (2011) followed another approach analyzing housing conditions across countries, using indicators mostly concerned with the physical attributes of dwellings. The included five components of housing standards; perceived lack of space, presence of rot in windows, doors and floors, damp and leaks and lack of indoor flushing toilet. In addition, they included characteristics of the environment in their study indicated by the extent to which households complained about noise, safety and lack of open areas in their neighborhood.

Explanations for varying housing conditions are sought at different levels. Norris and Shiels (2007) and Mandic and Cirman (2011) notes various institutional factors. Besides the home-ownership rate, Mandic and Cirman (2011) analyze two structural factors leading aggregated housing conditions to vary across the EU: socio-economic development measured as GDP per

capita in Purchasing Power Standard (pps), the influence of two separate housing models, the first found in Central and Eastern European countries which experienced a transitory of the economy and the second found in the strong reliability of kinship in housing provision found in the Southern European countries. Combining indicators of physical and environmental housing conditions with multivariate methods, a factor score denotes the dependent variable at an aggregate level. An OLS regression on country level including 26 countries supports the thesis of economic development playing a decisive role for the prevalence of poor housing conditions, the higher GDP the fewer problems in terms of inadequate housing conditions in the countries. In terms of housing tenures, of particular interest for this study, the rate of home-ownership shows a significant positive sign indicating that the higher the share of home-ownership, the lower quality of housing conditions. The suggested explanation for these results are that strong pro-ownership oriented societies often coincide with a residualised social housing sector which is not succeeding in accommodating the lower-income households.

Norris and Shiels (2007) examines the role of rental systems more cautiously for varying housing conditions across countries, as they apply the typology of a dual and unitary rental system elaborated by Kemeny (1995). Also, Norris and Shiels (2007) consider finance of housing and government subsidies, construction trends and governance systems. It is hypothesized, that larger social rental sectors are associated with higher housing standards as a key incentive behind the expansion of this sector was to eliminate poor housing conditions by rehousing the tenants of slum dwellings (Harloe, 1995). A small social housing sector is argued not to be able to address the poor housing conditions in any significant ways (Allen, Barlow, Leal, et al., 2004). The gap in housing conditions between the new and older EU member states are addressed to the case of Eastern European Housing Model (J. Hegedüs & Tosics, 1996). From the basis of the descriptive typology ranking housing conditions among EU member states it is concluded that the institutional factors mentioned have had a significant impact on the variation in housing conditions. It is argued that levels of GDP cannot account for these variations alone.

2.3 Social policy strategies and housing tenure types

Housing has been viewed as a major component of the welfare state. It is recognized as a key aspect for a decent human life and is closely related to health and well-being. During the period of welfare state expansion following the Second World War, housing was on top of the political agenda in most affluent countries. Many countries accepted far reaching collective responsibilities boosting new construction aimed at providing adequate housing for large parts of the population. These collective efforts to house the population coincided in many countries with the emergence and development of social protection, where social benefits and services expanded both in number of programs and expenditure (Flora, 1986; Pierson, 2001; Huber & Stephens, 2001). In some countries the state in terms of housing laid the foundation for a large rental sector, in other countries private owning became more salient (Esping-Andersen & Korpi, 1987).

Academic research on comparative housing policy tried to single out factors driving the differences in tenure structure among advanced capitalist nations after the Second World War, the most popular ones being class conflicts, economic development and demographic constraints (Doling, 1997; Donnison & Ungerson, 1982; Kemeny & Lowe, 1998). This study will not further examine the driving forces behind the organization of the housing market. Nonetheless, research nowadays seems to view incentives to housing policy change as the combination of economic development and political power relationships, thus similar factors that seem to be important also for the development of social protection (Myles & Quadagno, 2002).

Although this study is not explicitly focused on social benefits and transfers, housing policy can more generally be included in a broader perspective of welfare state development. A definition of social policy that includes housing is provided, for example by Clapham et al (1990) who describe social policy as “those areas of consumption in which the state plays a central role, either by regulating the provision of services, underwriting the cost of their provision, or providing goods and services in kind” (Clapham, Smith & Kemp, 1990: x). Lundqvist (1991: 81) identified the logical content of housing policies where public intervention is possible: the regulation of quality, quantity and price, financing or in the process of production.

Housing has since decades been described as “the wobbly pillar under the welfare state” (Torgersen, 1987: 116–118) indicating that welfare states institutions historically have been operating outside the market. Bengtsson (2001) suggested that “housing policies are best perceived as the state providing correctives to the housing market” (2001: 257). This means that the main mechanism distributing housing is market contracts and that state intervention typically take the form of regulating private consumption, which in turn defines the economic and institutional setting for market principles. Notwithstanding the salient influence of market principles in housing provision, state intervention is seen as necessary in many affluent countries not the least since housing is recognized as an important aspect of individual well-being (Lee & Murie, 1997). However, the opinions on the advantages of the market mechanism in providing affordable and adequate housing to every citizen differ and likewise state intervention in housing market principles.

Welfare states diverge in the way they respond to inequalities generated by the market. Different attempts have been made to classify welfare states more broadly according to their involvement in the distributive processes (Titmuss, 1974; Korpi, 1980; Mishra, 1981; Esping-Andersen, 1990; Korpi & Palme, 1998). Together these studies show that welfare states shape individual well-being and living conditions and ultimately social stratification differently. A recurring focus in social policy research is the relative importance of markets and the state in the distributive process. Broadly, two ideal typical approaches are often identified; firstly a market model where state intervention is targeted towards subgroups of the population with specific needs, often referred to as a selective or marginal social model.¹ The second type is often referred to as universal or institutional and characterize policy intervention that are directed towards larger sectors of the population and not only the poor (Titmuss, 1974; Korpi, 1980; Sainsbury, 1991).²

Behind selective model lies the view that state intervention in market principles should be minimal as the most efficient distribution of resources flows from market competition rather than state action. According to this view, state intervention in preventing unequal distribution

¹ The term ideal type here refers to the method of abstraction suggested by Weber (1978: 19–22). The ideal type is a tool to understand relationships and not to be conceived as a “model” of the reality. In comparative welfare research ideal types is at center stage certainly after the influential Esping-Andersen’s (1990) *Three Worlds of Welfare Capitalism*.

² Concepts related to this “polar pair” are marginal-institutional, residual-institutional, social-comprehensive. In this study I will use the concepts universal and selective.

of resources reduces the ability of the market creating justice. It is also argued that state intervention tends to have a wide range of undesirable and unanticipated effects such as weaker incentives to participate in paid work. In welfare states dominated by selective policies, it is recognized that some people are incapable at competing at the market; therefore usually small subgroups of the population are defined as requiring direct state support.³ In countries following these selective principles in the organization of welfare state, public intervention and support should be minimal, not the least since high public spending is often viewed as unwanted.⁴

The alternative to a selective strategy is a universal strategy, which typically rejects the proposition that the market is most successful distributing welfare. State intervention in market principles is seen as necessary, often because market mechanisms seem to fail to adequately supply essential welfare to reasonable standards to large fractions of the population. It has also been argued that public welfare is more economically efficient, for example in health, education and housing, sometimes contributing in the longer term to increased labor productivity (Morel, Palier & Palme, 2012). Furthermore, individual choice on a free market is sometimes restricted as true competition may be obscured due to monopolies. Most importantly, welfare is not like other commodities on markets where the consumer easily can shift between providers. The organization of state intervention is therefore seen as most efficient if it encompasses all income groups. By including those in the middle-classes who can afford welfare services on market terms in public programs, popular support for public intervention in market principles and redistributive policies is strengthened. This ensures a higher quality of transfers and services compared to programs that only target poor people (Korpi & Palme, 1998).

The questions if and how these opposite policy strategies are successful in reducing poverty, deprivation and social exclusion has been extensively debated (Kenworthy, 1999; Brady, 2003; Korpi & Palme, 1998). Nonetheless, research points to a paradox of redistribution (Korpi & Palme, 1998). The more we are concerned with targeting benefits to the poor, the less likely we are to reduce poverty and inequality. The Robin Hood statement; “take from the

³ For the purposes of receiving assistance, subgroups of the population are required to formally be categorized as “low-income”. A strand of research not touched upon in this study is the very process of labeling people and designing programs for undeserving or deserving poor which may have effects on stigmatization and processes of polarization in the society.

⁴ Due to the belief that low taxation stimulates the economy.

rich, and give to the poor” is proven not to effectively reduce poverty, as the resources actually reaching the poor are lower in selective and targeted welfare systems compared with the universal ones.

The redistributive paradox has primarily been applied to income support and social insurances provided by welfare states, focusing on combating income poverty. In research on social policy there is a long tradition on focusing on major types of social insurance systems, as they most likely capture the essence of social policy strategies. Recently however, the role of other policy sectors for combating poverty and social exclusion has been given increasing attention, such as family policy (Bäckman & Ferrarini, 2009) and social assistance (Nelson, 2012).

Housing tenure types and the role of the rental sectors are two additional areas of the welfare state that deserve increased focus in this regard, providing additional empirical evidence when it comes to the longstanding question concerning the fruitfulness of selective and universal policies to fight poverty, deprivation and exclusion.

When linking social policy strategies to the organization of the housing market, there has been a tendency to use tenure types as a central analytical category (Doling 1999). In this study, the structure of tenure types is perceived as “intervening variables” in the distributional processes; determined by social, economic and political factors and intervening in patterns of social stratification (Korpi & Palme, 1998). Particularly the role of economic development, as measured by GDP is often highlighted in studies on housing deprivation (Doling, 1997; Domański, 2006). For example, Donnison & Ungerson (1982) claim that “political systems and ideologies play only a small part in shaping housing standards and the distribution of housing space” (1982: 50). In the present study, the theoretical approach is that politics do matter in the sense that the organization of tenure types across countries is not perceived as a coincidence. Moving away from a structural-functional approach on social stratification, a power resource perspective sees welfare institutions and state intervention in market principles as results of distributive conflicts between actors with different economic and political resources (Korpi, 1980).

In research on housing markets, three tenure types have generally been distinguished: the owner occupied sector, the private rental sector; and the social rental sector. This general classification of tenure forms is problematic to use in comparative research, as the same tenure may have different meanings across countries, and there are various sub sectors within each of the particular housing tenure types (Ball, Harloe & Martens, 1988). For example, the rental sector can consist of dwellings that are owned privately for the purpose of making

profits and dwellings owned by local authorities and non-profit organizations. The use of tenure types have also been criticized as the concept of tenure has been used too abstractly and too widely and that it overemphasizes just one element in housing systems (Ball, Harloe & Martens, 1988). Barlow & Duncan (1988, 1994) illustrates the problem of analyzing tenure types with a comparison of owner-occupied sector in Sweden and the public housing in Britain. The owner occupied sector is decided by market principles while public housing is decided by a measure of need. However, rents in public housing in Britain are increasingly adjusted towards market levels, while Swedish house builders are building under price control and regulations. The owner-occupied sector in Sweden is therefore claimed to be less relied on market principles than public housing in Britain. A comparative measure based solely on tenure types increases the risk to miss such fundamental differences between housing systems. Other relevant dimensions when establishing the extent of market principles in housing systems are suggested by Ambrose (1991) who distinguished between promotion (who initiates the housebuilding process), production and consumption of housing and finally supply of land.

Nonetheless, housing tenure is an important concept in housing policy research as it “defines the formal position of residents in their capacities as owners, co-owners and users of their dwellings, and thus set up the rules of the games between actors in housing market” (Bengtsson, 2001: 5). Here it is relevant to distinguish between types and forms of housing tenure, where types of housing tenure refers to broad categories such as renting and forms of housing tenures aim to capture historically-specific arrangement across countries, such as tenant-owned housing in Sweden (*bostadsrätt*), British Council renting and housing company in Finland (Ruonavaara, 1993, 2005).⁵

⁵ Tenant-owned housing in Sweden implies membership of a housing co-operative association that owns the building. The tenant is an owner in the sense of being a member of the association and a shareholder. Membership rights are often obtained through a capital investment and maintained by monthly fees to the association. Tenant-owners differ from tenants in two ways: they enjoy a higher security of tenure and they have the right to transfer their dwellings as they wish. Finnish housing company resembles the Swedish tenant ownership in the sense that ownership of shares in the housing company entitles the right to use a dwelling, however opposed to Swedish tenant ownership, housing company in Finland is considered to be a form of owner-occupation and resembles condominiums (Ruonavaara, 2005). In Britain, social housing is sometimes referred to as council housing. Historically, social housing was run by district and borough councils. Two-thirds of social housing is still located within areas originally built as council estates (Balchin, 1996).

Housing tenure systems with high extent of social rented housing are typically viewed as collectivist, welfare-oriented and universal. Systems dominated by owner-occupation are more market oriented and associated with selective housing policies targeted at the disadvantaged people (Barlow & Duncan, 1994; Doling, 1999). This general picture can be further specified. Kemeny has developed a typology of rental tenure systems in affluent countries (Kemeny, 1995), which is continuously discussed (Balchin, 1996; Hulse, 2003; Matznetter, 2002; Stephens, Burns & MacKay, 2003; Heijden, 2002). According to this typology, rental systems may be unitary or dual, reflecting the role of non-profit rental sector.

Dualist rental systems typically combine an unregulated private rental sector and a tightly controlled state regulated rental sector of social housing for the poorest people. The social housing element of the dualist rental system is organized separately from the profit market and does not depend upon competition, neither constituting a market itself. In these systems, governments support home-ownership via subsidies and favorable legal treatment. The objective for the social housing sector is not to make profit, but to create accommodation for specific target groups unable to participate on the regular housing market. The rents are usually free or heavily reduced and the standard of social housing is typically set to minimum standards. The housing market in countries with a dualist rental system is typically dominated by owner-occupation and an unregulated, generally small, private rental sector together with the social housing sector (Kemeny, 1995). Thus, the dualist rental system shows clear resemblance with the selective strategy to organize public intervention related to the distribution of welfare.

The chief objective of the unitary rental sector is to create social integration and to minimize differences in prices and quality of dwellings in profit oriented and non-profit rental housing sectors. In unitary housing tenure systems, the state provided housing sector is extensive and established in a unitary market where the non-profit rental sector competes on the same terms as the profit-rental sector, for example by rent regulation forcing private landlords to adjust rent levels according to the non-profit rental sector. These unitary rental systems are more 'tenure neutral', that is, each tenure type is afforded similar levels of government support. The rent regulation leads to low rents also in the private rental sector, enabling also poorer people to acquire reasonable levels of housing in one and unified rental housing market (Kemeny, 1995). Consequently, the unified rental systems bears similarities to a universal policy strategy distributing welfare services to larger parts of the population (Esping-Andersen &

Korpi, 1987: 64–66; Donnison & Ungerson, 1982: 74–81; Heidenheimer, Heclo & Adams, 1983: 92–95; Headey, 1978: 13–14)

2.4 Hypotheses

Housing tenure structure may be an essential determinant for patterns of social stratification. The theoretical framework presented above provides a basis for formulating two competing hypotheses on links between rental housing tenure types and prevalence of housing deprivation in the European countries. Based on ideas about the effectiveness of targeting welfare efforts to needy persons we should expect social housing to play an important role in combating housing deprivation. The basic idea with social housing is that the state provides housing of minimum standards to low-income households who cannot afford to compete on the regular housing market. The strategy of ensuring housing mainly to risk groups and those in need means that poor people with limited access to market solutions do not have to balance household budgets with lower quality housing. Since the state in these circumstances provides social housing to the poor, involving free or heavily subsidized rents, housing deprivation should be substantially reduced. Based on this discussion we can formulate the following hypothesis:

Housing deprivation is lower in countries with dual rental systems, where rental housing is mainly targeted towards low-income groups, commonly perceived as social housing.

This hypothesis also includes certain expectations concerning the role of home-ownership and unregulated private rental markets in countries where social housing is comparatively widespread. For example, it is sometimes assumed that home-ownership increases incentives for maintaining or even improving quality of the housing stock, thus protecting home-owners investment costs (Linneman & Megbolugbe, 1992). Another expectation concerns the extent of unregulated private rental tenure types, which is likely to drive housing deprivation at individual level. The extent of unregulated private rental tenure types is likely to be low in countries with high shares of home-ownership and social housing (Kemeny, Kersloot & Thalmann, 2005).

However, an alternative hypothesis is possible. Since targeted social housing provides shelter for people excluded from the regular housing market, the suppliers of social housing may

have weak incentives for improving the housing stock available to poor people. The quality of housing can be expected to improve when risks and resources are pooled within a unified system of rental housing, similar to the idea of middle-class inclusion and redistribution of economic resources developed in comparative welfare state research (Korpi & Palme, 1998). Competition between private and public landlords may also improve further the housing stock for middle-class and lower income groups. Thus, we may formulate the second competing hypothesis as follows:

Housing deprivation is lower in countries with a unitary rental system, where all income groups are subject to the similar principles for rental market regulation.

A few caveats need to be addressed at this stage. There are of course many possibilities whereby governments may regulate housing markets to provide decent housing affordable for broader income groups (Lundqvist, 1991). These possibilities can broadly be categorized in the form of supply and demand oriented strategies for housing regulation. The state may intervene in market principles governing the construction industry, thus influencing supply of rental housing. State intervention may also affect demand for housing by increasing household's consumption budget, for example, by means of housing allowances. Another alternative besides cash benefits is to regulate the price of dwellings through rent regulation. The effects of these supply and demand side strategies are muddled (Murray et al, 1991; Olsen, 1988) and it is beyond this essay to study the influence of these factors in greater detail.

3. Data and methodology

This section covers a presentation of data, measures at micro-and macro level and ends with some methodological considerations.

3.1 Data

Housing deprivation and the link to housing policy in European countries is analyzed with data from 2007 EU Survey on Income and Living Conditions (EU-SILC). The EU-SILC is an

annual survey which provides individual and household level data on a wide range of social issues including income, poverty, social exclusion and living conditions. These data are gathered to provide comparable statistics for European countries and forms the basis for the calculation of many Laeken indicators (Marlier, 2007). The purpose of the survey is to allow EU member States and the European Commission to monitor national and cross-national progress in the context of living condition. An expert group develops EU-SILC indicators and its sources are highly reliable on existing or administrative data, where available. In countries where register data is not available, the full information is gathered via household surveys based on interviews with household members.⁶ Quite a number of studies on various aspects of data quality in EU-SILC have been carried out by researchers. Survey errors, non-sampling and sampling errors which affect comparability across countries have been documented by Eurostat. Despite possible fallacies in the data, the EU-SILC offers comparative micro level data at a high quality on living conditions in European countries, readily available for cross-national research purposes.

The total sample in this study consists of 399,486 individuals distributed across the following 26 European countries: Austria (AU), Belgium (BE), Cyprus (CY), Czech Republic (CZ), Germany (DE), Denmark (DK), Estonia (EE), Spain (ES), Finland (FI), France (FR), Greece (GR), Hungary (HU), Ireland (IE), Iceland (IS), Italy (IT), Lithuania (LT), Luxembourg (LU), Latvia (LV), The Netherlands (NL), Norway (NO), Poland (PL), Portugal (PT), Sweden (SE), Slovenia (SI), Slovakia (SK), The United Kingdom (UK).

The data are based on national representative probability sampling of populations residing in private households. The achieved sample size for 2007 varies from under 4000 households in Iceland, Cyprus and Luxembourg to nearly 45000 in Italy. The non-response rate occurs at three stages: 3 percent of the selected households were impossible to contact and both household interview and personal interviews had non-response rates slightly over 20 percent. Non-response rates vary somewhat between countries ranging from 8 percent in Cyprus and around 40 percent in Denmark (Eurostat, 2010b). Non-responses may cause biases if some groups are systematically under-represented. For example, persons with higher income may be more reluctant to give information on their income and similarly, poor and socially excluded persons may be more likely to be excluded from surveys, such as EU-SILC

⁶ For an extensive discussion of EU-SILC register and survey data collection, see Lohmann (2011).

(Eurostat, 2010a). A common solution to reduce bias resulting from non-responses is to use various weighting techniques. EU-SILC provides such weight, which are used in this study.

With the availability of extensive comparative data where the size and the organization of the rental sector can be accounted for, as well as indicators of housing deprivation at the individual level, many of the weaknesses found in the previous research can be addressed.

First, since housing deprivation is an ambiguous concept, EU-SILC data makes it possible to address the relationship between housing tenure types for composite housing deprivation indicators. *Second*, the large number of countries gives some possibilities for analysing confounding factors at the country level. And *third*, the organization of the housing market may influence individual risks differently across countries. Thus, the association between rental tenure types and housing deprivation at the individual level may be different across countries.

3.2 Measures

3.2.1 Housing deprivation

To be able to compare poverty, deprivation and social exclusion across countries, the EU member states have agreed to conceptualize and measure poverty, deprivation and social exclusion in similar ways. One of the most recent decisions includes common standards to measure material deprivation in the overall framework for EU poverty analysis. One reason for this broadening of the social inclusion agenda beyond merely income based criteria was to better capture the diversity in living standards across the EU countries, especially since the enlargement of the EU in 2005 and 2007 to Central and Eastern Europe (Marlier, 2007).

Aspects of housing are commonly included in the concept of material deprivation. Inability to pay rent, mortgage or utility bills and difficulties in keeping an adequate heating of dwelling are considered a necessity to lead an adequate life and thus creates the indicator of material deprivation together with other items.

Focusing on several aspects of housing, housing deprivation is often assumed to be an accumulation of deficiencies in basic housing conditions. Immediately, such definitions entail identifying a dwelling's basic or minimum acceptable standard. To be able to separate on the one hand lack of items due to preferences or choice and lacking items due to scarce resources on the other, the concept of "enforced lack" is used. Enforced lack of deficiencies in basic

housing conditions refers to situations where people would like to possess/access particular items but cannot afford them for financial reasons. In EU-SILC, the questions regarding durable goods rely on this concept (Halleröd, 1995). Only people who would like to possess the items but cannot afford them are considered as deprived. Still the question remains concerning the specific items that are supposed to be most relevant for measuring (housing) deprivation.

To be able to identify the relevance of included items in the EU-SILC, an EU wide Eurobarometer survey on the perception of poverty and social exclusion was carried out in 2007. From this cross-national survey, a list of basic facilities was established. Regarding the indicators of housing deprivation; leaking roof, damp walls/floor, a dwelling considered too dark, to have an indoor flushing toilet and a bath/shower and to have enough space, the Eurobarometer survey confirms that the items available measuring housing deprivation in EU-SILC can be socially validated. All of the items measuring housing deprivation are considered to be absolute necessarily in order to live a life of decent quality and dignity (Guio, Fusco & Marlier, 2009).⁷

However, there are still different opinions on which indicators should be used to measuring housing deprivation at the European level. Nonetheless, the starting point for this study is to use the definition agreed by the EU member states. Here, *housing deprivation* is defined as those who are:

- overcrowded⁸, while also exhibiting one of the following deficits;
- leaking roof/damp walls, floors, foundation or rot in window frames or floor⁹
- no bath/shower
- no indoor toilet

⁷ Percent answering "absolutely necessary" and "necessary" per item: Leaking roof, damp walls/floor: 97%, too dark: 87%, bath/shower: 94%, indoor flushing toilet: 96%, space: 73%.

⁸ I employ the EU indicator of overcrowding whose definition depends on size on the household as well as the age of households members and family situation: "A person's living conditions are considered as overcrowded if the household does not have at its disposal a minimum number of rooms equal to: one room for the household; one room per couple in the household; one room for each single person aged 18 or more; one room per pair of single people of the same gender between 12 and 17 years of age; one room for each single person between 12 and 17 years of age and not included in the previous category; and one room per pair of children under 12 years of age" (Eurostat, 2011).

⁹ Hereafter only referred to as "leaking roof".

- a dwelling considered too dark.¹⁰

If the concern about deprivation, poverty and social exclusion is about basic needs, the focus of analysis should perhaps be on individual consumption. Consequently, poverty and deprivation should ideally be measured in a multidimensional way through direct indicators rather than analysed indirectly via household income. However, what we view as basic needs and necessities differs across societies and historical time. In this study, lacking basic services such as a toilet or having a leaking roof is considered as housing deprivation as it is clear that the individual has not acquired commonly recognized “functionings” that are seen as a necessity by most people in and across societies (Sen, 1988).

The dependent variable is thus dichotomous, coded as 1 in case of experiencing overcrowding and lacking at least *any* of the other housing deficits. This index naturally gives each necessity beyond experiencing overcrowding the same weight. As some dimensions of housing deprivation may be more important for the experience of housing deprivation, each of the included housing deficit components are also analyzed separately.

In **Table A1** in the appendix, descriptive statistics on all indicators used in this study are presented. From this table, we can see that a large share of the population in Central and Eastern European countries are classified as overcrowded. Figures above 40 percent of objective overcrowdedness are found in Hungary, Lithuania, Poland and Slovakia. The relevance of objective overcrowding in the measurement of housing deprivation can be discussed. In the Eurobarometer survey 73 percent agreed that enough space in dwelling is at least necessary in order to lead an adequate life. Sometimes these kinds of indicators are complemented by a subjective measurement of overcrowding. However, long and short-term consequences caused by lack of housing space have since long been acknowledged in the literature. From a sociological point of view, Gove et al (1979) were among the first to establish a correlation between the number of persons per room and individual’s mental and physical health. Moreover, medical literature on health outcomes has continued to stress the importance of sufficient housing space as findings indicate that individuals living in overcrowded housing have higher risks for sickness (Britten, Davies & Colley, 1987; Rasmussen, Borchsenius & Ostergaard, 1978; Mann, Wadsworth & Colley, 1992); are more

¹⁰ In the EU agreement, these items create “severe housing deprivation”. In this paper I use the term housing deprivation. In the appendix you find the exact questions from which the dependent variable has been constructed

likely to die at a young age (Coggon, Barker, Inskip, et al., 1993); are more stressed than others and are more easily infected by transmittable infections. Several studies have also linked overcrowding to children's school performance (Goux & Maurin, 2005).

3.2.2 Tenure types

Treating features of the welfare state and social policy as independent variables has been extensively applied in comparative welfare state research (Moller, Nielsen, Huber, et al., 2003; Kenworthy, 1999, 2011; Goodin, Headey, Muffels, et al., 1999; Smeeding, Rainwater & Burtles, 2001). The most common indicator of welfare state effort has been social spending; a measure that has been criticized due to its biased influence of for example demographic and labor market profiles. With comparable information on tenure types, the problems connected with the use of expenditure data as indicator of welfare state generosity can be avoided.

Both Kemeny (1981) and Ruonavaara (1993) distinguish between two types of housing tenures: owning and renting. The main division concerns the right of disposal, where homeowners tend to possess this right, whereas the right of disposal among the renters often is restricted. It is also common to distinguish between a private and a social rental sector (Kemeny, 1995), which makes comparisons between countries problematic due to the organization of the rental market.

In the present study, the rental sector is initially studied as a whole, where no distinction between systems with a dual rental system with separate social housing targeted towards the poor and a unified rental system with a more extensive rental sector attainable for broader parts of the population. For the purpose of correctly identifying housing policy strategies, the rental sector needs though to be further separated.

In EU-SILC the variable *tenure status* makes it possible to divide the rental sector into three constituent parts;

- tenant or subtenants paying rent at prevailing or market price
- accommodation rented at a reduced rate (lower price than the market price)
- accommodation that is provided for free.

The variable tenure status is an individual level variable that have been aggregated. The key distinguishing issue is thus the functioning of the market in deciding rent levels.

Countries with a unified rental system where no distinction is made between private and social housing typically have a large share of tenants paying rents at prevailing or at market prices, thus closely resembling a universal strategy to the housing problem. The term *prevailing* is here of utmost importance. A common characteristic among countries with a unified rental system is that rent regulation imposes nonprofit rent levels to the private sector (Kemeny, Kersloot & Thalmann, 2005). The market principles in unified rental systems are therefore reduced and tenants living in countries dominated by a unitary rental system are commonly categorized as paying prevailing rents. Countries with a dual rental system where social housing is organized separately from the regular housing market more often have a relatively large number of tenants renting at reduced prices. This type of tenure system more closely resembles a selective strategy to the housing problem. Accommodation that is provided for free typically refers to the situation when housing is provided by the employer.

From the three categories above, the contextual variables

- *rental market*
- *social housing and*
- *rental for free*

are constructed and aggregated on the basis on individual level data concerning tenure types. The reference category throughout the empirical analyses is private home ownership.¹¹

Not all societies can easily be categorized to either of the above rental system. For example, Kemeny's (1995) division between unified and dual rental sector is based on developments in the longstanding industrialized democracies the United Kingdom, Australia and New Zealand as dual rental systems while Sweden, Germany, Switzerland and the Netherlands are held to belong the unified rental system. In later work, Kemeny also included Belgium, Finland, Iceland, Italy and Norway as belonging to the dual rental system (Kemeny, 2006; Kemeny, Kersloot & Thalmann, 2005).

In countries experiencing transitions to market economy, different perspectives and legacies of a particular Eastern European housing system are present. Before the transition, the Eastern European countries' housing policy model was characterized by an extensive state controlled

¹¹ Descriptive figures are found in Table A3 in the appendix.

housing sector that was embedded with the central planning of macro economics (Turner, 1992).

Embedded in the concept of transition-to-the market it is assumed that both the period of communism was homogenous and most importantly that the experience from communism to post-communism were similar in all Central and Eastern European countries, a standpoint that has been criticized by Lowe (1994), arguing that the transition countries displayed important differences in terms of the organization of housing policy and markets. For example, it has been argued that owner-occupation was a principal form of housing throughout the authoritarian regime in Hungary (Kemeny & Lowe, 1998). Therefore, I will not employ a particular typology of the rental sectors in the Central and Eastern European countries as has been proposed by previous research (Norris & Shiels, 2007; Mandic & Cirman, 2011). The measurement of tenure types included in this study has the advantage of not being a typology based on rental systems, but rather indicating share of different forms of tenure types on a continuous/interval scale. Using typologies or housing models based on assumptions of characteristics of housing markets would seriously reduce cross-country variation in housing tenure types, not least between countries that otherwise would have been categorized into the same category. The usage of tenure types is a way to unpack the descriptive information hidden within this type of model-building (see also Kemeny, 2001). However, the indicator of tenure types used in this study may perhaps be criticized for providing limited evidence for correctly identifying policy strategies reflecting state intervention in market principles. State intervention in housing markets may take various forms, indicated not the least by developments in Central and Eastern Europe noted below.

3.2.3 Other contextual variables

Several other contextual level variables are used to control for factors that beyond rental housing tenure systems can be linked to varying levels of housing deprivation. *GDP* per capita is expressed in 1000s purchasing standards per inhabitant. *Female labor force participation* is the employment rate of females between ages 15-64.¹² *The unemployment rate* is the number of unemployed persons as a percentage of the labor force based on the

¹² The employment rate is calculated by dividing the number of persons aged 15 to 64 in employment by the total population of the same age group. The employed population consists of those persons who during the reference week did any work for pay or profit for at least one hour, or were not working but had jobs from which they were temporarily absent

definition provided by the International Labor Office (ILO).¹³ *The long-term unemployment rate* (12 months or more) consists of those aged at least 15 years not living in collective households who are without work within the next two weeks, are available to start work within the next two weeks and who are seeking work (have actively sought employment at some time during the previous four weeks or are not seeking a job because they have already found a job to start later). *The activity rate* represents the active population as a percentage of total population (age 15-64 years).¹⁴ *The total fertility rate* is the mean number of children that would be born alive to a woman during her lifetime if she were to pass through her childbearing years conforming to the fertility rates by age of a given year. This rate is therefore the completed fertility of a hypothetical generation, computed by adding the fertility rates by age for women in a given year (the number of women at each age is assumed to be the same). *Public expenditure on housing* is measured as a percentage of GDP including allowances, benefits or structural schemes.¹⁵ All of the above contextual variables are from Eurostat and based on 2007 figures. This data is described in greater detail in **Table A2** in the appendix.

3.2.4 Confounding individual characteristics

In previous research linking policy strategies to outcomes of housing standards, aspects relating to both individual confounders and cross-national variations in socio-demographic characteristics is generally ignored (Norris & Shiels, 2007; Mandic & Cirman, 2011). Therefore, an important contribution for the following study is the ability to assess the extent to which compositional effects matters for cross-national variation in housing deprivation. A compositional effect may arise if the variations in the levels of housing deprivation across countries rates can be attributed to a non-random distribution in individual risk in experiencing housing deprivation (Snijders & Bosker, 1999).

¹³ The labor force is the total number of people employed and unemployed. Unemployed persons comprise persons aged 15 to 74 who are: without work during the reference week; are available to start work within the next two weeks; and have been actively seeking work in the past four weeks or had already found a job to start within the next three months. Figures for Iceland are missing in the Eurostat database and therefore gathered from OECD (2012). The major difference is the seasonal adjusted data versus harmonized employment rates.

¹⁴ The activity rate is defined as the proportion of persons in the labor force (employed and unemployed) in relation to the total population of the same age.

¹⁵ The figures for Slovakia are taken from the year of 2004, as they are unavailable for 2007.

The micro-level variables contain a set of characteristics that are often identified in the literature as having an impact on the risk of experiencing deprivation more generally (Nelson, 2012). The unit of analysis is the individual and variables measured at the household level are assigned to all individuals within that household. *Gender* is coded 0 for men and 1 for women. *Age* is included with dummies for 4 age groups in order to take account of a potential non-linear association between age and the likelihood of experiencing housing deprivation. The age groups are 0-17, 18-29, 50-64 and over 65 years where the reference category are the middle aged between 30-49 years. The following *household types* are controlled for: one person households, lone parents, couples (reference category) and two-parent families. Two dummy variables indicating highest *educational attainment* are included; whether the highest educational level is at primary schooling or tertiary schooling according to the ISCED-97 classification scale. The category included as reference is individuals with secondary schooling as their highest educational attainment. *European citizenship* is included as a dummy where 1 is coded for citizenship outside of Europe and 0 is used for European citizenship. Lastly, individual level variables on housing tenure type are included, measured in terms of dummies for *renting at market price*, *renting at reduced rate* and *renting for free*. The reference category is home-owner.¹⁶

3.3 Methodological considerations

The comparative approach is suitable in assessing the role of the welfare state in the distributive processes. Esping-Andersen argues that “only comparative empirical research will adequately disclose the fundamental properties that unite or divide modern welfare states” (Esping-Andersen, 1990: 3). Due to the major differences that exist between countries’ housing markets, a comparative perspective on the ways which welfare states influence patterns of social stratification is both theoretically and empirically motivated. A comparative method has several advantages and it may enable us to develop theories and hypotheses on social processes that single country studies would likely have missed. A comparative approach may help us to reach a better understanding on the importance of particular characteristics of the countries we are studying and most importantly, from a policy perspective; it helps us identify differences in national contexts that produce various social outcomes. There are different ways to conduct comparative research. Lijphart (1971, 1975)

¹⁶ In **table A1** in the appendix, all the descriptive of individual level variables are found.

presented a seminal conceptualization of comparative research, contrasting the comparative method to the experimental method where outcomes from randomly assigned samples and treatments are analysed. In the social sciences, the scope for making comparisons based on controlled experiments is limited, and it was suggested that a “statistical” method is a promising alternative to establish the likelihood that the explanatory variables have effects on the dependent variable of interest (Lijphart, 1971, 1975). Nonetheless, the statistical approaches for comparative analysis have been subject to some criticism (Shalev, 2007).

One problem of comparative research is that the number of cases is relatively small, at least in comparisons with survey data. If data would have been available for all countries in the world, a different path of theorizing would most likely have taken place for the current study as the theoretical concepts and their empirical application do for example not easily translate to countries outside Europe and the context of welfare states. However, limiting us to Europe, the number of countries are restricting for taking full potential of multivariate statistical techniques, but at the same time, they are too many for relying on in-depth observational studies (Liebersohn, 1997). In the current study, the 24 European countries included are not selected on basis of previous attempts to classify welfare states in to different types, a common strategy to increase generalizability (see for example Doling, 1999). Such a strategy implies that large institutional characteristics are treated as similar across countries. The strategy here has instead been to explore variations in housing tenure systems between countries in a strict sense, and not based on previous assumptions on these countries.

The data used in this paper has two levels of observatory; the individual level and the country level. If I would ignore the hierarchical structure of the data and use logistic regression techniques analyses would systematically underestimate the standard errors of the regression coefficients and systematically overestimate the effects of the country level variables. The reason for this is that the individual observations cluster according to country and thus the two levels of observations are not independent. Regular regressions may in effect lead to a larger share of significant coefficients, when they are in fact not significant (also known as “Type II error”). I will therefore employ multilevel modeling which allows us to isolate the effects of both individual- and country level variables. Furthermore, since the dependent variable is dichotomous and bounded to the values 0 and 1, which differs from a continuous variable in a number of ways, a logistic multilevel regression is preferred. The most important difference being that treating the outcome as linear would yield fitted values outside the allowed range. A meaningful model for dichotomous outcomes should not allow fitted values greater than 1.

To assure that the estimates are not biased due to unobserved heterogeneity; that is if there are other relevant variables that are unobserved but most likely correlated with the variables included, all regressions have also been fitted with linear multilevel regression techniques (Mood, 2010). The results from these models (not shown) do not invalidate the interpretations of the variables across countries.

Multilevel models are used in sociology to specify the effect of social context on individual level outcomes. “The essential feature of all contextual –effects models is an allowance for macro processes that are presumed to have an impact on the individual actor over and above the effects of any individual level variables that may be operating” (Blalock, 1984: 354). Therefore, the contextual effects of tenure types and other country level factors are examined through random intercept logistic regressions. With a random intercept specification, individual characteristics are assumed to have the same effect on experiencing housing deprivation across countries, in other words these are fixed effects. However, it is easy to imagine that the effects of individual characteristics on the risk of experiencing housing deprivation might vary across countries. Therefore, further analyses of individual risks are specified according to random slope multilevel logistic regressions. But, solely random slope models do not provide an answer to *how* these individual effects vary across countries. Including a cross-level interaction term between the individual risk characteristics and the contextual variable of interest provides an explanation for possible variation in the individual risk, that is, if the individual characteristic is dependent upon the contextual variable of interest (DiPrete & Forristal, 1994). To determine whether the cross-level interaction term actually provides us with answers, we use a Likelihood ratio test. A likelihood ratio test is testing if the model proves a better fit on our data with or without the cross-level interaction term. A significant likelihood ratio coefficient would lead us to a conclusion that the individual level characteristics do vary across countries, and that this risk is systematically related to the contextual variable of interest.

Dealing with multilevel techniques, issues related to the sample size are of importance. The number of units at each level of analysis must be large enough to estimate the multilevel model. The minimum number of countries for a multilevel analysis is 10 (Snijders & Bosker, 1999). However, such small numbers of countries might produce biased estimates since the number of higher level units influences the estimates of the variance components and the standard errors, as well as the parameter estimates themselves. A recommendation is to use at least 30 countries to avoid Type I errors and to produce unbiased estimates (Maas & Hox,

2005). However, restricting the number of contextual effects that are estimated simultaneously helps to some extent the problem of restricted sample size at higher levels (Meuleman & Billiet, 2009). As the number of European countries for obvious reasons is limited, the problem of a small N applies in cross-national analyses. In the following, I have therefore taken measures to lessen the complexity of the regression models in terms of reducing the number of contextual variables, testing contextual level variables separately and only in the last stage of the empirical analysis include all contextual variables.

All of the multilevel models in this study are compiled using STATA and are estimated using the *xtmelogit* command. The recommended method for statistical estimation of the parameters in the case of a small number of countries is the restricted maximum likelihood (REML) method (Snijders & Bosker, 1999: 56). REML is applied in all models in this study, except when estimating models including random coefficients. For testing random coefficients, the method of maximum likelihood (ML) is preferable (Snijders & Bosker, 1999: 89). REML only allows for comparisons of models that differ in terms of their random effects but have the same fixed effects. In a random slope specification, the cross-level interaction term differs across models.

4. Analysis and Results

The presentations of results are divided into five parts. First, I present a descriptive overview of the association between the rental sector and the prevalence of housing deprivation at the aggregate level. The analysis continues with a series of random intercept multilevel logistic regressions of housing tenure types on housing deprivation. Third, I analyse the components constituting housing deprivation separately. Fourth, the effects of further contextual variables are presented. Fifth, the analysis ends with an exploration of individual risks on experiencing housing deprivation according to tenure type.

Figure 1 shows a scatterplot of the overall rental sector and prevalence of housing deprivation across 24 European countries. There is a negative association between the size of the rental sector and prevalence of housing deprivation at the macro level. However, the relative size of the rental sector and levels of housing deprivation vary extensively across Europe. The largest rental sector is found in Germany, accounting for about 40 percent of the total housing stock

compared to the small rental sectors of about 10 percent of the total housing stock found in a cluster of Central and Eastern European countries and Iceland. In many countries, the prevalence of housing deprivation is below 2 percent with the lowest rates found in Nordic countries and Continental European countries including Netherlands, Germany, Belgium and France. Housing deprivation tend to be at highest levels in the Central and Eastern European countries, particularly in Lithuania, Estonia, Hungary, Latvia and Slovenia where deprivation levels are near 10 percent (for exact number see **Table A1** in appendix). The Central and Eastern European countries are influencing the negative slightly curvilinear association found between the size of the overall rental sector and housing deprivation at the macro level. However, excluding the Central and Eastern European countries from the analysis drastically weakens the negative association between the rental sector and the prevalence of housing deprivation but do not overturn the negative association, albeit not statistically significant.

It is not given beforehand how the Central and Eastern European countries can be expected to perform in comparative welfare state research on poverty, deprivation and social exclusion. Ferrarini and Sjöberg (2010) provide different examples concerning the link between social policy and poverty outcomes in Central and Eastern Europe and Western Europe . Their findings indicate that more generous family policies tend to reduce poverty and the Central and Eastern European countries do not distort this general pattern. However, in terms of the relationship between family policy and infant mortality, Central and Eastern European countries and Western European countries form two separate clusters. The relationship is much stronger for the longstanding European democracies. In terms of the association between family policy and death risks due to child injuries there is a larger negative effect in the Central and Eastern European countries than in Western European countries.

The descriptive results presented so far in this study indicate that the rental sector does matter for housing deprivation, but we can also note a geographical divide between new and old democracies. The higher prevalence of housing deprivation in Central and Eastern Europe may in part be a legacy of a tightly state controlled housing sector during the communist regimes. Hegedüs, Mayo, Tosics (1996) argues that at the time of transition, housing conditions in Central and Eastern European countries were by-and-large not better or worse than housing conditions in countries with similar levels of economic development.

Differences between Central and Eastern European countries and Western European countries in terms of living conditions increased during the socialist period, but this gap can partly be explained by economic development more generally. Moreover, the transition to market

economy in Central and Eastern Europe resulted in a rapid privatization of state rental housing, starting already from high levels of home ownership rate, thus creating what is known as super-owner occupied nations (Edgar, Filipovic & Dandolova, 2007; Ball, 2011; Fearn, 2004). Given economic resources, home-owners are more likely to maintain their housing. However, according to the high levels of home-ownership observed in Central and Eastern Europe (see table A3 in the appendix for exact figures), high home-ownership rates may have quite the opposite effect. Promoting home-ownership for low-income households could have the consequence that these groups find it more difficult than others to maintain their housing.

Figure 1. Share of rental sector and housing deprivation rate in 25 European countries 2007.¹⁷

¹⁷ Poland is excluded from this figure due to extreme outlier position in deprivation rates (15 percent).

However, the organization of the rental sector differs across countries, particularly along the lines of the unified and dual rental system discussed above. **Figures 2 A-C** shows the rental sector further diversified into three tenure types and their association with housing deprivation at the macro level. To recapitulate, in a unified rental system, the non-profit and the profit rental sector is organized together, where a large rental market sector is attainable for larger parts of the population. A dual rental system has to a larger extent a tightly controlled social housing sector targeted towards poor households. A third tenure type is when the accommodation is provided for free, commonly through the employer.

Figure 2A -2C Share of rental market/ social housing/ rental provided for free and housing deprivation rate in 25 European countries 2007.¹⁸

¹⁸ Poland is excluded from these figures due to outlier position in deprivation rates showing above 15 percent.

¹⁹ As a result of the partition of Cyprus in 1974, there are 13500 refugee-households living in housing estates (constructed and maintained by the government) free of charge (The Swedish National Board of Housing, Building and Planning, 2005). Therefore, Cyprus is excluded from this figure with above 15% of rental housing provided for free.

Figure 2A indicate that there is a negative association between the tenure type rental market sector and housing deprivation, demonstrating less extensive prevalence of housing deprivation in countries with a rental system where the non-profit and profit rental sector are unified. When it comes to the dual rental system with a large share of social housing targeted towards poor households, there is a negligible negative association shown in **Figure 2B**, between size of social housing sector and housing deprivation levels. From these figures, the expectation of lower housing deprivation in countries where rental sector is targeted towards low-income groups cannot find support. Rather, lower housing deprivation rates are found in countries with a more extensive rental market sector. Considering these two opposite pictures seen in Figure 2A and 2B, the systematic differences in tenure type structure across countries can be seen. Countries having a unified rental system where the non-profit and the profit rental sector create a large rental market sector imply having a small social housing sector. For example, Continental European countries having a rental market sector above 20 percent shows relatively small share of social housing. Having neither a large rental market sector nor a large social housing sector obviously implies a domination of other tenure types, in most cases a domination of home-ownership.²⁰ There is a systematic difference in terms of the role of private rental sector in countries with unitary and dual rental systems. Particularly the relative size of the private rental sector differs between unitary and dual rental systems. A plausible explanation for this difference is the functioning of rent regulation. Here it can be argued that rent control may lead to undermaintenance of property and underinvestment in new rental housing as it encourages landlords to convert rental housing into owner-occupied housing. However, a feature of rent regulation is that it also includes landlord's maintenance costs into rent increases. If landlords refuse to maintain the property, they may be penalized with fines or rent reductions for maintenance violations (Moon & Stotsky, 1993). A positive association between the prevalence of housing deprivation and a rental sector where accommodation is provided for free is shown in **Figure 2C**.²¹

The pattern found at the aggregate level above calls for an in-depth analysis of the link between the role of the rental sectors and the prevalence of housing deprivation. The analysis therefore continues with a series of random intercept multilevel logistic regressions of tenure

²⁰ The exception here is Poland where a significant share of housing is provided via employment (not shown in the figure).

²¹ The tenure type of housing provided for free will not be further elaborated on in this paper as the tenure type is relatively insignificant for most European countries.

types on housing deprivation. **Table 1** presents the results from a series of random intercept multilevel regressions. The first model is “empty” and does not include any individual- or country level variables. The purpose of this model is to benchmark the extent of cross-country variation in housing deprivation that is to be explained by the independent variables. To be able to measure the variance at the country level, the intraclass correlation coefficient (ICC) is calculated. The ICC is defined as the degree of resemblance between micro-units belonging to the same macro-unit (Snijders & Bosker, 1999: 16). For the empty model, the ICC is 0.29, which indicates that 29 percent of the variation in housing deprivation can be explained by country differences.

The second model includes variables at the individual level: gender, age, household type, educational attainment and citizenship, factors that may confound the results. The results are presented as log odds and these fixed effects represent the average effect for individual characteristics across countries. A negative coefficient indicates lower risk of experiencing housing deprivation, whereas a positive coefficient indicates the opposite. At the individual level, the coefficients show mostly the expected signs. Women are more likely than men to experience housing deprivation. Also, young adults between 18-29 years face a higher risk of experiencing housing deprivation. Belonging to older age groups reduces the likelihood of experiencing housing deprivation. Compared to couples, all the other household types are more likely to suffer from housing deprivation, albeit being single is not statistically significant. Lone parents and two-parent families seem to have similarly high risks of experiencing housing deprivation compared to couples. Less educated persons are more likely to experience housing deprivation compared to those with higher educational attainment. The likelihood of experiencing housing deprivation is significantly higher for non-European immigrants compared to individuals with a European citizenship. Renters, compared to homeowners, are more likely to experience housing deprivation, while tenants renting at reduced rents seem to be most vulnerable. These results suggest that housing solutions at individual level matters. Renting a dwelling seems to increase the likelihood of experiencing housing deprivation, even when tenure type is included as a variable at the country level. I will return to the distribution of risks at the individual level and especially the increased risk of experiencing housing deprivation for lone parents and risks related to citizenship and young adulthood.

To rule out possible compositional effects at the individual level, a comparison of the intraclass correlation coefficient (ICC) of model two with model one is helpful. Thus, if

individuals with differing characteristics are at higher or lower risk of experiencing housing deprivation, some of the variation in housing deprivation across countries will be due to differences in population composition, i.e. the relative size of the respective individual demographic characteristic. As there is hardly any change in the variation left to be explained by country differences from model one to model two, the conclusion is that no sizable compositional effects are present. In fact, due to the fixed variance at level one, the intraclass correlation coefficient (ICC) may increase slightly after inclusion of individual level variables (Snijders & Bosker, 1999). Still, after introducing individual level variables, there is considerable unexplained variance in the prevalence of housing deprivation across countries.

Table 1. Random Intercept Multilevel Logistic Regression on housing deprivation in 25 European countries 2007.²²

<i>Independent variables</i>	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>
<i>Fixed Effects</i>			
Female ^a		0.034** (0.017)	0.034** (0.017)
Age 0-17 ^b		0.048 (0.054)	0.048 (0.054)
Age 18-29 ^b		0.368*** (0.021)	0.367*** (0.021)
Age 50-64 ^b		-0.204*** (0.025)	-0.204*** (0.025)
Age 65 and over ^b		-0.531*** (0.033)	-0.531*** (0.033)
Single ^c		0.032 (0.036)	0.032 (0.036)
Lone parent ^c		0.775*** (0.043)	0.775*** (0.043)
Two-parent Family ^c		0.728*** (0.021)	0.728*** (0.021)
Primary Education ^d		0.433*** (0.026)	0.433*** (0.026)
Tertiary Education ^d		-0.476*** (0.028)	-0.476*** (0.028)
Non-European citizenship ^e		0.525*** (0.041)	0.525*** (0.041)
Renting at market price ^f		0.964*** (0.028)	0.965*** (0.028)
Renting at reduce rate ^f		1.161*** (0.033)	1.162*** (0.033)
Renting for free ^f		0.194*** (0.027)	0.194*** (0.027)
Rental market (ln) ^f			-0.663*** (0.194)
Social housing (ln) ^f			-0.186 (0.134)
Rental for free(ln) ^f			0.248** (0.122)
Intercept	-3.904*** (0.232)	-4.582*** (0.241)	-6.000*** (0.710)
<i>Random Effects (Variance)</i>			
Intercept	1.340 (0.381)	1.435 (0.408)	0.697 (0.200)
Log Likelihood	-58073.339	-54812.732	-54803.824
ICC	0.289 ²³	0.303	0.174
N	399486	399486	399486
Countries	25	25	25

Note: ***p<0.01, ** p<0.05. Standard errors within parenthesis. Reference categories are

^amale, ^b30-49 years, ^ccouple, ^dsecondary education, ^eEuropean citizenship, ^fowner-occupied. Source: EU-SILC 2007.

²² Slovakia is excluded from regression analysis as the figures for citizenship is missing.

²³ ICC, intraclass correlation coefficient is calculated as 1.340/(1.340+3.29) (Snijders & Bosker, 1999: 224).

In order to explain this variation in housing deprivation at the country level, we will next introduce a series of country level effects, e.g. contextual variables. Model 3 includes the three variables that characterize rental tenure types; rental market, social housing and rental for free.²⁴

In model 3, the negative association found at the aggregate level between the rental market sector and prevalence of housing deprivation is again confirmed. A negative association is also seen for the association between social housing rental tenure type and deprivation rates. A positive association found for accommodation provided for free is also established. However, only the negative coefficient for rental market sector and the positive coefficient for rental for free are statistically significant, showing that a unified rental system with a larger rental market sector tends to reduce the prevalence of housing deprivation. Furthermore, providing accommodation for free seems to increase the prevalence of deprivation. These findings seem to indicate that the expectation of finding lower housing deprivation rates in countries with a targeted social housing sector cannot find support. Nonetheless, the rental market sector seems to be the most important tenure type for less extensive levels of housing deprivation. Adding the contextual variables substantially reduces the variance left unexplained at the country level, from around 30 percent in model two to around 17 percent in the full model. Thus, the rental sector accounts for a 42 percent proportional decrease of the cross-national variation in housing deprivation.²⁵ Thus, two-fifths of the variance in housing deprivation is explained when introducing rental system tenure types, which is quite remarkable. As described and seen in the figures above, Central and Eastern European countries are influential with very high levels of housing deprivation and small rental sectors. To account for the possibility of outliers affecting the results and to be able to address the possible influence of the Central and Eastern European countries, a series of sensitivity analysis have been conducted through excluding countries one at a time and all together. Excluding all Central and Eastern European countries (LT, LV, HU, EE, PL, SI, SK) gives

²⁴ These contextual variables are all transformed to a logarithmic scale to account for the curvilinear association seen in the figures above. The regressions have also been done including the contextual variables without transformations. These analysis show the same directions of the relationships, however the tenure types show a weaker statistical explanatory power if not transformed.

²⁵ $0.303 - 0.174 = 0.129 / 0.303 = 0.425$

similar results as in **Table 1**, a negative coefficient for the rental market sector.²⁶ However, the statistical explanatory power for the contextual level variables is reduced and none of the tenure types are statistically significant.²⁷ When instead excluding each of these countries separately, the significant power of the negative coefficient for rental market sector is stable. Descriptions of the gap in levels of housing conditions between the new and 'old' member states have been extensively highlighted in the literature (Domaňsky, 2006; Norris & Shiels, 2007; Mandić & Cirman, 2011; Stuart Lowe & Tsenkova, 2003; Ball, 2011; Edgar, Filipovic & Dandolova, 2007; Mandić, 2010). The conclusion that the rental market sector may reduce the prevalence of housing deprivation should be interpreted with some caution as Eastern and Central European countries are likely to influence results. It may be that other factors can be more important for explaining the high levels of housing deprivation in the new democracies. Three suggestions posed in the literature are the level of economic development, the legacy of poor housing conditions from the socialist era and the limited state intervention in the housing market after the transition to market economy (J. Hegedüs & Tosics, 1996; Struyk, 1996; Clapham, 1996; Turner, 1992). However, the purpose of this study is to explore the linkages between rental tenure types and housing deprivation in Europe. Excluding the Eastern and Central European countries would remove nearly a third of European countries from the analysis. Moreover, there are substantial differences also between Eastern and Central European countries, where Slovakia has a housing deprivation rate of 3 percent while Poland has similar deprivation rates of 15 percent. Emphasizing the legacy of a particular and common Eastern European Housing Model that creates high levels of deprivation rates can be questioned in view of such results. Therefore Eastern and Central European countries are not removed from analysis.

Since housing deprivation is an index consisting of five components, each indicating a separate housing deficiency, it is interesting to look further into the association between the various dimensions of housing deprivation and tenure types. A consequent step is therefore to decompose the effects of housing tenure types on the components one by one. In doing so, one can out rule that separate components within the measure of housing deprivation are

²⁶ Slovakia is already excluded from the regression analysis on the basis on the missing figures for citizenship.

²⁷ When excluding the countries Lithuania, Latvia, Hungary, Estonia, Poland, Slovenia and Slovakia (LT, LV, HU, EE, PL, SI, SK) the coefficient for rental market sector is negative (-0.204) but no longer statistically significant ($p=0,5$).

driving the significantly negative relationship found for the rental market sector. **Table 2** shows separate random intercept multilevel logistic regressions for each indicator of housing deprivation; to be overcrowded, to not have a bath, to have a leaking roof, to not have an indoor flushing toilet or a dwelling considered too dark and the different tenure types.

Table 2. Random intercept multilevel logistic regression on separate indicators of housing deprivation in 25 European countries 2007.

	<i>Overcrowded</i>	<i>Bath</i>	<i>Leaking roof</i>	<i>Toilet²⁸</i>	<i>Darkness</i>
Rental market	-0.823*** (0.265)	-0.976*** (0.311)	-0.345*** (0.123)	-1.155*** (0.388)	-0.204 (0.127)
Social housing	-0.307 (0.183)	-0.128 (0.215)	-0.042 (0.085)	-0.814*** (0.302)	0.007 (0.088)
Rental for free	0.212 (0.166)	0.204 (0.195)	0.079 (0.077)	-0.546 (0.292)	0.090 (0.079)
<i>Random Effects (Variance)</i>					
Intercept	1.306	1.784	0.282	2.677	0.301
Log likelihood	-130697.13	-39073.058	-169752.29	-41068.681	-98022.133
N	399486	399486	399486	399486	399486
Countries	25	25	25	25	25

Note: ***p<0.01, ** p<0.05. Standard errors within parenthesis. All regression models include the full set of individual level variables. Source: EU-SILC 2007.

The negative association between the rental market sector and the prevalence of housing deprivation is consistent when testing each indicator one at a time. Having a dwelling considered to be too dark has no significant relationship to tenure types. A probable explanation for this pattern is that having a dwelling too dark is related to climate and/or trends or styles of housing construction. Looking at the descriptive numbers in **Table A1 in the appendix**, the United Kingdom, Portugal, and Spain stands out with around 10 percent reporting a dwelling considered too dark. The answers to housing shortages in such countries may have been to provide for dwellings in a compact or high-rise style, creating an absence of natural light flux. Another possible explanation is related to climate, where the heat in at least Portugal and Spain are deterring from large and many windows.

Again, the large regulated rental sector reduces the prevalence of each housing deficiency, although the rental type of social housing also have negative significant effects on the likelihood of not having an indoor flushing toilet. For experiencing overcrowding, not having

²⁸ Ireland is due to data issues not included in the analysis when estimating the effect of rental tenure types on not having a toilet. The total sample size is in this case 388787 distributed across 24 countries.

a shower/bath, a leaking roof and a dwelling considered too dark, no explanatory power can be given to the tenure types of social housing and rental for free.

The rental market sector seems to be the most important tenure type in order to account for cross-country differences in housing deprivation. The first hypotheses, that social housing rental sector targeted towards low-income households should be more successful in achieving better standard of housing cannot find support from the empirical investigations so far.

However, having looked at possible confounders at the individual level, the next step is to examine other contextual factors that are relevant. As we could see above, 17 percent of the variation in the prevalence in housing deprivation can be adhered to country differences after including housing tenure types. Economic development, often measured as GDP is sometimes assumed to be an important factor in explaining levels of deprivation across countries (Norris & Shiels 2007). Moreover, economic development has been suggested to play a decisive role for the development of housing tenure systems, whereas it is likely that highly developed countries more often have a comprehensive housing tenure system (Doling, 1997). Also, the rate of female labour force participation, unemployment rates, long term unemployment, total fertility rate, activity rate and spending on housing (as percent of GDP) are potential confounders that should be controlled for, as they both may be factors considered as additional intervening variables affecting the nature of tenure systems and thus the outcome studied. **Table 3** shows the results from further random intercept multilevel logistic regressions on housing deprivation where the effects of a set of country level variables are explored. All individual characteristics in Table 1 are included in the models, but not shown. Including many contextual variables at the same time could be problematic for small group sizes (Meuleman & Billiet, 2009). Therefore we will here regress each of the contextual variables one at a time, whereas in the second section the various contextual variables are regressed together with tenure types.

Table 3. Random Intercept multilevel logistic regression of housing deprivation on various contextual variables in 25 European Countries 2007.

<i>Independent variables</i>	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>	<i>Model 5</i>	<i>Model 6</i>	<i>Model 7</i>
GDP (pps)	-0.000 ^{29***} (0.000)						
Female labor force participation		-0.069*** (0.024)					
Unemployment rate			0.182 (0.105)				
Long-term unemployment				0.259** (0.120)			
Total fertility rate					-2.770*** (0.721)		
Activity rate						-0.121*** (0.032)	
Spending on housing (% of GDP)							-1.265 (0.718)
GDP (pps)	-0.000 (0.000)						
Female labor force participation		-0.056*** (0.018)					
Unemployment rate			0.158** (0.076)				
Long-term unemployment rate				0.279*** (0.084)			
Total fertility rate					-1.957*** (0.618)		
Activity rate						-0.086*** (0.025)	
Spending on housing % of GDP							-0.755 (0.537)
Rental market	-0.482** (0.225)	-0.688*** (0.165)	-0.710*** (0.181)	-0.758*** (0.164)	-0.623*** (0.164)	-0.587*** (0.163)	-0.640*** (0.188)
Social housing	-0.185 (0.129)	-0.047 (0.123)	-0.089 (0.133)	-0.014 (0.124)	-0.028 (0.124)	-0.065 (0.118)	-0.140 (0.133)
Rental for free	0.203 (0.121)	0.252** (0.104)	0.267 (0.113)	0.315*** (0.103)	0.199 (0.104)	0.240** (0.101)	0.259** (0.117)
N	399486	399486	399486	399486	399486	399486	399486
Countries	25	25	25	25	25	25	25

Note: ***p<0.01, ** p<0.05. Standard errors within parenthesis. All regression models include the full set of individual level variables. Source: EU-SILC 2007.

²⁹ Ireland is excluded when estimating the effect of GDP on severe housing deprivation, controlled for the full set of individual variables. Ireland is not excluded in the analysis in the second section of table 3. The total sample size is in this case 388787 distributed across 24 countries.

GDP, female labour force participation, total fertility rate and activity rate are significantly negatively associated with the prevalence of housing deprivation. The negative association is particularly weak for GDP. In previous research, GDP had a decisive role in explaining variations in housing deprivation across countries (Mandic & Cirman, 2011; Norris & Shiels, 2007). In this study however, no effect of economic development on deprivation levels across countries is seen. Spending on housing (in percent of GDP) also shows a negative association, albeit being statistically insignificant. The two unemployment indicators show an expected positive association, but only the long-term unemployment rate is statistically significant. When including the rental tenure types in the second half of **Table 3** GDP becomes insignificant and the negative association found for total fertility rate and activity rate weakens but remain their explanatory power. Current unemployment rate is still positive and now statistically significant. Again, it seems to be the rental market tenure type that significantly reduces the prevalence of deprivation, and the strength of this relationship is stable across the regression models. Significant positive association is found for the tenure type where accommodation is provided for free when controlling for female labour force participation, long term unemployment rate, activity rate and spending on housing as percent of GDP.

The conclusion so far is that the rental market sector through a series of multilevel regression analysis can be singled out as the key factor in explaining the differences in housing deprivation and its latent components across Europe. However, a number of individual characteristics seemed to have increased likelihood of experiencing housing deprivation.³⁰ The effect of the size of the rental market sector is likely to vary across countries and across individual risk groups. Therefore, a final step is to analyse whether the impact of these individual characteristics on housing deprivation differs between countries due to the effects of tenure types.

In doing so, the first step is to test whether the models show a better fit if the effects of anyone of the individual level variables is allowed to vary across countries. According to likelihood ratio tests, the effects of non-European citizenship, lone parenthood and being a young adult vary significantly across countries.³¹ **Table 4** shows three random slope multilevel logistic

³⁰ Being a lone parent, having low educational attainment, having a non-European citizenship and being a young adult (18-29 years), see table 1.

³¹ The higher risk of experiencing housing deprivation found for low educational qualifications is found not to vary across countries; however this may be due to a crude measurement of low educational attainment

regression models where the association between individual level variables and housing deprivation is allowed to vary across countries. In addition, we have added a cross-level interaction term between the random individual level variables and the macro variable rental market. A likelihood ratio test guides us in determining the goodness of fit for these models. All the individual level characteristics previously tested for are included in the models but for reasons of parsimony not shown in the table below.

Table 4. Random slope multilevel logistic regression of housing deprivation on housing tenure types in 25 European Countries, 2007.

	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>
	<i>Lone parent^a</i>	<i>Non-European citizen^b</i>	<i>18-29 years^c</i>
<i>Fixed effects</i>			
Coef.	1.084*** (0.271)	1.425*** (0.362)	1.042*** (0.182)
Rental market (ln)	-0.676*** (0.193)	-0.717*** (0.200)	-0.805*** (0.214)
Cross-level interaction	0.149 (0.098)	0.293*** (0.138)	0.175*** (0.067)
<i>Random Effects (Variance)</i>			
Intercept	0.692 (0.198)	0.728 (0.214)	0.915 (0.269)
Random slope	0.158 (0.074)	0.279 (0.110)	0.082 (0.031)
Log likelihood	-54779.359	-54755.229	-54728.764
L.R Test	2.15	4.20**	5.74**
N	399486	399486	399486
Countries	25	25	25

Note: ***p<0.01, ** p<0.05. Standard errors within parenthesis. Reference categories are ^acouple, ^bEuropean citizen and ^c 30-49 years. All regression models include the full set of individual level variables shown in Table 1. The individual level effect and the random slope parameter are not shown. Coef refers to the parameter estimate of the fixed effect of the individual level random slope variable. Cross-level interaction refers to the cross-level interaction between the individual level random slope variable and the log of the rental market tenure type. The L.R Test is based on models without the cross-level interaction term and shows whether the more elaborated model provides a better fit to the data. Source: EU-SILC 2007.

The negative association between the rental market sector and the prevalence of housing deprivation is again confirmed. A general conclusion to be drawn from these models is that the rental market sector decreases the prevalence of housing deprivation among all the identified risk groups. However, only the increased risks attached to having a non-European citizenship and being a young adult differs across countries due to the effect of the rental

as there are too few with only primary education in the sample. Therefore educational attainment is not further investigated in this paper. The results from these tests are not shown.

market sector, indicated by the statistically significant cross-level interaction between individual level characteristics and the rental market variable. The increased risk for lone parenthood varies across countries, but the increased risk can not be explained by the size of the rental sector, which is indicated by the statistically insignificant cross-level interaction term in Model 1. The positive interaction term for non-European citizenship and being a young adult suggests that these characteristics are linked to a lower likelihood of experiencing housing deprivation in countries with a small rental sector. These findings are illustrated at the aggregate level by **figure A1** and **A2** in the appendix. The Likelihood ratio test is significant across for both Model 2 and 3, indicating that including a cross-level interaction term proves a better fit than models without cross-level interaction terms.

5. Discussion

This paper has evaluated the role of housing tenure types for the prevalence of housing deprivation across European countries. Two hypotheses on the link between housing tenure types and prevalence of housing deprivation were tested for. The expectation of lower housing deprivation in countries with a dual rental system where social housing is targeted towards low-income groups, commonly perceived as social housing, could not find support. Instead, it has been possible to show that the role of unified rental systems where the non-profit and the profit rental sector creates an extensive rental market, accounts for a large part of the differences and reduces the prevalence housing deprivation across European countries. A series of logistic multilevel regressions on housing deprivation confirms a negative association between the rental market sector and the prevalence of housing deprivation. The analysis also provides us with important insights on the role of the Central and Eastern European countries for the cross-national patterns of housing deprivation. The findings presented here do suggest the need for more in-depth and institutional analysis in the variations of rental tenure systems. In statistical terms, there is no evidence that a dual rental system where social housing is targeted towards low income have any bearing in reducing the likelihood of experiencing housing deprivation.

These results indicate that a regulated rental sector aiming at providing decent housing for all is more successful providing housing at an adequate standard. A unified rental system where

rents are regulated, allowing all income groups to attain housing at one and the same general rental market indicates that redistributive housing policy strategies rather than targeted policy strategies are more successful in equalizing acceptable living standards. Although the policy shift towards privatizations in countries with a former unified rental system is hard to capture in a cross-sectional study, the evidence indicates that a larger rental sector reduces the prevalence of housing deprivation. The low-income targeted social housing cannot encompass the risk groups of households with low income. Households are forced to attain housing at the terms of the market, which means that they have to balance their household budget with lower housing standards.

This study is a contribution to a better understanding of the country level mechanisms that are associated with housing deprivation. However, potential factors at the individual level, which increases the risk of housing deprivation, have also been evaluated. The rental market sector lowers the risk for experiencing housing deprivation for all investigated risk factors, however, the pattern differs across societies.

The difference in living standards between the transitory countries compared to the longstanding welfare democracies can again be confirmed. The highest deprivation rates are found in the Central and Eastern European countries. A high reliance on home-ownership and a residualised rental sector may be leading the negative association found between the rental market sector and housing deprivation rates. However influential cases, excluding the Central and Eastern European countries in sensitivity analysis, the negative association for the association between the rental market sector and prevalence of housing deprivation is maintained. Suggested explanations for the particularities in the Central and Eastern European countries are sought in the experience of transition to market economy and a legacy of a tightly state controlled housing sector which neglected reinvestment and maintenance support. The policy trend to replace the strongly state-regulated housing system with a residualised privatized rental sector and a large dependence upon home-ownership have not however been effective in reducing the gap in living standards. The deteriorated fiscal capacities in the countries experiencing a transition to market economy are likely to have hindered successful poverty solutions as well as expansion of welfare programs.

One reason for agreeing on indicators of poverty, deprivation and social exclusion that goes beyond income based measurements was the inability to capture differences in actual living standards across the EU-member states, especially since the recent enlargement including Central and Eastern European countries. The deprivation indicator agreed on by EU member

states used in the present study needs to be further elaborated on. As there is no consensus in how to measure deprivation in general and housing deprivation in particular, an important finding when intersecting and analysing the indicators constituting the index of housing deprivation separately, the negative association for the role of the rental market sector is sustained. All of the indicators; being overcrowded and experiencing at least one of the following deficits: leaking roof/damp walls, floors, foundation or rot in window frames or floor, no bath/shower, no indoor toilet or a dwelling considered too dark are found to be negatively associated with the rental market sector, though having a dwelling considered too dark not being statistically significant. No other tenure type does statistically reduce the risk of facing either indicator of housing deprivation.

The lower prevalence of housing deprivation in countries with a unitary rental system are most likely also dependent upon programmes in other policy areas which alleviate needs and reduce the necessity of targeted public assistance. In the case of housing for example, income-tested housing allowances are available to ensure that low income groups have access to adequate housing. Family policies are providing fairly substantial benefits to single parents who are extra vulnerable. Furthermore, active labour market policies are important through creating retraining programmes, further training or public work projects which prevents the existence of scarce resources.

Mandic and Cirman (2011) confirmed that a housing market dependent upon high rates of home-ownership is associated with inadequate housing standards. Low-income households are not successfully provided for in such housing markets. From the present study, we can add that the organization of the rental system matters. A targeted version of rental sector is either not successful in achieving adequate standards in its own housing stock, or low-income households are forced to market solutions where lack of resources may lead to an inability to uphold acceptable housing standard. From previous research we have also seen that the degree of economic development, measured as GDP per capita, is an influential factor for the variations in housing standard across societies. Results from the present study show that the rental market sector is explaining a great share of variations in the prevalence of housing deprivation after controlling for the level of economic development. Theories emphasizing a convergence perspective are therefore challenged by such results. Different broader strategies of policy intervention are showing diverging results in their ability to achieve poverty reduction. State support without much means testing is easily achieved when the private rental sector is also supplying social housing, in the form of a unified rental system. Housing policy

is of course also strongly influenced by wider power relationships in the society. Rental housing threatens a continuing expansion of owner-occupation.

What are the potential consequences of changes in the housing market with these results in mind? Housing is an inert policy arena. This inertness may be caused by path dependency and/or a recent policy shift towards owning which however will constrain the possibilities in the future. Investments in social housing is not easily reversed, houses has the particularity of being a durable good. The last couple of decades housing policies across Europe have been focused on tax-deduction policies aiming at facilitating home-ownership. Such policies are not easily abolished. At the same time, the current policies are supported by interest groups who can be mobilized against further reforms. The chance of policy change may depend to a large extent on the salience of the issue of housing in the regular political debate. Rising housing deprivation rates, the extensive gap between the new EU-member states and the long EU-member states might together with the recent financial crisis (which certainly had a lot to do with the functioning of the housing market) again raise the question of rental housing high at the European policy agenda. The key challenge here is whether a rental system is developed that consists of housing of good quality in sufficient numbers at affordable rents.

For further research in this area it would be particularly fruitful to add a longitudinal perspective, with regards to the recent policy shift, financial crisis and to reach a better understanding of the individual pathways in experiencing housing deprivation. A longitudinal perspective could also to a greater extent address the question of causation. It is common to talk about “effects” when dealing with cross-sectional multilevel regression techniques, however none of these “effects” imply causation. Exploring possible variations within the dual and unified rental system seems also to be an important task for the future. Using tenure types as a proxy for complex state intervention in market principles has opened up for a possible future research path, where there is great need to develop contextual and institutional measures that in a more detailed way capture the different dimensions in state intervention. This study should be seen as a mere first step in the systematic analysis of links between housing tenure types and housing deprivation. The role of rental systems in the patterning of housing deprivation deserves close attention in the comparative analysis of welfare states and citizen’s living conditions.

6. References

- Allen J, Barlow J, Leal J, et al. (2004) *Housing and Welfare in Southern Europe*. 1st ed. Wiley-Blackwell.
- Ambrose PJ (1991) The housing provision chain as a comparative analytical framework. *Scandinavian Housing and Planning Research*, 8(2), 91–104.
- Atkinson AB (1998) Social Exclusion, Poverty and Unemployment. In: Hills J (ed.), *Exclusion, Employment and Opportunity*, London, London School of Economics and Political Science, pp. 1–20.
- Balchin P (1996) *Housing policy in Europe*. London, Routledge.
- Ball M (2011) European Housing Review 2011. RICS, Available from: http://www.rics.org/site/scripts/download_info.aspx?fileID=8882&categoryID=726 (accessed 8 February 2012).
- Ball M, Harloe M and Martens M (1988) *Housing and social change in Europe and the USA*. London, Routledge.
- Barlow and Duncan (1994) *Success and failure in housing provision : European systems compared*. Policy, planning, and critical theory, 99-1894619-9, Oxford, Pergamon.
- Barlow J and Duncan S (1988) The use and abuse of housing tenure. *Housing Studies*, 3(4), 219–231.
- Bengtsson B (2001) Housing as a Social Right: Implications for Welfare State Theory. *Scandinavian Political Studies*, 24(4), 255–275.
- Blalock HM (1984) Contextual-Effects Models: Theoretical and Methodological Issues. *Annual Review of Sociology*, 10, 353–372.
- Boarini R and D' Ercole MM (2006) *Measures of Material Deprivation in OECD Countries*. OECD Social, Employment and Migration Working Paper, OECD Publishing, Available from: <http://ideas.repec.org/p/oec/elsaab/37-en.html> (accessed 8 February 2012).
- Brady D (2003) The poverty of liberal economics. *Socio-Economic Review*, 1(3), 369–409.
- Britten N, Davies JM and Colley JR (1987) Early respiratory experience and subsequent cough and peak expiratory flow rate in 36 year old men and women. *British Medical Journal (Clinical research ed.)*, 294(6583), 1317–1320.

Bäckman O and Ferrarini T (2009) Combating Child Poverty? A Multilevel Assessment of Family Policy Institutions and Child Poverty in 21 Old and New Welfare States. *Journal of Social Policy*, 39(02), 275.

Clapham D (1996) *Housing privatization in Eastern Europe*. Contributions in sociology, 0084-9278 ; 117, Westport, Conn. ;, Greenwood.

Clapham, Smith and Kemp (1990) *Housing and social policy*. Studies in social policy, 99-0181162-7, Basingstoke, Macmillan.

Coggon D, Barker DJ, Inskip H, et al. (1993) Housing in early life and later mortality. *Journal of Epidemiology and Community Health*, 47(5), 345–348.

DiPrete TA and Forristal JD (1994) Multilevel Models: Methods and Substance. *Annual Review of Sociology*, 20(1), 331–357.

Doling (1997) *Comparative housing policy : government and housing in advanced industrialized countries*. Basingstoke :, Macmillan ;

Doling (1999) De-commodification and Welfare: Evaluating Housing Systems. *Housing, Theory and Society*, 16(4), 156–164.

Domański H (2006) *First European quality of life survey. Social dimensions of housing*. Luxembourg, Office for Official Publications in the European Communities, Available from: <http://www.eurofound.eu.int/publications/htmlfiles/ef0594.htm> (accessed 8 February 2012).

Donnison D and Ungerson C (1982) *Housing policy*. Penguin education, 99-0103167-2, Harmondsworth, Penguin.

Edgar B, Filipovic M and Dandolo I (2007) Home ownership and marginalisation. *European Journal of Homelessness*, 1, 141–160.

Esping-Andersen G (1990) *The three worlds of welfare capitalism*. Cambridge, Polity.

Esping-Andersen and Korpi W (1987) *From poor relief to institutional welfare states : the development of Scandinavian social policy*. Stockholm, Swedish Institute for Social Research.

European Commission (2010) *Draft Joint Report on Social Protection and Social Inclusion*.

Eurostat (2010a) *An assessment of survey errors in EU-SILC*. Methodologies and working papers, Luxembourg: Publications Office of the European Union.

Eurostat (2010b) *Comparative Intermediate EU Quality Report 2007*. Version 5 – October 2009, European Commission, Available from: http://epp.eurostat.ec.europa.eu/portal/page/portal/income_social_inclusion_living_conditions/quality/eu_quality_reports.

Eurostat (2011) *Housing conditions in Europe 2009*. Eurostat Statistics in focus.

- Fearn J (2004) *Too poor to move, too poor to stay: a report on housing in the Czech Republic, Hungary and Serbia*. Budapest, Open Society Institute.
- Ferrarini T and Sjöberg O (2010) Social policy and health: transition countries in a comparative perspective. *International Journal of Social Welfare*, 19, S60–S88.
- Flora P (1986) *Growth to Limits: The Western European Welfare States Since World War II.. Germany, United Kingdom, Ireland, Italy*. Walter de Gruyter.
- Fusco A, Guio A-C and Marlier E (2010) *Income poverty and material deprivation in European countries*. Methodologies and working papers, Luxembourg, Publications Office of the European Union.
- Goodin RE, Headey B, Muffels R, et al. (1999) *The Real Worlds of Welfare Capitalism*. Cambridge University Press.
- Goux D and Maurin E (2005) The effect of overcrowded housing on children's performance at school. *Journal of Public Economics*, 89(5–6), 797–819.
- Gove WR, Hughes M and Galle OR (1979) Overcrowding in the Home: An Empirical Investigation of Its Possible Pathological Consequences. *American Sociological Review*, 44(1), 59–80.
- Guio A-C (2009) *What can be learned from deprivation indicators in Europe*. Population and social conditions, Eurostat methodologies and working papers, Luxembourg.
- Guio A-C, Fusco A and Marlier E (2009) *A European Union Approach to Material Deprivation using EU-SILC and Eurobarometer data*. IRISS Working Paper Series, IRISS at CEPS/INSTEAD, Available from: <http://econpapers.repec.org/paper/irsiriswp/2009-19.htm> (accessed 8 February 2012).
- Halleröd B (1995) The Truly Poor: Direct and Indirect Consensual Measurement of Poverty in Sweden. *Journal of European Social Policy*, 5(2), 111–129.
- Harloe M (1995) *The people's home? : social rented housing in Europe & America*. Studies in urban and social change, 99-1594358-X, Oxford, Blackwell.
- Headey B (1978) *Housing policy in the developed economy : the United Kingdom, Sweden and the United States*. London, Croom Helm.
- Hegedüs J. and Tosics I (1996) The Disintegration of the East European Housing Model. In: Clapham D (ed.), *Housing Privatization in Eastern Europe*, Contributions in sociology, 0084-9278 ; 117, Westport, Conn. ;, Greenwood, cop.

- Hegedüs JoAzsef, Tosics I and Mayo SK (1996) Transition of the Housing Sector in the East Central European Countries. *Review of Urban & Regional Development Studies*, 8(2), 101–136.
- Heidenheimer AJ, Heclo H and Adams CT (1983) *Comparative public policy : the politics of social choice in Europe and America*. New York, St. Martin's Press.
- Heijden and Boelhouwer P (1996) The private rental sector in Western Europe: Developments since the Second World War and prospects for the future. *Housing Studies*, 11(1), 13–33.
- Heijden H van der (2002) Social Rented Housing in Western Europe: Developments and Expectations. *Urban Studies*, 39(2), 327–340.
- Huber E and Stephens JD (2001) *Development and crisis of the welfare state : parties and policies in global markets*. Chicago, The University of Chicago Press.
- Hulse K (2003) Housing Allowances and Private Renting in Liberal Welfare Regimes. *Housing, Theory and Society*, 20(1), 28–42.
- Kemeny J (2006) Corporatism and Housing Regimes. *Housing, Theory and Society*, 23(1), 1–18.
- Kemeny J (1995) *From public housing to the social market : rental policy strategies in comparative perspective*. London, Routledge.
- Kemeny J (1981) *The myth of home-ownership : private versus public choices in housing tenure*. London, Routledge & Kegan Paul.
- Kemeny J, Kersloot J and Thalmann P (2005) Non-profit Housing Influencing , Leading and Dominating the Unitary Rental Market: Three Case Studies. *Housing Studies*, 20(6), 855–872.
- Kemeny and Lowe (1998) Schools of Comparative Housing Research: From Convergence to Divergence. *Housing Studies*, 13(2), 161–176.
- Kenworthy L (1999) Do Social-Welfare Policies Reduce Poverty? A Cross-National Assessment. *Social Forces*, 77(3), 1119–1139.
- Kenworthy L (2011) *Progress for the poor*. Oxford, Oxford University Press.
- Korpi, Nelson K and Stenberg S-Å (2007) The accumulation of social problems 1974-2000 (Chapter 4). *International Journal of Social Welfare*, 16, S91–S103.
- Korpi W (1980) Social policy and distributional conflict in the capitalist democracies. A preliminary comparative framework. *West European Politics*, 3(3), 296–316.
- Korpi W and Palme J (1998) The Paradox of Redistribution and Strategies of Equality: Welfare State Institutions, Inequality, and Poverty in the Western Countries. *American Sociological Review*, 63(5), 661–687.

- Layte, Whelan, Maître, et al. (2001) Explaining levels of deprivation in the European Union. *Acta Sociologica*, 105–121.
- Lee P and Murie A (1997) *Poverty, Housing Tenure and Social Exclusion*. Policy Press.
- Lieberson S (1997) *Causality in Crisis? Statistical Methods and the Search for Causal Knowledge in the Social Sciences*. Notre Dame, Indiana, University of Notre Dame Press.
- Lijphart A (1971) Comparative Politics and the Comparative Method. *The American Political Science Review*, 65(3), 682–693.
- Lijphart A (1975) II. The Comparable-Cases Strategy in Comparative Research. *Comparative Political Studies*, 8(2), 158–177.
- Lindbom A (2001) Dismantling Swedish Housing Policy. *Governance*, 14(4), 503–526.
- Linneman PD and Megbolugbe IF (1992) Housing Affordability: Myth or Reality? *Urban Studies*, 29(3-4), 369–392.
- Lohmann H (2011) Comparability of EU-SILC survey and register data: The relationship among employment, earnings and poverty. *Journal of European Social Policy*, 21(1), 37–54.
- Lowe S (1994) Towards a Theory of East European Housing. In: Tanninen T, Ambrose I, and Siksio O (eds), *Transitional Housing Systems*, Dessau (Dresden), Bauhaus Dessau, pp. 108–120.
- Lowe Stuart and Tsenkova S (2003) *Housing change in East and Central Europe : integration or fragmentation*. Aldershot, Ashgate.
- Lundqvist LJ (1991) Rolling stones for the resurrection of policy as the focus of comparative housing research. *Scandinavian Housing and Planning Research*, 8(2), 79–90.
- Maas CJM and Hox JJ (2005) Sufficient Sample Sizes for Multilevel Modeling. *Methodology: European Journal of Research Methods for the Behavioral and Social Sciences*, 1(3), 86–92.
- Mandič S (2010) The changing role of housing assets in post-socialist countries. *Journal of Housing and the Built Environment*, 25(2), 213–226.
- Mandic S and Cirman A (2011) Housing Conditions and Their Structural Determinants: Comparisons within the Enlarged EU. *Urban Studies*, Available from: <http://usj.sagepub.com/cgi/doi/10.1177/0042098011405688> (accessed 8 February 2012).
- Mann SL, Wadsworth ME and Colley JR (1992) Accumulation of factors influencing respiratory illness in members of a national birth cohort and their offspring. *Journal of Epidemiology and Community Health*, 46(3), 286–292.
- Marlier E (2007) *The Eu And Social Inclusion: Facing the Challenges*. The Policy Press.

- Matznetter W (2002) Social Housing Policy in a Conservative Welfare State: Austria as an Example. *Urban Studies*, 39(2), 265–282.
- Meuleman B and Billiet J (2009) A Monte Carlo sample size study: how many countries are needed for accurate multilevel SEM? *Survey Research Methods*, 3(1), 45–58.
- Mishra R (1981) *Society and social policy: theories and practice of welfare*. Humanities Press.
- Moller S, Nielsen F, Huber E, et al. (2003) Distribution and Redistribution in Postindustrial Democracies. *World Politics*, 55(2), 193–228.
- Mood C (2010) Logistic Regression: Why We Cannot Do What We Think We Can Do, and What We Can Do About It. *European Sociological Review*, 26(1), 67–82.
- Moon C-G and Stotsky JG (1993) The Effect of Rent Control on Housing Quality Change: A Longitudinal Analysis. *Journal of Political Economy*, 101(6), 1114–1148.
- Morel N, Palier B and Palme J (eds) (2012) *Towards a social investment welfare state?: Ideas, policies and challenges*. Policy Press.
- Myles J and Quadagno J (2002) Political Theories of the Welfare State. *Social Service Review*, 76(1), 34–57.
- Nelson K (2012) Counteracting material deprivation: The role of social assistance in Europe. *Journal of European Social Policy*, 22(2), 148–163.
- Nolan B and Whelan CT (2010) Using non-monetary deprivation indicators to analyze poverty and social exclusion: Lessons from Europe? *Journal of Policy Analysis and Management*, 29(2), 305–325.
- Norris M and Shiels P (2007) Housing inequalities in an enlarged European Union: patterns, drivers, implications. *Journal of European Social Policy*, 17(1), 65.
- Nussbaum M and Sen A (1993) *The Quality of Life*. Oxford University Press, USA.
- OECD (2008) *Growing unequal? : income distribution and poverty in OECD countries*. Paris, Organisation for Economic Co-operation and Development.
- OECD (2012) Harmonised unemployment rates. Economics: Key Tables from OECD, Available from: doi: 10.1787/unemp-hur-table-2012-1-en.
- Pierson P (2001) *The New Politics of the Welfare State*. Oxford University Press.
- Quigley JM (1991) *Housing Markets and Housing Institutions: An International Comparison*. Springer.

- Rasmussen, Borchsenius and Ostergaard (1978) Associations between housing conditions, smoking habits and ventilatory lung function in men with clean jobs. *Scandinavian journal of respiratory diseases*, 59(5), 264.
- Ringen S (1988) *Direct and indirect measures of poverty*. Stockholm, Univ., Swedish Institute for Social Research.
- Ruonavaara H (2005) How Divergent Housing Institutions Evolve: A Comparison of Swedish Tenant Co-operatives and Finnish Shareholders' Housing Companies. *Housing, Theory and Society*, 22(4), 213–236.
- Ruonavaara H (1993) Types and forms of housing tenure: Towards solving the comparison/translation problem. *Scandinavian Housing and Planning Research*, 10(1), 3–20.
- Sainsbury D (1991) Analysing Welfare State Variations: The Merits and Limitations of Models Based on the Residual–Institutional Distinction*. *Scandinavian Political Studies*, 14(1), 1–30.
- Sen A (1979) Issues in the Measurement of Poverty. *The Scandinavian Journal of Economics*, 81(2), 285–307.
- Sen A (1988) *The Standard of Living*. Cambridge University Press.
- Shalev M (2007) Limits and Alternatives to Multiple Regression in Comparative Research. *Comparative Social Research*, 24, 261–308.
- Smeeding T, Rainwater L and Burtles G (2001) United States Poverty in a Cross-National Context. *Center for Policy Research*, Available from: <http://surface.syr.edu/cpr/151>.
- Snijders TAB and Bosker RJ (1999) *Multilevel analysis : an introduction to basic and advanced multilevel modeling*. Thousand Oaks, Calif. :, SAGE.
- Stephens, Burns N and MacKay L (2003) The Limits of Housing Reform: British Social Rented Housing in a European Context. *Urban Studies*, 40(4), 767–789.
- Struyk RJ (1996) *Economic restructuring of the former Soviet bloc: the case of housing*. The Urban Institute.
- The Swedish National Board of Housing, Building and Planning (2005) *Housing statistics in the European Union, 2004*. Karlskrona :, Boverket,, Available from: <http://www.boverket.se/novo/filelib/arkiv11/rapporter/housingstatistics2004.pdf> (accessed 17 September 2012).
- Titmuss RM (1974) *Social Policy: An Introduction*. Taylor & Francis.
- Torgersen U (1987) Housing: the Wobbly Pillar Under the Welfare State. In: Turner B, Kemeny J, and Lundqvist LJ (eds), *Between state and market : housing in the post-industrial*

era, Scandinavian housing & planning research. Supplement, 0284-5539 ; 1, Stockholm, Almqvist & Wiksell Periodical Co.

Townsend P (1979) *Poverty in the United Kingdom : a survey of household resources and standards of living*. Harmondsworth, Penguin books.

Tsakoglou P and Papadopoulos F (2002) Aggregate level and determining factors of social exclusion in twelve European countries. *Journal of European Social Policy*, 12(3), 211–225.

Turner B (1992) *The Reform of Housing in Eastern Europe and the Soviet Union*. Routledge.

Weber M, Roth G and Wittich C (1978) *Economy and society : an outline of interpretive sociology. Vol. 1*. Berkeley, Calif., Univ. of Calif. Press.

Whelan CT, Layte R and Maître B (2002) Multiple deprivation and persistent poverty in the European Union. *Journal of European Social Policy*, 12(2), 91 –105.

Whelan CT, Layte R and Maître B (2004) Understanding the Mismatch Between Income Poverty and Deprivation: A Dynamic Comparative Analysis. *European Sociological Review*, 20(4), 287 –302.

7. Appendix

The dependent variable housing deprivation consists of the following indicators

Overcrowded is a derived variable created by the information on number of rooms available and number of household members using the rooms, according to the definition described in footnote 9.

Leaking roof/damp walls, floors, foundation or rot in window frames or floor

Do you have any of the following problems with your dwelling / accommodation?

a leaking roof

damp walls/floors/foundation

rot in window frames or floor

No bath/shower

Is there a shower unit or a bathtub in your dwelling?

No indoor toilet

Is there an indoor flushing toilet in your dwelling?

A dwelling considered too dark

Is your dwelling too dark, meaning is there not enough day-light coming through the windows?

In % if not stated otherwise	AT	BE	CY	CZ	DE	DK	EE	ES	FI	FR	GR	HU	IE	IS	IT	LT	LU	LV	NL	NO	PL	PT	SE	SI	SK	UK
housing deprived	2,46	0,92	0,35	5,75	1,54	1,31	7,34	1,18	0,76	2,09	5,14	8,13	0,68	1,34	4,37	10,07	1,38	10,27	0,38	0,73	15,45	3,65	1,08	9,48	2,94	0,88
overcrowded	13,2	2,96	1,47	28,5	5,68	5,73	39,6	3,12	6,25	8,38	26,4	42,4	4,11	8,17	21,1	48,0	6,71	57,4	1,57	3,99	47,7	13,5	9,19	36,8	40,3	3,44
no bath	1,09	1,05	1,49	0,83	0,64	0,88	18,3	0,22	1,38	0,72	1,01	4,28	0,79	0,06	0,31	17,8	0,41	21,8	0,3	0,11	7,32	2,48	0,54	1,03	1,4	0,15
no toilet	1,61	0,76	1,47	1,25	1,21	0	15,4	0,21	0,93	0,91	2,91	6,28	0,71	0,39	0,2	19,4	0,59	19,3	0,04	0,29	6,5	2,28	0	1,1	2,92	0,73
too dark	5,69	8,29	6,39	4,24	4,11	4,36	6,95	10,4	5,07	8,21	7,58	10,2	8,75	1,09	8,34	10,4	4,55	12	5,44	3,41	9,17	16,0	6,44	9,6	3,59	10,6
leaking roof	9,05	13,7	31,9	15,1	12,3	9,93	21,1	17,3	4,7	13,7	19,2	19,0	14,1	10,5	21,0	24,4	13,4	26,2	17,8	7,93	37,4	18,3	5,87	17,4	5,92	13,6
female	0,51	0,51	0,51	0,51	0,51	0,51	0,54	0,51	0,51	0,51	0,51	0,53	0,51	0,49	0,51	0,54	0,50	0,54	0,50	0,50	0,52	0,52	0,51	0,51	0,52	0,51
age (mean)	40,9	40,2	37,3	40,3	42,2	40,1	40,3	40,7	40,9	40,1	41,7	39,8	41,9	36,0	42,7	39,5	38,8	40,0	39,2	36,8	38,9	41,0	39,9	40,2	40,2	39,3
single	0,15	0,15	0,05	0,09	0,18	0,22	0,14	0,06	0,18	0,15	0,07	0,09	0,09	0,11	0,12	0,11	0,12	0,10	0,16	0,26	0,09	0,06	0,19	0,07	0,09	0,13
lone parent	0,05	0,06	0,03	0,04	0,05	0,07	0,06	0,02	0,05	0,05	0,02	0,04	0,07	0,07	0,03	0,05	0,04	0,06	0,04	0,05	0,03	0,03	0,07	0,03	0,02	0,07
two-parent family	0,45	0,45	0,62	0,48	0,39	0,41	0,48	0,50	0,42	0,47	0,47	0,51	0,47	0,57	0,47	0,55	0,54	0,53	0,47	0,32	0,59	0,54	0,44	0,56	0,55	0,43
educational level (mean)	3,15	3,23	2,88	3,07	3,60	3,09	3,29	2,67	3,05	2,89	2,58	3,00	2,74	3,09	2,43	3,36	2,76	3,13	3,08	3,29	2,86	2,00	3,30	3,00	3,12	3,26
non- European	0,07	0,02	0,05	0,01	0,02	0,02	0,17	0,04	0,01	0,03	0,05	0,00	0,02	0,01	0,04	0,01	0,04	0,18	0,00	0,00	0,00	0,02	0,02	.	0,00	0,04

Table A1. Values on individual level variables in 26 European countries. Source: EU-SILC 2007

Table A2. Values on contextual control variables in 26 European countries 2007. Source: Eurostat.

%	AT	BE	CY	CZ	DE	DK	EE	ES	FI	FR	GR	HU	IE	IS	IT	LT	LU	LV	NL	NO	PL	PT	SE	SI	SK	UK
Female employment rate	64.4	55.3	62.4	57.3	63.2	73.2	65.9	54.7	68.5	59.6	47.9	50.9	60.6	80.8	46.6	62.2	56.1	64.4	69.6	74.0	50.6	61.9	71.8	62.6	53.0	65.5
Long term unemployment rate	1.2	3.8	0.7	2.8	4.9	0.6	2.3	1.7	1.6	3.4	4.2	3.4	1.3	0.2	2.9	1.4	1.2	1.6	1.4	0.5	4.9	4.2	0.9	2.2	8.3	1.3
Unemployment rate	4.4	7.5	3.9	5.3	8.7	3.8	4.7	8.3	6.9	8.4	8.3	7.4	4.6	7.5 ³²	6.1	4.3	4.2	6.0	3.6	2.5	9.6	8.9	6.1	4.9	11.1	5.3
Total Fertility Rate	1.38	1.82	1.39	1.44	1.37	1.84	1.63	1.4	1.83	1.98	1.41	1.32	2.01	2.09	1.37	1.35	1.61	1.41	1.72	1.9	1.31	1.33	1.88	1.38	1.25	1.9
Activity rate	74.7	67.1	73.9	69.9	75.6	80.2	72.9	71.6	75.6	69.9	67.0	61.9	72.5	87.1	62.5	67.9	66.9	72.8	78.5	78.8	63.2	74.1	79.1	71.3	68.3	75.5
Spending on housing (% of GDP)	0.11	0.14	0.63	0.06	0.61	0.69	0.02	0.18	0.24	0.76	0.49	0.92	0.33	0.61	0.02	0.00	0.15	0.13	0.38	0.14	0.09	0.00	0.47	0.01	0.02	1.15
GDP (pps) (in thousands)	309	289	231	207	289	306	175	262	294	269	225	154	369	302	260	148	686	139	331	447	136	196	312	221	169	290

³² Figure for Iceland is from 2010 (OECD, 2012).

Table A3. Tenure status in 26 European countries 2007. Source: EU-SILC

%	AT	BE	CY	CZ	DE	DK	EE	ES	FI	FR	GR	HU	IE	IS	IT	LT	LU	LV	NL	NO	PL	PT	SE	SI	SK	UK
Rental market	0.26	0.18	0.07	0.04	0.35	0.21	0.03	0.08	0.06	0.17	0.14	0.02	0.06	0.05	0.11	0.01	0.33	0.05	0.21	0.07	0.02	0.08	0.25	0.03	0.09	0.07
Social housing	0.06	0.07	0.01	0.17	0.05	0.00	0.01	0.03	0.10	0.14	0.01	0.03	0.11	0.05	0.05	0.01	0.03	0.06	0.00	0.03	0.01	0.07	0.02	0.01	0.00	0.16
Accommodation for free	0.06	0.01	0.16	0.03	0.02	0.00	0.07	0.06	0.01	0.03	0.06	0.05	0.01	0.01	0.09	0.06	0.02	0.03	0.00	0.01	0.31	0.07	0.00	0.09	0.01	0.01
Home- ownership	0.62	0.74	0.76	0.76	0.58	0.79	0.89	0.83	0.83	0.66	0.80	0.89	0.82	0.89	0.76	0.92	0.62	0.85	0.78	0.89	0.66	0.77	0.74	0.86	0.89	0.76

Figure A1. Housing deprivation and rental market sector according to citizenship.

Figure A2. Housing deprivation and rental market sector according to age (18-29 years).