



HORIZON-CL2-2023-TRANSFORMATIONS-01-09



EqualHouse

Deliverable 3.2: Housing Inequalities Dynamic Framework

April 2026

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Project Acronym	EqualHouse
Project Title	From Housing Inequality to Sustainable, Inclusive and Affordable Housing Solutions
Project Coordinator	Michelle Norris michelle.norris@ucd.ie Geary Institute for Public Policy – University College Dublin
Project Duration	January 2024-December 2027

Deliverable No.	D3.2
Dissemination Level	PU
Work Package	WP3
Task	3.1, 3.2, 3.3 and 3.4
Lead beneficiary	Tilburg University
Contributing beneficiary(ies)	Tilburg University
Due date of deliverable	April 2026
Actual submission date	April 2026





4 Chapter 4: Precarious Work, Precarious Housing: Explaining cross-national variations in double precarity across Europe

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4.1 Introduction

The relationship between one's position in the labour and housing market has been an important topic in housing research (e.g. Beer et al. 2016; Dwyer & Phillips Lassus 2015). At the core of this discussion is the question how one's labour market position shapes one's housing market position (e.g. Randolph 1991), especially when one is in precarious work. Precarious work is one of the key social issues in post-industrialised societies, often characterised by low or unstable income and/or job insecurity without sufficient social protection (Kalleberg 2009; Vosko 2006). These job characteristics can impact on one's access to housing (especially homeownership, see e.g. Arundel & Doling 2017; Lersch & Dewilde 2015), and on tenure security, resulting in part from housing unaffordability or rent/mortgage arrears (Parkinson, Wood & Campbell 2024; Horsewood & Doling 2004). Households may furthermore opt for sub-standard housing quality, or in extreme cases, be exposed to exploitation, eviction and homelessness. Thus, job precariousness and housing precariousness are closely intertwined, forming what Bentley et al. (2019) refer to as 'double precarity'.

Nevertheless, the relationship between work and housing precarity is not as straightforward as it seems. Some studies point to cross-national variations in the extent to which work precarity leads to precarious housing outcomes, indicating the potential role of national-level institutional contexts in moderating this relationship – either by mitigating or further reinforcing it (e.g. Arundel & Doling 2017; Arundel & Lennartz 2020; Caroz-Armayones et al. 2023). However, little is known as to how the relationship between the two forms of precarity varies across countries for workers specifically, and if institutions matter, which ones are more





relevant. Furthermore, both work and housing precarity are multidimensional concepts, and the different dimensions of work precarity (e.g. insecure employment contract, low income) may have varying relationship with different dimensions of housing precarity (e.g. tenure insecurity, housing quality). While the experience of separate dimensions of precarity alone does not necessarily make one precarious, examining the relationships between separate dimensions could contribute to our understanding of the work-housing-precarity nexus.

This chapter aims to examine the impact of various institutional arrangements on cross-national variations in the relationship between work and housing precarity for current workers. We focus specifically on the moderating role of different labour and housing market institutions, such as (un)employment policies, social housing and rent regulation. We do this by using multilevel modelling, based on EU-SILC-data (EU Statistics on Income and Living Conditions) for 25 countries (2023).

This chapter contributes to knowledge on double precarity as well as housing dualization, by providing empirical evidence showing which policies matter in protecting precarious workers from falling into housing precarity. More specifically, our contribution to the literature is twofold. First, by taking a broader approach to work precarity, including both employment insecurity and low income, and housing precarity, including both tenure insecurity and quality insecurity, we demonstrate nuances in the relationship between work and housing precarity. Especially by moving away from focusing solely on income, we avoid minimising work precarity to issues of low-income when it comes to housing outcomes, whilst emphasising the importance of employment insecurity. The significant relationship between employment (contract) insecurity and both dimensions of housing precarity, even when controlling for household income, further indicates an important role of other job characteristics on housing outcomes. Second, we examine the impact of both labour market and housing market institutions, as the relationship between the two precarities cannot be solely explained by housing markets or labour markets alone. Our findings show





significant cross-national variation in the extent to which work precarity leads to housing precarity, and how social policies designed to protect workers from various social risks in the labour and housing market have a mitigating role. This chapter therefore provides a comprehensive view of the role of institutional contexts on the work-housing-nexus.

We first review existing literature on the two forms of precarity and their relationship. Then, we discuss how institutional arrangements pertaining to labour and housing markets may shape the extent to which the two precarities are related, leading to various hypotheses. Before discussion results, we present data, variables and methodology. Finally, we discuss some key insights that open up new questions for future research.

4.2 Precarious work, precarious housing

Precarity in both employment and housing can be understood in terms of the individualisation of risks, driven and facilitated by long-term institutional change. Trends towards increasing labour market flexibilisation and decreasing welfare state generosity have resulted in a shifting of risks from employers and the state to individual workers. Another 'great risk shift' (Dwyer & Phillips Lassus 2015) from the state to individual households is linked to processes of housing market financialisation and the residualisation of state support for housing (also see Deliverable 3.1, Chapter 1).

Precarious work has become one of the key characteristics of post-industrialised societies, marked by increasing uncertainties in employments relations and social protection resulting from intensified labour market flexibilisation, globalisation and neo-liberalism, especially since the 1980s (Kalleberg 2009; Vosko 2006). A typical example is the increase of non-standard employment contracts, deviating from the stability and protection of the post-war standard (open-ended) employment relationship that was built upon collective bargaining and the expansion of the welfare state. Whilst standard employment has remained 'the ideal standard' in most advanced economies, increase of work





experiences that deviate from this is not negligible (ILO 2016): precarious work is no longer ‘atypical’. As labour became recommodified, it also became more difficult for non-standard workers to access regular social insurance benefits, leaving them more vulnerable to welfare gaps (e.g. Rubery et al. 2018; Wright & Patrick 2019). Precarity is further reinforced by enhanced selectivity and conditionality of welfare state benefits.

Whilst the definition of precarious work remains elusive, recent studies point to the multidimensionality of precarity (e.g. Seo 2021; Olsthoorn 2014), as the actual experience of precarity goes beyond the standard vs. non-standard dichotomy. A key indicator often considered together with the nature of the employment contract is income (i.e. low or unstable income), which is also used to measure ‘actual outsidersness’ by Häusermann and Schwander (2009).

The concept of precarity has recently been adopted by housing scholars in order to understand increasing uncertainty arising from the financialisation of housing, especially since the Great Financial Crisis (GFC, 2009). Homeownership itself, for instance, does not necessarily guarantee security when some mortgaged homeowners are pushed to the ‘edges of homeownership’ (Boelhouwer 2020; Haffner et al. 2017; Pareja-Eastaway & Sánchez-Martínez 2017; Wood et al. 2017). With the expansion and deregulation of the private rental sector as well as the residualisation of social housing (Angel 2023), low-to-moderate income households are stuck between not being able to afford private renting (nor homeownership) and not being eligible for social housing (Boelhouwer 2020; Grander 2017; Murphy 2020). This has affected younger generations in particular, leading to notions of ‘generation rent’ or ‘generation co-residence’. Precarious housing is often experienced as: not being able to afford housing costs, living in poor-quality housing, experiencing rent or mortgage arrears, and in the extreme case, exposure to eviction and homelessness. Clair et al. (2019: p. 16) define housing precariousness as: *“a state of uncertainty which increases a person’s real or perceived likelihood of experiencing an adverse event, caused (at least in part) by their relationship with their housing provider, the physical qualities, affordability,*





security of their home and access to essential services". Similar to work precarity, housing precarity is used as an umbrella term and defines it as uncertainties arising from the accumulation of various housing problems (also see Gielens, Seo & Dewilde 2025). Adopting the concept of 'precariat' by Standing (2011), which refers to a new more durable social class of precarious workers, Dorling (2014) refers to those experiencing multiple housing problems as the 'housing precariat'.

4.3 Double precarity and beyond

Work precarity is closely related to housing precarity. They are often intertwined (Beer et al. 2016; Dwyer & Phillips Lassus 2015), forming what Bentley et al. (2019) refer to as 'double precarity'. Whilst not all studies specifically use the term 'precarity' nor share the same definition, studies show that those experiencing precarity and exclusion from advancement in their labour market position are likely to experience precarity and exclusion from the housing market. Case studies in Australia (Bentley et al. 2019), Spain (Caros-Armayones et al. 2023) and the Netherlands (Arundel & Lennartz 2020) find a positive relationship between work precarity and housing precarity. Furthermore, some studies have focused on how work precarity is a predictor of various housing outcomes closely related to housing precarity, such as lower homeownership rates, especially amongst young people (Arundel & Doling 2017; Lersch & Dewilde 2015), as well as difficulties in repaying mortgage loans (Horsewood & Doling 2004) or being confronted with rent arrears (Parkinson, Wood & Campbell 2024).

There are several theoretical mechanisms explaining this empirically tested relationship between the two forms of precarity. First, low income is a crucial factor. Income is directly linked to the affordability of housing costs. Lower-income households find themselves in a vulnerable position, given the residualisation of social housing and the housing affordability crisis in the private rental sector. Arundel and Doling (2017) further argue that declining homeownership rates of current generations of young adults should not simply be understood in terms of credit restrictions following the GFC, but are rather due to decades of creeping





labour precarisation affecting vulnerable groups of workers in general. Those who cannot afford better-quality housing are likely pushed into poorer-quality housing or towards co-residence. The latter households, however, are also less likely to be able to afford regular maintenance or renovation to improve the quality of housing.

Nevertheless, the relationship between work and housing precarity goes beyond one's income level. Having an insecure contract may indicate a lack of prospects in terms of a guaranteed stable income in the long term. The second mechanism is that this may make it difficult for individuals/households to obtain a mortgage or even a rental contract in a competitive housing market. This especially impacts those with short-term employment contracts or self-employment contracts, without continuous or stable income (e.g. Lersch & Dewilde 2015). This again may push households towards poor-quality housing or living with extended family.

Third, from a more psychological perspective, households may themselves opt for a non-permanent contract, given uncertainty about future employment prospects. Uncertain job prospects often lead to a postponement of major life transitions, such as moving out of parents' home (Lennartz et al. 2016) or become a parent (Matysiak & Vignoli 2024). Similarly, uncertain job prospects could lead to households choosing cheaper yet poorer-quality housing in the short term, in order to save resources for obtaining more secure housing in the longer term. In the same vein, some might opt for more flexible short-term rental contracts, despite higher costs of such arrangements.

Existing research on the relationship between work and labour precarity has two major limitations, which this chapter aims to address. First, the conceptualisation of both work and housing precarity has been limited. Whilst the definition of each form of precarity has figured in the labour market and housing studies literature separately, research investigating the relationship between the two has often focused on specific dimensions of each form of precarity. This limits both a comprehensive view of this relationship and comparability of results across studies and countries. Moreover, several studies discussed above have merely





focused on issues of low income, and how this results in housing affordability issues. While this is an essential mechanism explaining double precarity, income alone does not fully capture how insecurity and uncertainty related to work precarity result in housing precarity, specifically for current workers. Furthermore, in the context of housing, low income usually pertains to equivalised disposable household income. Whilst disposable household income is directly relevant to housing precarity, it has less relevance to work precarity as it includes income outside of labour income. Thus, this chapter incorporates diverse dimensions of work and housing precarity that are used widely in the literature, including insecure employment contracts and income from employment.

Second, little is known as to how relationships between work and housing precarity vary across countries (also see Deliverable 3.1, Chapter 7). Despite the theoretical and empirical evidence behind the strong association between labour and housing precarity, a recent study for the Netherlands has shown that this relationship has weakened in recent years (Arundel & Lennartz 2020). The authors argue that this may be driven by the overall flexibilisation of the workforce, or by the enhanced importance of other predictors such as parental wealth (with parental resources facilitating mortgage or rental contract negotiations for their adult children). While this 'weakened' relationship between the two forms of precarity itself requires further investigation, this chapter shifts the focus to potential cross-national variations in the extent to which work precarity relates to housing precarity. Given cross-national variations in types and extent of work precarity (Seo 2021) and housing precarity (Claire et al. 2019; Gielens, Seo & Dewilde, 2025; Deliverable 3.1 (Chapter 7)) across Europe, it is likely that the relationship between the two forms of precarity varies across countries.

Taking a step further, the primary aim of this chapter is to understand what explains this variation. We focus specifically on the moderating role of different labour market and housing market institutions, which could mitigate or reinforce the association between precarious work and precarious housing. In the following section, we discuss how some key labour market and housing market institutions





could impact the relationship between the two forms precarity and present our hypotheses.

4.4 The role of labour market arrangements and housing policies

National institutional arrangements such as social policies and cultural norms have been argued to shape labour market and housing market structures as well as individual behaviours (e.g. Chung & Seo 2024, Dewilde 2022; Rueda 2005). What is yet to be investigated is how such institutions shape the extent to which work precarity translates into housing precarity, whether by mitigating or reinforcing this relationship. In this chapter, we specifically focus on labour market policies designed to protect precarious workers' employment conditions and income (i.e. employment protection for temporary workers, unemployment benefits, active labour market policies) and housing policies that are designed to support low-income households (i.e. housing allowances, social housing), and examine their role in protecting precarious workers against falling into housing precarity. In the following paragraphs, we provide theoretical arguments and present our main hypotheses. Given the different mechanisms of precarity linked to issues of low income vs. employment insecurity discussed above, hypotheses are built separately for precarious workers with insecure employment contracts and for low-income precarious workers.

Employment Protection Legislation (EPL) is a set of regulations concerning hiring and firing of workers, mainly pertaining to employment security. This measure has often been considered mostly relevant to those who already have a permanent position (Boeri et al. 2001). We therefore focus specifically on EPL for temporary workers (EPLt). Stricter EPL for standard workers can increase the use of temporary contracts (Chung 2005), as employers avoid hiring workers due to high labour costs of permanent workers. Somewhat similar to what has been found for EPL for standard workers, EPLt can also act as a double-edged sword, be it in a different way. Relaxing EPLt can, on the one hand, increase employment rates and hence job opportunities, but, on the other hand, lead to more widespread





use of temporary contracts. Under stricter EPLt, there may be less temporary contracts (and job opportunities) in general, but when one is in a temporary contract, there is less uncertainty around the end of contract. However, there may be greater uncertainty for those who are nearing the end of their contract, as such regulations still do not necessarily guarantee a prolonged contract or other future employment. Long-term employment uncertainty in a context of fewer flexible jobs may still have as a consequence that such workers are perceived as 'less financially stable' by banks or landlords, leading them to experience higher housing precarity. As the income level is not part of this regulation, it is unclear how EPLt could have an impact on housing precarity of precarious workers with a low income.

Hypothesis 1.1: Precarious workers with insecure employment contracts are more likely to live in precarious housing compared to workers with secure contracts; this relationship is stronger in countries with stricter employment protection for temporary workers.

Hypothesis 1.2: Precarious workers with a low income are more likely to live in precarious housing compared to workers with a higher income; this relationship is not moderated by the level of employment protection for temporary workers.

Unemployment protection is a crucial labour market policy that could mitigate the relationship between work and housing precarity. Unemployment protection aims to secure workers from (temporary) income loss by providing income support (i.e. passive labour market policies; PLMP) and employment support (e.g. training, job search) (i.e. active labour market policies; ALMP). Better accessible and more generous unemployment protection can therefore mitigate workers' perceived insecurity despite having an insecure contract (Anderson & Pontusson 2007; Chung & van Oorschot 2011). However, it needs to be noted that PLMP and ALMP may function in different ways. PLMP, as mentioned, is crucial for income maintenance: generous PLMP may function as income guarantee for





landlords or other housing providers. This is especially essential for precarious workers with insecure contracts, due to expected interruptions in their income. However, such protection may only be theoretical, depending on the strictness of eligibility requirements for unemployment insurance benefits (i.e. PLMP). Focussing on digital platform workers, De Becker et al. (2024) show how unemployment protection can be merely fictitious for workers with short-term contracts. This is one of the reasons why PLMP is often considered a labour market insider's unemployment protection policy (Meyer 2019). When it comes to work precarity in terms of low income, given that most unemployment benefits are earnings-related, low-income workers, on the other hand, may benefit from traditional income maintenance policies. Thus, we hypothesise the following:

Hypothesis 2.1: Precarious workers with insecure employment contracts are more likely to live in precarious housing compared to workers with secure contracts; this relationship is not moderated by the level of PLMP.

Hypothesis 2.2: Precarious workers with a low income are more likely to live in precarious housing compared to workers with a higher income; this relationship is weaker in countries with a high level PLMP.

On the contrary, employment support through ALMP may have a significant effect for both low income and insecure contract-precarious workers, as it may provide an opportunity for low-income workers to find better-paid jobs and for those with insecure contracts to quickly find a new job. This interpretation is supported by the fact that such policies significantly reduce workers' subjective sense of job insecurity (Chung & van Oorschot 2011). ALMP are often considered to benefit precarious outsiders more than insiders (workers with permanent contract and access to regular social insurance) (Meyer 2019; Schwander 2023), which is why this spending is sometimes referred to as 'outsider spending' (see Dewilde 2025). We thus hypothesise the following:





Hypothesis 3.1: Precarious workers with insecure employment contracts are more likely to live in precarious housing compared to workers with secure contracts; this relationship is weaker in countries with high ALMP.

Hypothesis 3.2: Precarious workers with a low income are more likely to live in precarious housing compared to workers with a higher income; this relationship is weaker in countries with high ALMP.

Social housing is government provided/funded/regulated housing that is affordable and often of decent quality. A larger social housing sector is an indication of a wider availability of affordable decent housing, including for (precarious) workers with low-to-moderate incomes. Residualisation of social housing sectors in the last decade, however, has not only pushed low-to-moderate-income households into unaffordable housing in the private rental sector, but also led to lower-quality housing in the social housing sector (Angel 2023). It also needs to be noted that under increasing privatisation of social housing, even social housing in so-called unitary rental market countries (e.g. Sweden, the Netherlands) became more targeted towards lower-income households, leaving households with a slightly higher income to rely on private renting (Grander 2017). Nevertheless, a larger social housing sector may still imply higher opportunities to secure affordable decent housing for workers, regardless of one's income level or contractual security from one's job. Social housing is not only more available in unitary rental market countries, a larger part of the stock is still reserved for households with somewhat of a higher income (such as precarious workers) paying 'affordable' rather than 'social' rent, in order ensure cross-funding across different 'layers' within the sector. This is much less the case in countries with smaller social housing sectors targeted explicitly towards more vulnerable households out of the scope of this paper.





Hypothesis 3.1: Precarious workers with insecure employment contracts are more likely to live in precarious housing compared to workers with secure contracts; this relationship is weaker in countries with more social renting.

Hypothesis 3.2: Precarious workers with a low income are more likely to live in precarious housing compared to workers with a higher income; this relationship is weaker in countries with more social renting.

Finally, strict *rent regulation* could prevent housing precarity by protecting renters' rights in terms of rental period, amount of rent and quality of housing. Rent regulations often concern the length of rental contracts (i.e. minimum duration of rent, short-term tenancies) and protection against eviction (i.e. conditions under which eviction of a tenant is allowed or not) in the private rental sector. While Weber and Lee (2020) find that rent regulation in general has been liberalised over time (between 1973 and 2014), there are cross-national variations which may lead to different housing precarity outcomes across countries. Although rent regulation does not directly relate to workers' income levels or job security, stricter regulations may increase overall security in the housing market through controlling housing cost, guaranteeing housing security and decent housing for renters. Thus, we hypothesise that stricter rent regulation would decrease overall housing precarity for all workers, but for precarious workers in particular.

Hypothesis 4.1: Precarious workers with insecure employment contracts are more likely to live in precarious housing compared to workers with secure contracts; this relationship is weaker in countries with strict rent regulation.

Hypothesis 4.2: Precarious workers with a low income are more likely to live in precarious housing compared to workers with a higher income; this relationship is weaker in countries with strict rent regulation.





4.5 Data, variables and methodology

4.5.1 Data

This study aims to examine how national institutional arrangements pertaining to labour and housing policies shape the relationship between work and housing precarity. To this end, this study uses European Union (EU) Statistics on Income and Living Conditions (EU-SILC) from 2023, as it is the most recent dataset that includes information on both individuals' working conditions and their household situation, such as housing and income. EU-SILC collects both household and individual-level data, where housing data are primarily collected at the household level, in contrast to the information on the labour market situation, which is collected at the individual level. Our sample is restricted to the reference person in each household, where this reference person is currently employed. The reference person is the person responding to the household questionnaire on behalf of the household, who is responsible for the accommodation and can speak for the household. Being an employee does not include the self-employed nor (unpaid) family workers, and we further excluded the armed forces. We assume the income of the reference person to be the primary source of household income, if not an important part of it. While data from all 27 EU Member States and Norway are available, our sample is limited to 25 countries (excluding Ireland, Malta and Slovenia).²⁴ Our final sample size is 117,172 for the models using tenure insecurity as dependent variable, and 112,288 for the models using quality insecurity as dependent variable (see further). Due to more limited data availability for the contextual-level variables, models including the contextual-level variables vary in terms of sample size.

²⁴ In Malta and Slovenia, all or the vast majority of the sample was categorised as 'armed forces' based on the ILO International Standard Classification of Occupations (ISCO) (i.e. those coded as 0-9 for question PL051A). Ireland is excluded due to potential data errors, as both the subjective housing cost burden rate and the housing deprivation rate amounted to 0 %.





4.5.2 Variables

Independent variables: work precarity

As discussed above, we investigate two dimensions of work precarity: income insecurity and employment insecurity. Whilst a single dimension alone does not sufficiently capture work precarity, we use the two dimensions separately to understand the nuances of the relationship between work and housing precarity. For simplicity, they are referred to as work precarity when discussed together.

First, *employment insecurity* is defined as having a non-standard contract, which includes having a non-permanent (or non-open-ended) or part-time²⁵ contract. This is operationalised using the variables PL141 (permanency of job) and PLO40A (part-time/full-time) in EU-SILC. PL141 includes four answer categories which are “fixed-term written contract”, “fixed-term verbal contract”, “permanent written contract”²⁶ and “permanent verbal contract”. We construct a binary variable by coding those with full-time and permanent contract as secure (0) and the rest as insecure (1).

Second, *income insecurity* refers to low income and is defined as an employment income below 60% of the median individual employment income in a country. This definition is widely used in labour market research (e.g. Olsthoorn 2014; Seo 2021). Existing research that examined the relationship between the two forms of precarity has looked at the equivalised household income, given that housing costs are more directly related to household income rather than individual income. However, this measure is limited when it comes to measuring work

²⁵ Note that the precarity of ‘voluntary’ part-time work is debated. However, we consider all part-time work as precarious for two reasons. First, in most countries, job quality differs between full-time and part-time work (Yerkes & Visser 2006), even in the Netherlands where part-time work is normalised (Yerkes 2009). Second, we need to question whether part-time work is truly ‘voluntary’, when workers are constrained in their choice. A significant number of mothers working part-time due to family responsibilities (see Chou et al. 2017) clearly demonstrates how the ‘voluntariness’ of part-time (or any type of non-standard) work requires in-depth consideration of social, historical and cultural contexts, which a single indicator cannot capture.

²⁶ Referring back to the mechanisms of how work precarity leads to housing precarity, the second mechanism on not having a contract to prove payment guarantee may apply to those without a written contract (albeit permanent), whilst it would not be the case for the third mechanism related to psychological responses to precarious prospects. Thus, we also constructed a variable where a verbal permanent contract is considered insecure. No significant difference was found between the two employment insecurity variables, due to the small number of individuals with a verbal permanent contract (results available upon request).





precarity, as the household income often includes sources of income other than one's employment income. Taking other household members' income into account may also blur the actual precarity experienced by an individual from work. Thus, we focus on the individual income from work but limit the sample to the reference person of a household, based on the assumption that their income insecurity is likely to have a strong influence on the household income. Considering the more general importance of household income for housing outcomes, we do take it into account by controlling for it in our models (see further). We operationalise income from work as a binary variable: low income (coded as 1) and no low income (coded as 0).

Dependent variable: housing precarity

For the dependent variable, we also use two indicators of housing precarity, which are tenure insecurity and quality insecurity. We do not use a combined housing precarity variable, due to the small number of workers who experience both forms of housing precarity (1.95% of the sample). This demonstrates the differences in the nature of the two precarities, which often do not coincide. Tenure insecurity closely relates to affordability associated with household income and cost of housing, while quality insecurity pertains to the quality of dwelling, which in part stems from different housing market contexts (e.g. Gielens, Seo & Dewilde 2025). Especially low-income households tend to compromise the quality of housing to avoid high housing costs (see Galster & Lee 2021).

First, *tenure insecurity* is defined as experiencing objective and subjective overburdening of housing costs, which may endanger one's tenure security. Housing cost unaffordability occurs when total housing costs exceed a certain level of household income and is perceived subjectively as a high burden for household. The threshold to determine whether total housing costs (including utility costs and other costs attached to living in the property, e.g. taxes) exceed a 'certain level' is set differently by income quintile, at 25% for the first income quintile, 30% for the second quintile, 40% for the third quintile, and 50% for the fourth and fifth quintiles (see Dewilde 2018; Heylen 2023). Given that housing is secure for outright





homeowners, housing cost overburdening of outright homeowners is not considered a risk to housing insecurity. Thus, we consider all outright homeowners, as well as mortgaged homeowners and tenants with no housing cost burden to be tenure secure (following Arundel & Lennartz 2020). Mortgaged homeowners and tenants with an unaffordable housing cost burden are therefore considered tenure insecure. Among those whose housing costs exceed these thresholds, we further select those who subjectively feel their housing costs to be a high burden. We do this to further avoid overestimation of housing cost overburdening, especially amongst high-income groups, as the objective measure often relies on rules of thumb based on theoretical assumptions (Bramley 2012; Heylen 2023). Tenure insecurity is a binary variable consisting of those who are insecure (coded as 1) and secure (coded as 0).

Second, *quality insecurity* is defined as those living in poor or inadequate housing (similar to the definition of housing deprivation; Eurostat, n.d.-b). Five questions are used to construct this variable: 1) “Do you have any of the following problems with your dwelling/accommodation? A leaking roof; damp walls/floors/foundations; rot in window frames or floor”; 2) “Is your dwelling too dark, meaning that there is not enough daylight coming through the windows?”; 3) “Is there a shower unit or bathtub in your dwelling?”; and 4) “Is there an indoor flushing toilet in your dwelling?”; 5) “Apart from your household’s ability to afford heating costs, do you consider that the dwelling’s heating system and thermal insulation are adequate to keep the dwelling comfortably warm during the winter?”. Quality insecurity is a binary variable: when at least one of the deprivation indicators is present, it is coded as 1, otherwise it is coded as 0.

Individual-level controls

Several individual-level variables are controlled for in this study. We control for *gender* as women are more likely than men to experience both work and housing precarity. Women are more likely to experience low income and more often work part-time (ILO 2019). Moreover, studies on divorced women and lone mothers show that they are more likely to experience poor housing quality and housing





affordability issues (see Murphy 2020; Feijten & van Ham 2010). Women are coded as 1 and men are coded as 0. Second, we control for *age* of the respondents: young people as new labour market and housing market entrants are especially vulnerable to both labour market flexibilisation (Hvinden et al. 2019) and high housing costs in the private rental sector (e.g. Grander, 2023; Hoolachan & McKee, 2019). Older people, on the other hand, enjoy greater housing security as they are more likely to be (outright) homeowners, especially in countries with high homeownership. We enter age as a continuous variable. Third, we control for *disposable equivalised household income* (referred to as household income) to account for the impact of overall household income on housing outcomes, regardless of an individual's work precarity. We use income tertiles: low income (1st tertile; set as reference), middle income (2nd tertile) and high income (3rd tertile). Finally, we control for occupation (main job), focusing specifically on the skill level. This is because income and employment insecurity may not lead to the same level of precarity, depending on workers' occupational skill levels. For instance, a highly skilled worker may have a higher sense of job security and experience less difficulty making ends meet, despite having short-term contracts. The variable referred to as *skill level* has three categories: low skill (reference); middle skill; and high skill, based on the ILO-classification. Whilst tenure status is an important predictor of housing precarity, we do not use this as a control variable due to its strong correlation with tenure insecurity. We furthermore partly capture cross-national differences in tenure structures and homeownership rates by including a control variable indicating the housing regime. Estimates for models with quality insecurity as dependent variable were consistent with and without including tenure status, highlighting robustness of the main results (available upon request).

Labour market policies

We use three indicators of labour market policies. First, we use *Employment Protection Legislation for temporary contracts* (EPLt) from OECD. It is a 0-6 scale which indicates the strictness of regulation on using and dismissing temporary contracts. We use the latest data available (2019). Second, we use *unemployment benefit coverage* (PLMP) based on reciprocity data from EU-SILC (see Otto 2018).





Following Otto (2018), we first calculate the proportion of unemployment benefit recipients in 2023 amongst the total working population (16-64 years). We then divide this by the unemployment rate in 2023. Third, we use an indicator *generosity of outsider spending* to examine unemployment protection through ALMP. Following Rueda (2014) and Dewilde (2025), the data is constructed by dividing public expenditure on ALMP (% of GDP, OECD) by the unemployment rate (15 to 74 years, % of labour force, Eurostat). We hence account for those cases where coverage and public spending are high due to high unemployment. The variable is constructed based on the latest available data from OECD and Eurostat (2022).²⁷

Housing market policies

As discussed above, we use three indicators of housing market policies that may have an impact on housing precarity. Measuring the size of social housing has been difficult for various reasons, including the blurred legal boundaries between social and affordable housing. *De facto* social housing may differ from *de jure* social housing, and there might also be regional variations, for instance in terms of eligibility or priority (for a discussion on the measurement of social housing, see Kholodilin et al. 2024). We use two alternative indicators that can be considered as a proxy, based on EU-SILC data and Housing Europe estimates. First, we use the percentage of the population living in regulated renting in EU-SILC (2023).²⁸ However, whilst ‘renting at reduced rate’ could act as a proxy for social housing (see Chapter 2 for a more detailed explanation), there are differences with the share of the social housing stock as defined and estimated by Housing Europe. We therefore also use the share of social housing stock (as part of the total housing stock) from Housing Europe (2025). We refer to the first measure as *share of*

²⁷ For Croatia, Greece and Ireland the latest OECD data are from 2021. For Italy and Romania, data are from 2020. For these countries, the unemployment rate (Eurostat) is also adjusted for the respective years.

²⁸ Given no clear distinction between renting at market rent and reduced rent in several unitary rental market countries, where rents are strictly regulated, all tenants have been recoded as renting at ‘reduced rent’. This applies to Denmark and Sweden. In the Netherlands, we distinguished between the two rental tenures using the so-called liberalisation-threshold. This is a fixed amount that limits the starting rent of social rental housing, as opposed to market renting.





regulated renting and the second as the *share of social housing*. Third, we use the *index of rental regulation* to examine the strictness of (private) rent regulation and tenure security derived by Kholodilin (2025). Higher values indicate stricter rent regulation.

Contextual-level controls

We further control for five contextual-level variables indicating the wider structural contexts that may influence work and housing precarity (e.g. Chung & Van Oorschot 2011; Horsewood & Doling 2004). We acknowledge that labour market and housing policies are embedded in existing labour market and housing market contexts within a country: these policies reflect, influence and are influenced by these broader contexts. We therefore control for structural contexts that are closely related to the labour market (i.e. the *unemployment rate* (15 to 74 years, % of labour force; Eurostat (2023)) and the level of *labour market flexibilisation* (i.e. temporary employees as a percentage of the total number of employees 15 to 64 years; LFS (2023)), and the housing market (i.e. house price volatility (i.e. annual average rate of change; Eurostat; 2023)). We further control for the broader housing-welfare regime (see Appendix C for classification) to account for other housing market and welfare system factors that are not captured through the variables listed above, but lack immediate relevance to the main relationships of interest between work precarity and housing precarity. The broader housing-welfare regime nonetheless has a strong impact on cross-national differences in the dependent variable (tenure insecurity and quality insecurity), as it captures different tenures structures, as well as more general cross-national variations in the relationships between income, tenure and quality precarity (see Deliverable 3.1, Chapter 1 of Deliverable 3.2). Each control variable is included in the model one at a time.

4.5.3 Research model

To examine how national-level institutional arrangements influence the relationship between work and housing precarity, we estimate two-level random-slopes multilevel logistic regression models (see Hox 2002). Multilevel modelling



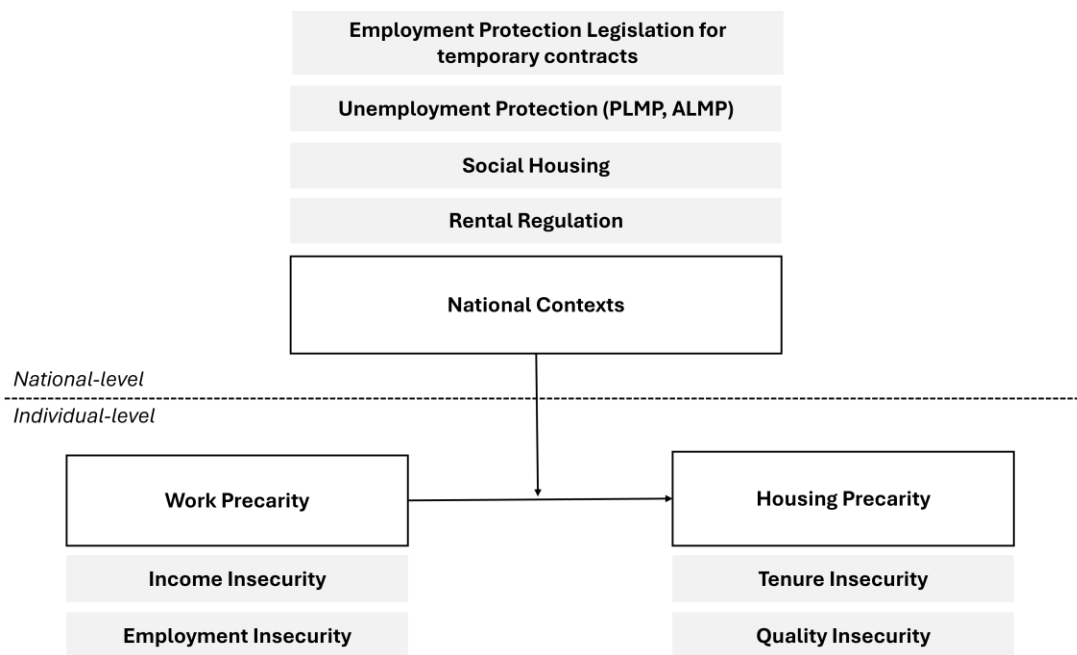


assumes a hierarchy in the data, which means that, in the case of our study, individuals are nested in countries. We assume that there is a significant variance across countries in terms of individuals' housing precarity as well as its relationship with work precarity, which can be explained by national-level institutional contexts. Therefore, we first test the extent to which variation in each form of housing precarity in Europe can be attributed to the country individuals live in, using the Intraclass Correlation Coefficient (ICC) (Null Model). We then examine the relationship between different dimensions of work precarity and housing precarity without (Model 1) and with individual-level control variables (Model 2 for random intercepts and Model 3 for random slopes). Models 4-9 investigate how each institutional context shapes the relationship between the two forms of precarity in the following order: employment protection legislation for temporary contracts (Model 4), unemployment benefit coverage (Model 5), outsider spending (Model 6), regulated rent (Model 7), social housing (Model 8), rental regulation (Model 9). We report the models where we control for the relevant contextual-level control variables mentioned above. Figure 4.4 below illustrates our main research model. All contextual-level variables were standardised. Descriptive statistics for each variable can be found in Appendix A.





Figure 4.1 Research Model



4.6 Empirical results

Figure 4.2 shows cross-national variations in the percentage of employed workers experiencing tenure insecurity and quality insecurity. Lithuania shows the lowest percentage of tenure insecurity, followed by Latvia, Poland and Romania. The low percentage of tenure-insecure workers in the Eastern-European countries in general coincides with their high share of (super-)outright homeownership, which in this chapter is considered tenure-secure as they are unlikely to fall out of homeownership. The high percentage of workers living in tenure insecurity in Luxembourg (the highest) and Belgium (5th highest) highlights the insecurity of private renters in so-called homeownership countries with a dual rental market, characterised by more limited rent regulation in combination with a more residualised social housing sector. Similar observations pertain to the Southern-European family-based homeownership countries (e.g. Greece, Spain and Italy).

Figure 4.2 further shows how quality insecurity does not coincide with tenure insecurity. No similar nor opposite patterns are found between the two





housing precarity measures, which indicates that, at the country-level, nuances in housing precarity are not explained through a trade-off relationship between affordability and quality. Quality insecurity is most prominently found in Portugal, France, Spain and Cyprus, in line with what has been widely understood of Southern-European countries in general, due to limited state control in housing quality (see Allen et al. 2004). France, characterised by a more unitary rental market,²⁹ is rather an outlier in this group, suggesting that conservative-corporatist 'labour market outsidersness' might matter more than housing regime features, for workers at least. Whilst a relatively lower percentage of quality insecurity is found in Sweden and Denmark, the lowest percentages are found in Eastern-European countries (e.g. Poland, Estonia), which could be driven by rapid economic growth in these countries in the last decades, benefiting younger generations of workers in particular.

²⁹ In fact, the housing deprivation rate has increased substantially since 2020 according to EU-SILC data.





Figure 4.2. Cross-national variation in housing tenure insecurity and quality insecurity (%)



Note: data on quality insecurity are missing for IE.

Significant cross-national variations in housing precarity and contribution of contextual-level factors to this variance can further be tested using the Intraclass Correlation Coefficient (ICC). Both tenure and quality insecurity show moderate levels of ICC (0.184 for tenure insecurity and 0.082 for quality insecurity), suggesting an explanatory role for both individual- and contextual-level factors.

As shown in Table 4.1 we found a positive association between work precarity and housing precarity for all dimensions considered, even when controlling for relevant individual-level control variables (i.e. gender, age, skill level, household income) (Model 3; see Appendix B for estimates from Models 0-2). **When comparing income and employment insecurity, we find income insecurity to be more closely related to tenure insecurity, and employment insecurity to**





quality insecurity. This is evident when both are examined together (see Model 2 in Appendix B, controlling for household income). What these results further demonstrate is that having an insecure employment contract itself significantly increases one's risk of experiencing housing precarity. This indicates that the relationship between work and housing precarity goes beyond having a low income from employment. Furthermore, improved log likelihoods in the random slopes model compared to the random intercepts model demonstrates that the extent to which work precarity relates to housing precarity varies across countries (see Appendix B for estimates from the random intercepts model). In addition, for both tenure and quality insecurity, we find that women, younger workers, lower skilled workers, and those with lower household income are significantly more likely to experience housing precarity.





Table 4.1. Relationship between work and housing precarity (random slopes model)

DV: Tenure Insecurity	Model 3	
	Income	Employment
Constant	-0.985* (0.421)	-0.728* (0.350)
Income Insecurity	0.404** (0.155)	
Employment Insecurity		0.235*** (0.064)
Women (ref: men)	0.278*** (0.034)	0.293*** (0.034)
Age	-0.025*** (0.001)	-0.025*** (0.001)
Skill (ref: low skill)		
middle skill	-0.258*** (0.046)	-0.274*** (0.046)
high skill	-0.659*** (0.053)	-0.728*** (0.053)
Household Income (ref: low income)		
middle income	-1.647*** (0.046)	-1.647*** (0.042)
high income	-4.213*** (0.081)	-4.137*** (0.350)
Var level 1	(π^2)/3	(π^2)/3
Var level 2	4.205 (1.231)	2.896 (0.829)
Var Work Precarity	0.472 (0.186)	0.041 (0.028)
Log Likelihood	-14877.732	-14933.918
N level 1	117172	117172
N level 2	25	25
DV: Quality Insecurity	Model 3	
	Income	Employment
Constant	-0.345** (0.132)	-0.290* (0.124)
Income Insecurity	0.186*** (0.046)	
Employment Insecurity		0.243*** (0.039)
Women (ref: men)	0.127*** (0.015)	0.116*** (0.015)
Age	-0.006*** (0.001)	-0.006*** (0.001)
Skill (ref: low skill)		
middle skill	-0.359*** (0.025)	-0.353*** (0.025)
high skill	-0.512*** (0.026)	-0.520*** (0.026)
Household Income (ref: low income)		
middle income	-0.305*** (0.023)	-0.345*** (0.022)
high income	-0.703*** (0.028)	-0.727*** (0.026)
Var level 1	(π^2)/3	(π^2)/3
Var level 2	0.386 (0.110)	0.344 (0.098)
Var Work Precarity	0.037 (0.015)	0.026 (0.011)
Log Likelihood	-60370.184	-60346.41
N level 1	112288	112288
N level 2	25	25

Note: ***p < 0.001, **p < 0.01, *p < 0.05, +p < 0.1.

Table 4.2 summarises findings from Models 4 through 9, focusing on the association between labour market policies and the extent to which these influence the positive relationship between work precarity (i.e. income insecurity and employment insecurity) and housing precarity (i.e. tenure insecurity and quality insecurity). Appendix D and E illustrate this relationship by comparing how the likelihood of experiencing housing precarity is moderated by labour market institutional arrangements for secure and insecure workers, when controlling for the housing-welfare regime.





We find no significant moderation effect of EPLt on the relationship between work precarity and housing precarity. Insecure workers (both in terms of income and employment) show a relatively higher likelihood of housing precarity compared to secure workers, but this difference is more or less similar across countries (also see Appendix D and E). While the findings support hypothesis 1.2 that EPLt will have no significant moderating role in the work-housing precarity relationship when it comes to income insecurity, we also did not find a significantly positive cross-level interaction effect for employment insecurity, and therefore we reject hypotheses 1.1. The findings indicate that, while EPLt does not seem to protect precarious workers from falling into housing precarity, it also does not reinforce this relationship either.

For the level of PLMP and outsider spending (i.e. ALMP), we generally expected that, for both dimensions of work precarity, countries with more generous policies would lower precarious workers' risk of experiencing housing precarity. The findings show that while more generous PLMP protect low-income workers from housing tenure insecurity and workers with precarious employment contracts from housing tenure insecurity and poor-quality housing, it has a more limited role in protecting low-income workers from living in poor-quality housing ($p < 0.10$). These findings reject both Hypothesis 2.1 and 2.2, finding significant cross-level moderations where none was expected (Hypothesis 2.1), and finding no cross-level moderation where one was expected, in particular for the association between income security and quality insecurity (Hypothesis 2.2). This demonstrates the importance of examining separate dimensions of work and housing precarity to understand nuances of the work-precarity nexus. Regarding the level of outsider spending, we find that generosity of active labour market policies significantly lowers precarious workers' risk of living in precarious housing across all dimensions considered (supporting both Hypotheses 2.3 and 2.4). We therefore find that unemployment protection (both passive and active) plays a significant role in protecting precarious workers, especially those with insecure contracts, from falling into precarious housing. The limited role of PLMP for the





likelihood that low-income workers fall into quality insecurity could be an indication that perceived future, potentially inadequate, coverage by (or low levels of) unemployment benefit for low-income workers deters them from acquiring better-quality housing in the current moment.

A notable finding from Table 4.2 is that the cross-level interactions between work precarity and labour market policies are consistent when controlling for relevant contextual factors, such as the unemployment rate, the level of labour market flexibilisation, and housing price volatility. However, some of the main effects change with the introduction of control variable to the models. Notably, PLMP becomes insignificant when controlling for housing price volatility and the housing-welfare regime, although the cross-level interaction-effects remain significant. This may indicate that, whilst housing-welfare regimes contribute to explaining overall between-country differences in different dimensions of housing precarity, our more specific indicators of labour market policies are more suited to explaining cross-national variations in the strength of the relationship between work and housing precarity for our sample of workers.

Table 4.3 summarises the findings from Models 4 through 9, and focuses on the association between housing market institutions and the extent to which work precarity (i.e. income insecurity and employment insecurity) leads to housing precarity (i.e. tenure insecurity and quality insecurity). We find that all housing institutions significantly lower the risk for precarious workers to experience housing precarity, in all dimensions considered. The only exception is the share of regulated renters when it comes to the relationship between employment insecurity and tenure insecurity, which is only significant to $p < 0.1$ level. The interaction effect however becomes significant for this model when controlling for the unemployment rate, labour market flexibilisation and housing price volatility. The opposite is found for the share of social housing and its impact on the association between employment insecurity and tenure insecurity, where the moderation effect is reduced in significance to the $p < 0.1$ - level when housing price volatility is controlled for. Despite these slight differences, we argue that, overall, a





higher share of social housing (which is approximated through both the share of people living in regulated rent and the share of social housing stock) and more strict rent regulations significantly reduces precarious workers' (versus non-precarious workers') risk of living in housing tenure insecurity and quality insecurity. The findings, therefore, support hypotheses 3.1, 3.2, 4.1 and 4.2.





Table 4.2. The impact of labour market institutions on the work-housing precarity relationship

DV: Tenure insecurity contextual-level control var		EPLt (Model 4)		PLMP (Model 5)		Outsider Spending (Model 6)	
		income	employment	income	employment	income	employment
without control	work precarity	0.284* (0.135)	0.161*** (0.040)	0.382*** (0.109)	0.233*** (0.053)	0.594*** (0.141)	0.243*** (0.060)
	contextual level var	0.574 (0.354)	0.627+ (0.367)	0.895* (0.346)	0.788* (0.324)	0.935** (0.272)	0.951*** (0.229)
	*work precarity	-0.031 (0.142)	-0.029 (0.035)	-0.456*** (0.104)	-0.149** (0.049)	-0.448*** (0.116)	-0.136* (0.055)
unemployment rate	work precarity	0.298* (0.139)	0.236** (0.069)	0.370** (0.114)	0.233*** (0.053)	0.612*** (0.142)	0.250*** (0.063)
	contextual level var	0.633 (0.401)	0.646+ (0.351)	0.929** (0.338)	0.801* (0.322)	1.067*** (0.262)	1.030*** (0.238)
	*work precarity	0.019 (0.140)	-0.014 (0.060)	-0.457*** (0.112)	-0.149** (0.049)	-0.466*** (0.120)	-0.141** (0.053)
	control	-0.281 (0.437)	-0.234 (0.438)	0.245 (0.328)	0.219 (0.402)	0.639+ (0.350)	0.608+ (0.359)
labour market flexibilisation	work precarity	0.278* (0.134)	0.236** (0.069)	0.386** (0.116)	0.232*** (0.053)	0.617*** (0.146)	0.262*** (0.062)
	contextual level var	0.617+ (0.356)	0.606+ (0.318)	0.992** (0.336)	0.759* (0.301)	0.823** (0.289)	0.865*** (0.234)
	*work precarity	0.031 (0.138)	-0.014 (0.060)	-0.451*** (0.113)	-0.148** (0.048)	-0.465*** (0.119)	-0.148** (0.052)
	control	0.605+ (0.329)	0.455 (0.303)	0.724* (0.301)	0.535* (0.268)	0.312 (0.314)	0.236 (0.252)
housing price volatility	work precarity	0.306* (0.152)	0.220** (0.073)	0.398** (0.116)	0.232*** (0.059)	0.635*** (0.147)	0.251*** (0.070)
	contextual level var	0.458 (0.314)	0.475+ (0.277)	0.586+ (0.356)	0.499 (0.337)	0.853*** (0.232)	0.818*** (0.210)
	*work precarity	-0.008 (0.143)	-0.019 (0.061)	-0.448*** (0.111)	-0.149** (0.053)	-0.462*** (0.120)	-0.141* (0.058)
	control	-1.071*** (0.307)	-0.876** (0.267)	-0.829* (0.344)	-0.672* (0.305)	-0.932** (0.286)	-0.738** (0.241)
regime	work precarity	0.297* (0.147)	0.224** (0.067)	0.431*** (0.116)	0.231*** (0.054)	0.596*** (0.144)	0.251*** (0.064)
	contextual level var	0.522** (0.162)	0.589*** (0.164)	-0.017 (0.253)	-0.063 (0.220)	0.805*** (0.211)	0.535** (0.196)
	*work precarity	-0.102 (0.136)	-0.022 (0.059)	-0.498*** (0.112)	-0.148** (0.049)	-0.368** (0.121)	-0.141** (0.054)
	Control						
	Cons.-corp. unitary	0.132 (0.597)	0.081 (0.531)	0.547 (0.783)	0.605 (0.683)	1.701* (0.722)	1.235+ (0.650)
	NWE dual	0.635 (0.613)	0.569 (0.559)	1.791* (0.764)	1.904** (0.666)	2.722*** (0.700)	2.397*** (0.628)
	SE family	-1.775** (0.625)	-1.663** (0.573)	-0.812 (0.668)	-0.606 (0.582)	1.336 (0.835)	0.762 (0.760)
	Baltics	-3.946*** (0.642)	-3.431*** (0.553)	-3.491*** (0.769)	-2.939*** (0.657)	-1.377 (0.920)	-1.493+ (0.824)
	CEE	-2.279*** (0.482)	-2.234*** (0.503)	-2.834*** (0.643)	-2.315*** (0.580)	-0.722 (0.659)	-1.031 (0.691)





Table 4.2 The impact of labour market institutions on the work-housing precarity relationship continued

DV: Quality insecurity contextual-level control var		EPLt (Model 4)		PLMP (Model 5)		Outsider Spending (Model 6)	
		income	employment	income	employment	income	employment
without control	work precarity	0.133** (0.040)	0.204*** (0.035)	0.173*** (0.045)	0.242*** (0.036)	0.180*** (0.043)	0.256*** (0.037)
	contextual level var	0.225* (0.112)	0.220+ (0.112)	0.207+ (0.126)	0.177 (0.120)	0.066 (0.106)	0.023 (0.100)
	work precarity	-0.006 (0.042)	-0.006 (0.034)	-0.080+ (0.047)	-0.083 (0.036)	-0.116** (0.041)	-0.084** (0.031)
unemployment rate	work precarity	0.130** (0.041)	0.179*** (0.019)	0.173*** (0.045)	0.206*** (0.019)	0.181*** (0.043)	0.197*** (0.019)
	contextual level var	0.151 (0.114)	0.151 (0.111)	0.229* (0.111)	0.227* (0.110)	0.150 (0.095)	0.146 (0.094)
	*work precarity	-0.009 (0.043)	0.007 (0.018)	-0.080+ (0.047)	-0.061** (0.019)	-0.116** (0.041)	-0.064** (0.019)
	control	0.260+ (0.142)	0.261+ (0.139)	0.361** (0.138)	0.362** (0.137)	0.413** (0.144)	0.407** (0.142)
labour market flexibilisation	work precarity	0.130** (0.042)	0.208*** (0.037)	0.174*** (0.046)	0.242*** (0.037)	0.181*** (0.044)	0.256*** (0.037)
	contextual level var	0.231* (0.103)	0.225* (0.106)	0.193+ (0.109)	0.166 (0.109)	-0.022 (0.099)	-0.051 (0.097)
	work precarity	-0.009 (0.044)	-0.003 (0.035)	-0.080+ (0.047)	-0.083 (0.036)	-0.117** (0.041)	-0.084** (0.031)
	control	0.230* (0.098)	0.206* (0.101)	0.278** (0.097)	0.220* (0.097)	0.280** (0.107)	0.232* (0.105)
housing price volatility	work precarity	0.117** (0.039)	0.200*** (0.038)	0.170*** (0.046)	0.242*** (0.038)	0.179*** (0.044)	0.257*** (0.039)
	contextual level var	0.198+ (0.115)	0.195+ (0.117)	0.155 (0.140)	0.129 (0.133)	0.050 (0.108)	0.007 (0.102)
	work precarity	-0.022 (0.040)	-0.006 (0.035)	-0.069 (0.048)	-0.083 (0.038)	-0.110** (0.041)	-0.084* (0.033)
	control	-0.146 (0.111)	-0.121 (0.113)	-0.140 (0.126)	-0.129 (0.120)	-0.149 (0.124)	-0.138 (0.118)
regime	work precarity	0.135** (0.041)	0.203*** (0.036)	0.175*** (0.046)	0.242*** (0.037)	0.182*** (0.044)	0.255*** (0.038)
	contextual level var	0.119 (0.078)	0.110 (0.083)	-0.005 (0.086)	-0.001 (0.090)	0.034 (0.086)	-0.013 (0.090)
	work precarity	-0.009 (0.043)	-0.005 (0.034)	-0.079+ (0.047)	-0.083 (0.037)	-0.117** (0.041)	-0.084** (0.032)
	control						
	Cons.-corp. unitary	0.455+ (0.251)	0.490+ (0.266)	0.551* (0.265)	0.580* (0.278)	0.587* (0.284)	0.540+ (0.299)
	NWE dual	0.007 (0.264)	0.032 (0.280)	0.139 (0.259)	0.149 (0.271)	0.167 (0.275)	0.112 (0.289)
	SE family	0.548* (0.272)	0.594* (0.287)	0.788*** (0.225)	0.821** (0.236)	0.841* (0.332)	0.736* (0.349)
	Baltics	-0.310 (0.256)	-0.199 (0.270)	-0.220 (0.251)	-0.116 (0.263)	-0.136 (0.358)	-0.173 (0.375)
	CEE	-0.763** (0.239)	-0.708** (0.252)	-0.685** (0.225)	-0.517* (0.235)	-0.603* (0.302)	-0.559+ (0.317)

Note: ***p < 0.001, **p < 0.01, *p < 0.05, +p < 0.1. This table presents a summary of different models. Note that we only include one contextual-level control variable to the main model "without control". The reference category of the "regime" control variable is: social-democratic unitary rental market countries. The other regime types are: conservative-corporatist unitary rental market countries ("cons.-corp. unitary"), North-Western European homeownership countries with a dual rental market ("NWE dual"), Southern-European family-based homeownership countries ("SE family"), Baltics and Central- and Eastern-European countries ("CEE") (see Appendix C for the list of countries that belong to each regime type). All individual-level control variables are included in the model but not shown in this table. Significant interaction effects are in bold





Table 4.3 The impact of housing market institutions on the work-housing precarity relationship

DV: Tenure insecurity		Regulated rent (Model 7)		Social Housing (Model 8)		Rent Regulations (Model 9)	
contextual-level control var		income	employment	income	employment	income	employment
without control	work precarity	0.451*** (0.125)	0.239*** (0.059)	0.478*** (0.125)	0.236*** (0.061)	0.402** (0.136)	0.212*** (0.048)
	contextual level var	0.743* (0.294)	0.732** (0.252)	0.705* (0.328)	0.669* (0.297)	0.891* (0.348)	0.754* (0.307)
	work precarity	-0.300 (0.116)	-0.104+ (0.056)	-0.443*** (0.113)	-0.132* (0.056)	-0.433** (0.141)	-0.120** (0.041)
unemployment rate	work precarity	0.543*** (0.137)	0.251*** (0.063)	0.486*** (0.125)	0.236*** (0.061)	0.365** (0.126)	0.217*** (0.051)
	contextual level var	0.803** (0.287)	0.742** (0.263)	0.802* (0.329)	0.761* (0.304)	0.930* (0.368)	0.741* (0.313)
	*work precarity	-0.367** (0.121)	-0.121* (0.054)	-0.449*** (0.119)	-0.133* (0.056)	-0.395** (0.128)	-0.120** (0.043)
labour market flexibilisation	control	0.402 (0.350)	0.157 (0.390)	0.439 (0.379)	0.435 (0.420)	0.118 (0.394)	0.158 (0.402)
	work precarity	0.594*** (0.145)	0.250*** (0.061)	0.493*** (0.129)	0.236*** (0.061)	0.452** (0.142)	0.217*** (0.051)
	contextual level var	0.660* (0.312)	0.678** (0.260)	0.554 (0.375)	0.490 (0.332)	0.776* (0.391)	0.563 (0.344)
housing price volatility	*work precarity	-0.594** (0.123)	-0.120* (0.055)	-0.452*** (0.115)	-0.133* (0.056)	-0.426** (0.141)	-0.121** (0.042)
	control	0.288 (0.319)	0.314 (0.278)	0.284 (0.360)	0.365 (0.327)	0.190 (0.336)	0.353 (0.316)
	work precarity	0.557*** (0.129)	0.243*** (0.066)	0.509*** (0.131)	0.2007** (0.063)	0.442*** (0.121)	0.233*** (0.058)
regime	contextual level var	0.694* (0.284)	0.622** (0.239)	0.542+ (0.297)	0.637* (0.259)	0.852* (0.398)	0.657+ (0.349)
	*work precarity	-0.333** (0.117)	-0.115* (0.058)	-0.450*** (0.119)	-0.108+ (0.060)	-0.520** (0.151)	-0.137* (0.061)
	control	-0.634* (0.267)	-0.616* (0.260)	-0.911** (0.311)	-0.641* (0.262)	-0.666* (0.295)	-0.626* (0.295)
regime	work precarity	0.668*** (0.142)	0.239*** (0.062)	0.405** (0.117)	0.236*** (0.062)	0.428** (0.136)	0.211*** (0.050)
	contextual level var	0.406 (0.394)	0.512 (0.328)	-0.082 (0.275)	-0.119 (0.244)	0.474* (0.216)	0.333+ (0.185)
	*work precarity	-0.365** (0.122)	-0.105+ (0.054)	-0.402*** (0.105)	-0.131* (0.056)	-0.427** (0.136)	-0.121** (0.043)
	Control						
	Cons.-corp. unitary	1.477 (1.224)	1.687+ (1.021)	0.507 (0.722)	0.488 (0.640)	0.499 (0.713)	0.469 (0.606)
	NWE dual	2.463* (1.194)	2.719** (0.996)	1.629* (0.784)	1.611* (0.694)	1.970** (0.705)	1.814** (0.600)
	SE family	0.498 (1.461)	1.016 (1.218)	-1.022 (0.853)	-0.927 (0.754)	-0.400 (0.666)	-0.327 (0.567)
Baltics	-2.363 (1.472)	-1.402 (1.220)	-3.787*** (0.930)	-3.288*** (0.812)	-3.099*** (0.785)	-2.691*** (0.652)	
CEE	-1.164 (1.473)	-0.600 (1.234)	-3.273*** (0.801)	-2.569*** (0.700)	-1.761** (0.623)	-1.755** (0.595)	





Table 4.3 The impact of housing market institutions on the work-housing precarity relationship continued

DV: Quality insecurity		Regulated rent (Model 7)		Social Housing (Model 8)		Rent Regulations (Model 9)	
contextual-level control var		income	employment	income	employment	income	employment
without control	work precarity	0.185*** (0.043)	0.250*** (0.036)	0.173*** (0.041)	0.239*** (0.028)	0.158*** (0.039)	0.226*** (0.031)
	contextual level var	0.067 (0.107)	0.040 (0.102)	0.065 (0.118)	0.043 (0.111)	0.273* (0.113)	0.242* (0.109)
	work precarity	-0.091 (0.040)	-0.071* (0.030)	-0.109** (0.039)	-0.115*** (0.023)	-0.124** (0.036)	-0.100** (0.029)
unemployment rate	work precarity	0.186*** (0.044)	0.203*** (0.019)	0.173*** (0.041)	0.206*** (0.019)	0.155*** (0.040)	0.214*** (0.019)
	contextual level var	0.083 (0.099)	0.081 (0.098)	0.150 (0.108)	0.154 (0.108)	0.274** (0.101)	0.259** (0.102)
	work precarity	-0.091 (0.041)	-0.059* (0.017)	-0.110** (0.039)	-0.095*** (0.016)	-0.135** (0.037)	-0.070** (0.018)
	control	0.342* (0.147)	0.341* (0.145)	0.399** (0.150)	0.390** (0.149)	0.347** (0.130)	0.346** (0.130)
labour market flexibilisation	work precarity	0.187*** (0.045)	0.259*** (0.037)	0.174*** (0.042)	0.238*** (0.028)	0.156*** (0.041)	0.230*** (0.033)
	contextual level var	-0.018 (0.103)	-0.029 (0.101)	-0.099 (0.116)	-0.093 (0.114)	0.152 (0.121)	0.158 (0.119)
	work precarity	-0.092 (0.042)	-0.075* (0.031)	-0.110** (0.039)	-0.115*** (0.023)	-0.125** (0.037)	-0.098** (0.030)
	control	0.293** (0.109)	0.240* (0.107)	0.333** (0.115)	0.276* (0.113)	0.216+ (0.111)	0.162 (0.109)
housing price volatility	work precarity	0.181*** (0.045)	0.259*** (0.039)	0.171*** (0.042)	0.241*** (0.030)	0.162*** (0.042)	0.238*** (0.034)
	contextual level var	0.030 (0.112)	0.004 (0.107)	0.027 (0.117)	0.009 (0.112)	0.327* (0.135)	0.294* (0.132)
	work precarity	-0.086 (0.041)	-0.075* (0.032)	-0.104** (0.039)	-0.116*** (0.025)	-0.126** (0.044)	-0.114** (0.035)
	control	-0.193 (0.122)	-0.179 (0.116)	-0.197+ (0.119)	-0.176 (0.113)	0.088 (0.114)	-0.072 (0.111)
regime	work precarity	0.187*** (0.043)	0.250*** (0.036)	0.175*** (0.042)	0.239*** (0.029)	0.159*** (0.040)	0.226*** (0.032)
	contextual level var	0.087 (0.131)	0.093 (0.138)	-0.069 (0.093)	-0.066 (0.099)	0.114 (0.072)	0.110 (0.077)
	work precarity	-0.092 (0.041)	-0.071* (0.031)	-0.111** (0.039)	-0.115*** (0.024)	-0.127** (0.037)	-0.099** (0.030)
	control						
	Cons.-corp. unitary	0.748+ (0.405)	0.782+ (0.427)	0.556* (0.245)	0.572* (0.259)	0.541* (0.235)	0.564* (0.253)
	NWE dual	0.412 (0.396)	0.429 (0.418)	0.052 (0.267)	0.041 (0.282)	0.318 (0.233)	0.319 (0.250)
	SE family	1.070* (0.484)	1.110* (0.510)	0.644* (0.289)	0.663* (0.306)	0.888*** (0.220)	0.911*** (0.236)
	Baltics	0.046 (0.483)	0.160 (0.509)	-0.369 (0.309)	-0.274 (0.326)	-0.092 (0.251)	0.004 (0.268)
CEE	-0.390 (0.491)	-0.216 (0.517)	-0.805** (0.270)	-0.650* (0.284)	-0.495* (0.233)	-0.344 (0.248)	

Note: ***p < 0.001, **p < 0.01, *p < 0.05, +p < 0.1. This table presents a summary of

different models. Note that we only include one contextual-level control variable to the main model "without control". The reference category of the "regime" control variable is: social-democratic unitary rental market countries. The other regime types are: conservative-corporatist unitary rental market countries ("cons.-corp. unitary"), North-Western European homeownership countries with a dual rental market ("NWE dual"), Southern-European family-based homeownership countries ("SE family"), Baltics and Central- and Eastern-European countries ("CEE") (see Appendix C for the list of countries that belong to each regime type). All individual-level control variables are included in the model but not shown in this table. Significant interaction effects are in bold.





4.7 Discussion and conclusion

This chapter aims to examine the relationship between work precarity and housing precarity, and how institutional contextual arrangements designed to protect (precarious) workers, as well as housing policies in general, may mitigate this relationship. Using multilevel modelling on EU-SILC 2023 data from 25 European countries, we have three key findings.

First, there is a significant positive relationship between work and housing precarity, which varies across countries. While such relationship has often been assumed, especially with regard to those experiencing both forms of precarity – double precarity (Bentley et al. 2019) – studies on this topic have been limited and have suffered from inconsistencies in measurements and lack of comparability. This chapter shows that this relationship can be confirmed, but also that it varies across countries.

Furthermore, findings on the different dimensions of work precarity and housing precarity provide important evidence of nuanced mechanisms connecting the two. Given that tenure insecurity in part arises from high housing costs in relation to one's household income, it is not unexpected for low-income workers to experience such insecurity. However, it is important to note that our focus lies with individual labour income of the household reference person. This particular income-effect remains significant even when controlling for household income, which consist of different sources of income from different household members. The same applies for housing quality insecurity, albeit to a lesser extent. Moreover, the significant relationship between employment insecurity and housing precarity demonstrates that the work-housing precarity nexus goes beyond how much one earns. As discussed above, on the one hand, uncertainties around future prospects due to insecure employment contracts could make it difficult for individuals to make long-term plans such as finding more secure and better-quality housing. On the other





hand, they might be perceived of as ‘financially unstable’ by landlords or when considered for a mortgage by the bank. While such mechanism or explanation is not the focus of this paper, our findings support the possibility of various mechanisms behind precarious work leading to precarious housing, other than having insufficient income.

Second, labour market and housing market policies implemented to protect workers and households in general from various social risks, including unemployment and precarious housing, do matter when it comes to protecting precarious workers (vs. non-precarious workers) from living in precarious housing. While precarious workers are more likely to live in precarious housing, more generous unemployment coverage and protection, a higher share of social housing and more strict rental regulations clearly mitigate this relationship, by either providing labour market security, income security or housing market security. The findings were consistent even when structural contexts (e.g. unemployment rate, labour market flexibilisation, housing price volatility, housing-welfare regime) are controlled for. The only exception was employment protection for temporary workers, which did not significantly moderate the work-housing precarity relationship. As discussed above, EPL for temporary workers can be a double-edged sword, as stricter protection may lead to prolonged unemployment (similar to EPL for permanent workers, as found in Nickell 1997), while a more relaxed level of protection could lead to widespread use of temporary contracts. All in all, EPLt seems irrelevant to the work-housing precarity nexus.

Several limitations need to be taken into account when interpreting these results for wider applications. Firstly, we limited the sample to the reference person of a household, assuming that their income would contribute most to the household income compared to other members of household (i.e. breadwinner). We do this because having precarious work as second or third earner in a household may not have as strong impact on a household’s housing outcomes compared to the primary





earner. Whilst significant relationships between work precarity and housing precarity, even when (equivalised) household income is controlled for, shows that this is a good proxy, further investigation can be done for more accurate estimations by identifying different types of breadwinners, e.g. lone parents or migrant households. Secondly, the significant relationships found in this paper are not strictly causal relationships. We assumed that precarious work leads to precarious housing, based on existing literature, but we cannot completely rule out the possibility of reversed causality (i.e. precarious housing leading to precarious work) without using longitudinal data. Thirdly, other organisational and institutional contextual factors (e.g. norms, trade unions, family institutions) are not considered in this paper; we may therefore not fully capture the differences across countries. While this goes beyond the scope of this paper, examining the role of other meso-level factors may provide further nuances to our knowledge of the work-housing-precarity nexus.

Nevertheless, this study significantly contributes to knowledge on double precarity as well as on housing dualization, by providing empirical evidence demonstrating which policies matter in protecting precarious workers from falling into housing precarity. By focusing on separate dimensions of both work and housing precarity, we demonstrated nuances in the relationship between work and housing precarity. The significant role of employment insecurity, in particular, highlights the importance of moving beyond a limited view of double precarity as a problem of low-income or housing affordability. Whilst low income does have significantly detrimental effects on workers' access to secure housing (both in terms of tenure security and quality), we argue that uncertainties about future prospects due to insecure employment also pushes people into housing precarity. Second, we examined the impact of both labour market and housing institutions, as the relationship between the two forms of precarity cannot be solely explained by housing markets or labour markets alone. This paper therefore provides a comprehensive view





of the moderating role of institutional contexts on the work-housing-nexus, while contributing to the knowledge on both labour market and housing precarity.

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Appendix A: Descriptive Statistics

Models with Tenure Insecurity as Dependent Variable (N=117,172)

Variable		%	
income insecurity		22.28	
employment insecurity		22.14	
tenure insecurity		3.82	
Women		48.98	
skill level	low skill	7.93	
	middle skill	43.20	
	high skill	48.87	
household income	low income	24.45	
	middle income	33.02	
	high income	42.53	
Housing-welfare regime	Soc.-dem. Unitary rental market countries	10.30	
	Cons.-corp. unitary rental market countries	22.00	
	NWE homeownership countries with a dual rental market	9.86	
	SE family-based homeownership countries	30.24	
	Baltics	7.36	
	CEE	20.24	

Variable	country N	N	Mean	Std. dev.	Min	Max
age		117,172	46.403	11.267	16	80
EPL for temporary workers	21	107,293	0.050	0.984	-1.199	2.956
PLMP reciprocity	25	113,909	0.114	1.014	-1.355	2.340
Outsider Spending	24	111,934	0.008	0.968	-1.369	4.297
Reduced rent	25	117,172	0.026	1.044	-0.711	3.573
Social housing	24	113,909	0.050	1.044	-0.922	2.886
Rental regulations	25	117,172	0.107	0.962	-2.461	1.441
Unemployment rate	25	113,909	0.038	0.999	-1.245	2.121
Labour market flexibilisation	24	113,909	0.022	1.038	-1.892	2.644
Housing price volatility	23	111,121	-0.039	1.025	-1.533	3.090



Models with Quality Insecurity as Dependent Variable (N=112,288)

Variable			%			
income insecurity			23.06			
employment insecurity			21.92			
quality insecurity			26.67			
Women			49.63			
skill level						
	low skill		8.08			
	middle skill		42.95			
	high skill		48.97			
household income						
	low income		25.61			
	middle income		33.37			
	high income		41.02			
Housing-welfare regime						
	Soc.-dem. unitary rental market countries		10.77			
	Cons.-corp. unitary rental market countries		18.16			
	NWE homeownership countries with a dual rental market		10.48			
	SE family-based homeownership countries		31.59			
	Baltics		7.69			
	CEE		21.31			
Variable	country N	N	Mean	Std. dev.	Min	Max
age		112,288	46.503	11.213	16	80
EPL for temporary workers	21	102,309	0.111	0.997	-1.199	2.956
PLMP recipiency	25	109,037	0.021	0.964	-1.355	2.340
Outsider Spending	24	107,062	0.005	0.989	-1.369	4.297
Reduced rent	25	112,288	0.058	1.067	-0.711	3.573
social housing	24	109,037	0.014	1.058	-0.922	2.886
rental regulations	25	112,288	0.096	0.985	-2.461	1.441
Unemployment rate	25	109,037	0.098	0.988	-1.245	2.121
Labour market flexibilisation	24	109,037	0.030	1.063	-1.892	2.644
Housing price volatility	23	106,249	-0.025	1.048	-1.533	3.090





Appendix B: Results from Random Intercepts Models





DV: Tenure Insecurity	Null Model	Model 1			Model 2		
		Income	Employment	Both	Income	Employment	Both
Constant	-3.584*** (0.174)	-4.085*** (0.217)	-3.806*** (0.171)	-4.126*** (0.205)	-0.807* (0.356)	-0.710* (0.345)	-0.835* (0.351)
Income Insecurity		1.373*** (0.036)		1.171*** (0.039)	0.254*** (0.041)		0.215*** (0.042)
Employment Insecurity			0.834*** (0.033)	0.454*** (0.036)		0.179*** (0.036)	0.126** (0.038)
Women (ref: men)					0.291*** (0.034)	0.283*** (0.034)	0.271*** (0.034)
Age					-0.025*** (0.001)	-0.025*** (0.001)	-0.025*** (0.001)
Skill (ref: low skill)							
middle skill					-0.270*** (0.046)	-0.276*** (0.046)	-0.260*** (0.046)
high skill					-0.720*** (0.053)	-0.735*** (0.052)	-0.710*** (0.053)
Household Income (ref: low income)							
middle income					-1.575*** (0.045)	-1.640*** (0.042)	-1.565*** (0.045)
high income					-4.046*** (0.078)	-4.112*** (0.076)	-4.021*** (0.078)
Var level 1	(π^2)/3	(π^2)/3	(π^2)/3	(π^2)/3	(π^2)/3	(π^2)/3	(π^2)/3
Var level 2	0.184 (0.044)	1.151 (0.334)	0.714 (0.209)	1.029 (0.299)	2.962 (0.847)	2.796 (0.800)	2.875 (0.823)
Log Likelihood	-18127.485	-17470.944	-17393.314	-17393.314	-14933.399	-14940.86	-14927.885
N level 1	117172	117172	117172	117172	117172	117172	117172
N level 2	25	25	25	25	25	25	25
ICC	0.184						
DV: Quality Insecurity	Null Model	Model 1			Model 2		
		Income	Employment	Both	Income	Employment	Both
Constant	-1.237*** (0.109)	-1.371*** (0.114)	-1.318*** (0.110)	-1.402*** (0.113)	-0.309* (0.127)	-0.277* (0.123)	-0.341** (0.125)
Income Insecurity		0.473*** (0.019)		0.381*** (0.020)	0.168*** (0.021)		0.118*** (0.022)
Employment Insecurity			0.372*** (0.017)	0.268*** (0.018)		0.198*** (0.018)	0.174*** (0.018)
Women (ref: men)					0.127*** (0.015)	0.108*** (0.015)	0.104*** (0.015)
Age					-0.006*** (0.001)	-0.006*** (0.001)	-0.006*** (0.001)
Skill (ref: low skill)							
middle skill					-0.361*** (0.025)	-0.359*** (0.025)	-0.349*** (0.025)
high skill					-0.523*** (0.026)	-0.527*** (0.026)	-0.510*** (0.026)
Household Income (ref: low income)							
middle income					-0.312*** (0.023)	-0.353*** (0.022)	-0.310*** (0.023)
high income					-0.695*** (0.028)	-0.723*** (0.026)	-0.676*** (0.028)
Var level 1	(π^2)/3	(π^2)/3	(π^2)/3	(π^2)/3	(π^2)/3	(π^2)/3	(π^2)/3
Var level 2	0.294 (0.083)	0.321 (0.091)	0.302 (0.086)	0.316 (0.090)	0.355 (0.101)	0.334 (0.095)	0.342 (0.097)
Log Likelihood	-61524.325	-61210.262	-61283.135	-61097.247	-60389.87	-60359.534	-60344.726
N level 1	112288	112288	112288	112288	112288	112288	112288
N level 2	25	25	25	25	25	25	25
ICC	0.082						





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D3.2 Housing Inequalities Dynamic Framework



Note: ***p < 0.001, **p < 0.01, *p < 0.05, +p < 0.1.





Appendix C: Housing-Welfare Regime Typology

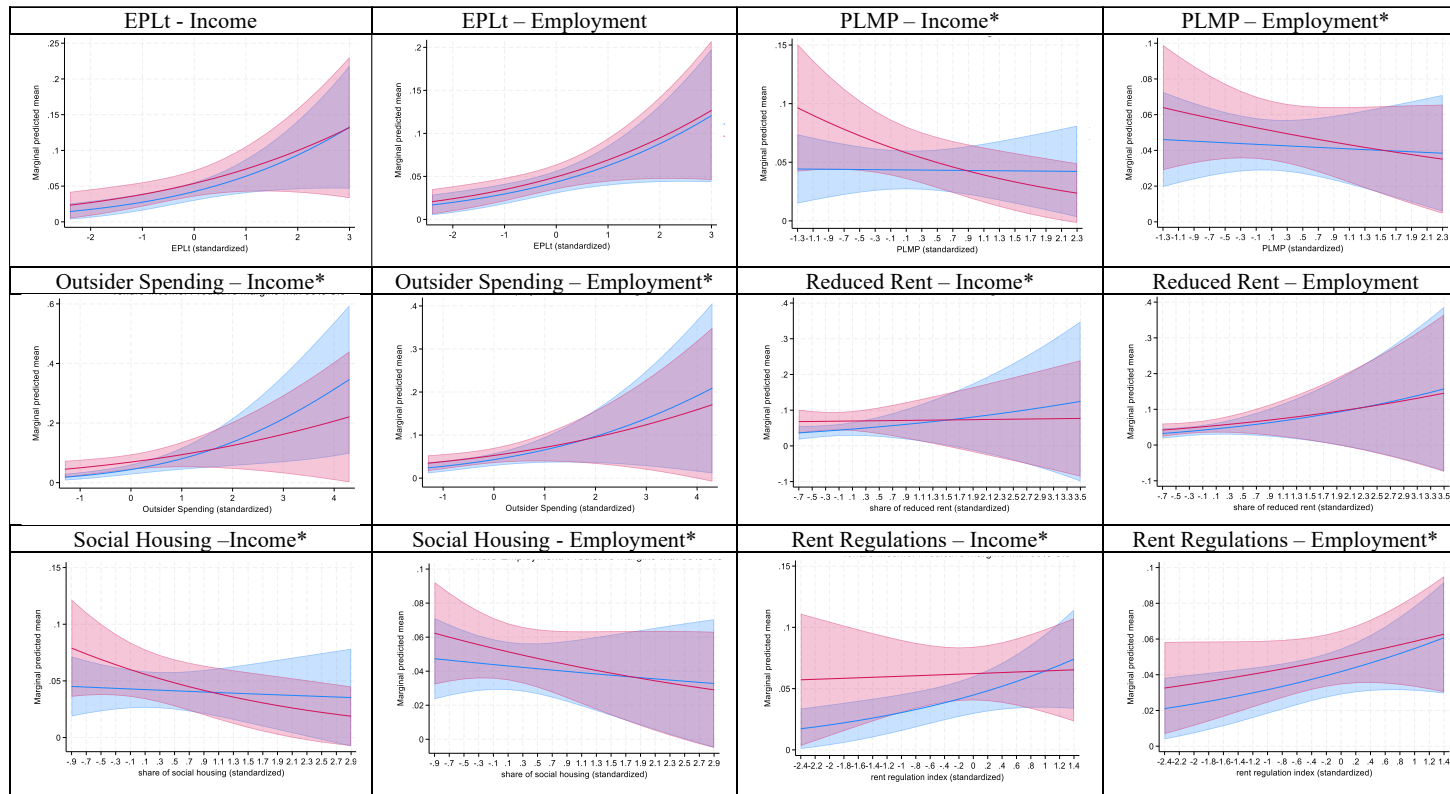
Housing-Welfare Regime Typology	Countries
Social-democratic unitary rental market-countries	Denmark, The Netherlands, Sweden
Conservative-corporatist unitary rental market-countries	Austria, Germany, France
NWE homeownership countries with a dual rental market	Belgium, Finland, Ireland, Luxembourg, Norway, United Kingdom
SE family-based homeownership countries	Cyprus, Spain, Greece, Italy, Malta, Portugal
Baltics	Estonia, Latvia, Lithuania
CEE-countries	Bulgaria, Czech Republic, Croatia, Hungary, Poland, Slovenia, Slovakia, Romania

Classification adapted from Lersch, P. M., & Dewilde, C. (2015). Employment insecurity and first-time homeownership: Evidence from twenty-two European countries. *Environment and Planning A*, 47(3), 607-624 (also see Chapter 1 of Deliverable 3.1)





Appendix D: Predictive margins with tenure insecurity as dependent variable, controlling for housing-welfare regime



Note: Lines are drawn Based on the predicted margins using "melogit" and the areas show 95% confidence intervals. Blue indicates secure workers and red indicates precarious workers. Models with significant interaction effect are marked with *.





Appendix E: Predictive margins with quality insecurity as dependent variable, controlling for housing-welfare regime

Note: Lines are drawn based on the predicted margins using "margins" and the areas show 95% confidence intervals. Blue indicates secure workers and red indicates precarious workers. Models with significant interaction effect are marked with *.

