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EqualHouse

**Deliverable 3.2: Housing Inequalities
Dynamic Framework**

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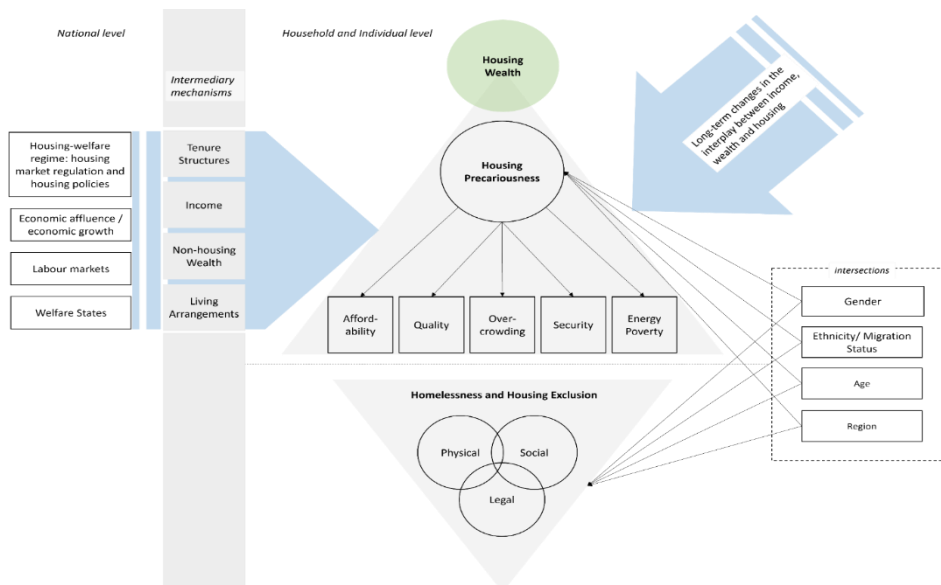




Executive Summary

Deliverable 3.1 of Work Package 3 provided a conceptual framework (see Figure 0), which served as a guide to profile relevant housing inequalities across European countries. Chapters of Deliverable 3.1 explored various aspects of housing inequality, ranging from: the theoretically-grounded development of a multidimensional measure of housing precariousness (Chapters 2-4); an analysis of tenure restructuring captured by the enhanced income-based stratification of homeownership entry over time (Chapter 5); an exploration of cross-sectional comparative aspects of housing wealth (Chapter 6); the variegated relationship across European housing-welfare regimes between labour market precariousness and housing precariousness (Chapter 7); and a critical discussion of old and new approaches to the measurement of homelessness across Europe (Chapter 8). This conceptual framework also provided the conceptual building blocks for a further, more in-depth, investigation of the interplay between income, wealth, and housing inequalities across European countries. This interplay is the main topic of the current report.

Figure 0. Graphical representation of the interplay between income, wealth, and housing





Chapter 1 of this report picks up on recent debate regarding the existence or nature of a ‘European housing crisis’. Across academic, policy and public debates, ‘the housing question’ has resurfaced as one of the more pressing social challenges of our times. The chapter, firstly, briefly reviews the antecedents of Europe’s alleged housing crisis. It then uses the newly developed multidimensional measurement approach to explore the ‘European housing crisis’. Using EU-SILC-data, **we investigate developments over time (2013-2018-2023) in increasingly severe degrees of housing precariousness, specifically focusing on the intersection with vulnerability.** Results from this analysis contribute to our understanding of how a European housing crisis could be emerging from long-term trends in housing, and how such a crisis should be understood from a comparative perspective. When looking at average trends in singular headline-indicators, developments over time are mostly stable (e.g. homeownership rates) or gradually improving (e.g. housing deprivation). This is reflective of long-term economic growth, associated with secular improvements in living standards and housing quality, typically resulting from renovation and the replacement of old housing stock by new build. Under the waterline, however, closer examination of typical combinations of housing problems, conceptualized in terms of increasingly severe degrees of housing precariousness, reveals that **impacts from long-term changes in housing provision are unevenly distributed. Levels and trends in absolute levels of housing precariousness as well as relative inequalities between vulnerable vs. non-vulnerable households are, furthermore, clearly variegated across Europe.** Whilst in some regions there is no apparent crisis and housing inequalities seem to improve (Eastern-Europe), in other regions there is a continued (Southern-Europe) or emerging (part of North-Western-Europe) housing crisis. Southern-European countries appear as the most disadvantaged of all. Southern-Europe seems to be stuck between two logics – pre-commodified vs. mortgaged homeownership –, in a context of slow economic recovery following a deep housing and/or economic crisis. It is here that a housing crisis has been clearly





visible above the waterline for quite some time. **Policy responses should take these comparative variations into account.**

Chapter 2 picks up on recent debate regarding the provision of affordable housing in Europe, and examines to what extent trends such as housing market liberalisation and increased low-income targeting may have contributed to more precarious housing conditions in the social housing sector. Using EU-SILC data from 2010–2023 across 21 European countries, we find a growing concentration of low-income and non-European migrant households in the so-called regulated rental sector, driven in part by declines in social housing in combination with more intense targeting. While this concentration suggests deepening residualisation, results of this chapter also reveal a paradox. **Despite the inflow of lower-income residents, we find mostly declining levels of housing precariousness within the regulated rental sector across Europe. On the other hand, increases in more vulnerable households (e.g. headed by a non-EU migrant) in the sector are positively associated with a higher occurrence of more severe forms of housing precariousness.** Possible explanations for this paradox are: (a) overall reductions in income poverty that contributed to improved living conditions of low-income groups; (b) a more effective integration of social housing with other social service providers; and (c) the determent and eviction of ‘worst-case’ residents from social housing in combination with the ‘recruitment’ of better-positioned households in new social housing stock. From an optimistic perspective, social housing proves to be quite resilient to societal crises and long-term financial pressures. Without more intense targeting, however, developments in housing precariousness would have been even more positive. Future research could further disentangle the various sources of these paradoxical trends, particularly in terms of changing composition of the population housed in the sector.

The first aim of Chapter 3, was to explore, across 22 European countries for the period 2010-2021 (HFCS, waves 1-4), the nature and direction of trends





in the inequality and concentration of gross housing wealth. Descriptive results indicate that trends in the development of (gross) housing wealth inequality and concentration are strongly diversified by the prevailing housing-welfare regime. An overall statistically significant time trend towards increased inequality and concentration of housing wealth across all households (i.e. between owners and renters) is mainly driven by developments across Western-European countries. Such a trend is most consistent in several Northern-European countries with a unitary rental market and across Southern-Europe, and is likely driven in part by increased income-based stratification of young-adult homeownership. Hence, **to the extent that access to homeownership is blocked for young adult-households, in particular for those with a lower income, we also see an emerging trend towards increased inequality and concentration of (gross) housing wealth across all households, i.e. between owners and renters.** Given the strong association between housing wealth and total wealth established in Chapter 6 of Deliverable 3.1, **tenure restructuring is therefore also an important driver of wealth inequality in general.** Whilst the overall polarization of (gross) housing wealth between owners and renters seems to be driven by changes in young-adult homeownership, a polarization of (gross) housing wealth between low wealth/income and high wealth/income homeowners seems to be more specific to young adult-homeowners. Across Eastern-European countries, similar time trends in terms of (housing) wealth inequality and concentration are far more benign, both across all households and across homeowner-households.

A second aim of Chapter 3 was to model the impact of various drivers of housing wealth polarization between owners and renters, and between richer and poorer homeowners. Next to the above-mentioned all-important driver of **declining or more intensely socially-stratified access to homeownership**, we find empirical evidence for the following drivers: changes/differences in available **mortgage credit** (impacting on the affordability of homeownership for different age cohorts, in various opposite ways); the extent of **house price acceleration**





(with house price booms intensifying differential capital gains for households with different income/wealth levels); **multi-property and rental property ownership** (concentrating housing assets in the hands of higher income/wealth households, potentially blocking access to homeownership for younger housing market entrants); and **the intergenerational transfer rate** (with mostly positive effects on the concentration and inequality of housing wealth across the income distribution of all households (homeowners), rather than of young households (homeowners), possibly pointing at the importance of inheritance for the housing wealth levels of older generations).

Chapter 4, finally, further investigated the relationship between labour and housing precariousness. Work and housing precariousness are closely intertwined, forming what is sometimes referred to as ‘double precariousness’. However, limited empirical evidence of cross-national variations in the extent of double precariousness suggests that the relationship between work and housing precariousness is more complex than often assumed (also see Chapter 7 of Deliverable 3.1), and that institutional arrangements may moderate this relationship. Against this background, we **examine how labour market and housing policies as institutional contexts shape the housing precariousness of precarious workers**, using multilevel modelling based on recent EU-SILC data (2023). We focus on policies designed to provide housing and labour market security, such as housing allowances, social housing, coverage of unemployment benefits and employment protection. By bringing together the labour market and housing literatures, this study contributes to knowledge of double precariousness and how policies can protect precarious workers from falling into housing precariousness. **Findings on the different dimensions of work precariousness and housing precariousness provide important evidence of nuanced mechanisms connecting the two. More specifically, the work-housing precariousness nexus goes beyond how much one earns: controlling for both labour income insecurity and household income, a relationship is found between employment security and both tenure insecurity and quality insecurity.** Uncertainties around future prospects due to insecure employment





contracts could make it difficult for individuals to make long-term plans in relation to obtaining more secure and better-quality housing, or they may be seen as less 'financially stable' by mortgage providers or landlords. On the other hand, ***whilst 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.***

Chapters in this report respond to Objectives 3-4, as listed in the Work Package Description.





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1 Chapter 1. Europe's Emerging Housing Crisis Investigated

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1.1 Introduction

Across academic, policy and public debates, 'the housing question' has resurfaced as one of the more pressing social challenges of our times (e.g. Egner and Krapp, 2025, Lafrati, 2024, Dewilde et al., 2025). At the level of the European Union (EU), housing recently became a focal point for policy, despite it not traditionally being an EU-competence. Housing issues are framed in terms of a European-wide crisis, requiring urgent collective action. This has resulted in the appointment of a Commissioner for Housing and Energy, the establishment of a European Parliament Task Force on Housing, and the launch of a European Affordable Housing Plan.

Yet, is there a single 'European housing crisis'? And to what extent are we dealing with a crisis in the sense of a deterioration of housing outcomes for all, or rather with an emerging crisis, rising slowly from under the waterline and characterized by a more intense concentration of specific housing problems affecting, in particular, more vulnerable households? Furthermore, how can we explain levels and trends in absolute housing outcomes vs. relative housing inequalities between more and less advantaged households?

The first section of this chapter starts from the conceptual framework set out in Chapter 1 of Deliverable 3.1 (Dewilde et al., 2025), pertaining to the drivers and nature of what could be denoted as 'Europe's emerging housing crisis'. We review theoretical and empirical insights arising from recent research. Next, using the multidimensional measurement approach developed to profile housing inequality based on data from EU-SILC (EU-Statistics on Income and Living Conditions (Gielens et al., 2025, Chapter 4 of Deliverable 3.1), we investigate





developments over time (2013-2023) in increasingly severe degrees of housing precariousness, focusing on the intersection with vulnerability.

Results from this analysis contribute to our understanding of how a European housing crisis could be emerging from long-term trends in housing, and how such a crisis should be understood from a comparative perspective. When looking at average trends in singular headline-indicators, developments over time are mostly stable (e.g. homeownership rates) or gradually improving (e.g. housing deprivation) (e.g. Winters, 2025). This is reflective of long-term economic growth, associated with secular improvements in living standards and housing quality, typically resulting from renovation and the replacement of old housing stock by new build. Under the waterline, however, closer examination of typical combinations of housing problems, conceptualized in terms of increasingly severe degrees of housing precariousness, reveals that impacts from long-term changes in housing provision are unevenly distributed. Differences in levels and trends are, however, clearly variegated across Europe. Whilst in some regions there is no apparent crisis, in other regions there is a continued or emerging housing crisis. Adequate policy responses, therefore, take such variation into account.

1.2 Theoretical background: What, why, and how?

1.2.1 Comparative differences in housing outcomes

Across European countries, housing is generally financed, produced and allocated through the market (e.g. Bengtsson, 2001). The mode of housing consumption, reflected in the tenure structure of a country – owning vs. private and social renting –, is hence strongly determined by households' market power in terms of income and wealth. Market regulation (e.g. rent regulation) and housing policies (e.g. social housing and rent allowances) improve access to decent and affordable housing for low-income households. Compared with renting, homeownership is typically associated with better housing outcomes,





the latter commonly indicated by housing affordability, quality of housing, and security of tenure. Homeownership rates are, furthermore, consistently higher when moving up the income distribution. Depending on comparative variations in so-called ‘housing-welfare regimes’, relationships between income/wealth and tenure vary systematically, as do relationships between tenure and variegated configurations of housing outcomes (e.g. Kemeny, 2001, Kemeny, 1981, Grander and Stephens, 2023, Flynn and Montalbano, 2023, Dewilde, 2017, Borg, 2015, Hick et al., 2024, Dewilde and Waitkus, 2024, Norris and Domanski, 2009, Norris and Shiels, 2007, Dewilde et al., 2025, Lersch and Dewilde, 2015). See Table 1.1 for an overview of key indicators across European housing-welfare regimes.

The income gradient in homeownership (see Chapter 6 of Deliverable 3.1) is most outspoken across North-Western-European (NWE) countries, where houses are mostly bought on the market and financed by mortgage credit. In the so-called unitary rental market-countries, both owning and renting are supported by public policy and are therefore of reasonable quality. Households across the income distribution theoretically have more choice whether to own or rent. However, notwithstanding higher levels of ‘tenure neutrality’, about two-thirds of low-income households and half of middle-income households select into renting, with conversely, much higher levels of homeownership amongst high-income households. In unitary rental market-countries, (mortgaged) homeownership is hence selective of high-income households. Low-income households select into (social) renting, but given stricter rent regulation and higher housing allowances, in combination with more and better accessible social housing, renting constitutes an attractive alternative to owning. Housing provision is generally more de-commodified, leading to overall better housing outcomes and lower relative inequalities in housing outcomes between vulnerable and non-vulnerable households.





In the dual-rental market homeownership countries, a smaller social housing sector is increasingly targeted towards poorer households, with larger numbers of low-income households relying on private renting. The latter is less strictly regulated, and tends to offer lower quality at higher cost. Ideological and policy preferences favour homeownership, which is the majority tenure across the income distribution, but with much higher rates for higher-income vs. lower-income households (about 85 per cent vs. about 50 per cent). In dual rental market-countries, renting is selective of low-income households. As rental housing is also less de-commodified, this translates into a higher level of absolute housing problems, and starker relative inequalities in various housing outcomes between vulnerable and non-vulnerable groups.

As we move from Northern- to Southern-Europe and from Western- to Eastern-Europe, a more pre-commodified form of inherited homeownership is increasingly common amongst moderate-income (about 70 per cent) and low-income households (about 80 per cent). Across the Southern-European (SE) family-based homeownership regime, the Baltics and the Central-and-Eastern European countries (CEE), outright homeownership is the dominant tenure across income groups; income gradients are consequently smaller. Within the homeownership segment, however, heterogeneity in terms of housing outcomes, also indicated by differences in housing value, result from the use of more informal strategies of self-provisioning affecting quality of housing (Manzo et al., 2019, Druta and Ronald, 2018, Allen, 2006, Soaita and Dewilde, 2019, Mandic and Cirman, 2012). Outright homeownership is associated with better housing affordability based on objective measures, but with higher housing-related costs due to lower building quality, hence contributing to perceived housing unaffordability as well as energy poverty. Across Eastern-Europe, the legacy of 'crude egalitarianism' resulting from the mass-privatization of state-provided housing following the collapse of state-socialism, has given way to growing socio-





economic stratification of housing resources, though more based on housing value, housing type, quality and location, than on housing tenure. Growing housing inequality could be expected from strong increases in income inequality, and from intensified intergenerational support for homeownership (e.g. Lux et al., 2013, Soaita and Dewilde, 2021, Lux et al., 2021, Stephens et al., 2015). Housing resources are furthermore redistributed in alternative ways within extended families, with poorer households resorting to multi-generational living and self-built in order to mitigate problems of supply and affordability. Though higher levels of accumulated absolute housing problems have been reported in these housing-welfare regimes (e.g. Clair et al., 2019, Hick et al., 2022), the severity of housing precariousness tends to be mitigated by higher rates of outright homeownership and other household strategies (Gielens et al., 2025). On the other hand, the common assumption of 'lower housing quality across the board' potentially obscures larger or growing differences in typical configurations of housing outcomes between vulnerable and non-vulnerable households (e.g. Soaita and Dewilde, 2021, for Romania). It is, furthermore, unclear to what extent findings from previous cross-sectional research still hold, given recent exceptional economic growth in several East-European countries (see Table 1.1).

1.2.2 Trends in housing outcomes

Long-term processes of housing (re-)commodification and financialization have been argued to contribute to increasing housing inequality (e.g. Dewilde et al., 2025, Dewilde and Waitkus, 2024). Housing (re-)commodification indicates a process of declining (direct) state intervention in tune with a higher reliance on market mechanisms. Social housing in particular became less available (e.g. Kholodilin et al., 2024), with further complicated outcomes for different groups of tenants. On the one hand, older housing stock has been increasingly targeted towards lower-income households, though more recently such targeting became accompanied by enhanced conditionality (e.g. Angel, 2023, Gielens and Dewilde,





2025a). On the other hand, organizational hybridization has implied the incorporation of market principles, with newer housing stock selectively allocated to 'less risky' clients paying affordable (rather than social) rents (Blackwell and Bengtsson, 2023, Hochstenbach, 2025, Grander, 2024). These developments are geared towards enhancing financial sustainability under conditions of welfare state retrenchment, but risk pushing the most vulnerable, with the highest housing needs, out of the sector altogether. Though initially more prominent in dual rental market-countries, unitary rental market-countries are currently undergoing similar processes of transformation.

Housing financialization pertains to the increased reliance of homeownership expansion on (global) finance, initially in terms of mortgage finance liberalisation, but later on (driven by real house price increases in a context of restricted supply, abundant credit and speculative demand) also in terms of the procurement and transaction of actual housing, including (social) rental housing (Ryan-Collins, 2021, Ryan-Collins and Murray, 2021, Aalbers, 2016). The rise of real estate property as an asset class has fuelled, and was fuelled by, rentier interests of investor-homeowners, small-scale landlords, multi-property owners, and various types of domestic and foreign investors (including institutional investors, such as pension funds or social housing providers) (Gabor and Kohl, 2022, Kohl, 2021, Wijburg and Aalbers, 2017). Housing financialization and associated price increases, as well as volatility and resulting credit restrictions, are associated with reduced affordability of access to homeownership, especially for younger and poorer households, and with enhanced socio-economic stratification of homeownership entry, further amplified by unequally available intergenerational family support (e.g. Gielens and Dewilde, 2025b, Dewilde, 2020). Intensified housing market financialization, underpinned by generous welfare state benefits and high levels of female labour market participation allowing for the expansion of (highly-leveraged) mortgaged homeownership, has placed the unitary rental market-





countries with a social-democratic welfare state on a different, more financialized homeownership-focused trajectory compared with unitary rental market countries of conservative-corporatist descent (e.g. Lennartz, 2017, Johnston et al., 2021, Grander and Stephens, 2023). Housing financialization has also increased heterogeneity within the Southern-European family-based homeownership regime, with in particular Spain, Portugal, Cyprus and Malta embarking on a trajectory of financialized homeownership partly fuelled by a combination of more uncontrolled mortgage market liberalization and new housing construction¹ (e.g. Norris and Byrne, 2015). Consequences of the Global Financial Crisis (GFC) were more adverse in these countries, resulting in volatility, repayment problems and repossessions (Fuentes et al., 2013), as well as fiscal and economic restructuring, including austerity packages. Greece stands out as the country that continues to be most affected, for instance in terms of the population at risk of poverty and social exclusion (26.9 per cent in 2024; also in Spain (25.8 per cent) and Italy (23.1 per cent), AROPE-rates are comparatively high).²

Reduced access to homeownership and social housing for a heterogeneous group of less advantaged households has created a high demand for private rental housing, particularly in the more 'affordable' segments. Newer private rental housing (e.g. Buy-to-Let) generally does not cater to poorer households, resulting in a so-called 'private rental paradox' (Hulse and Yates, 2017). Mismatches between supply and demand, in a context of real house price increases and a creeping decline in rent regulation, has contributed to declining housing affordability for, in particular, low-income renters (Dewilde, 2018, Hick et

¹ Similar also to Ireland.

² EUROSTAT (downloaded 07/01/2026).





al., 2024). Europe's emerging housing crisis is predominantly arising from a rental affordability problem concentrated on more vulnerable households locked out of other housing segments.

Heterogeneous trajectories of housing-welfare regime change depend on the peculiarities of housing provision systems, specifically with regard to financialization. Housing financialization strikes when institutional complementarities between aspects of housing systems and other economic sectors open up profit-making opportunities (Matznetter, 2020, Flynn and Montalbano, 2023). For households with less market power, however, long-term processes of (re-)commodification and financialization have been shown to result in deteriorating housing outcomes and living conditions as well as growing housing inequality, though mostly in Western-European countries (Dewilde and De Decker, 2016, Dewilde, 2022, Hick et al., 2024). Across Eastern-Europe, grown economic affluence, in combination with a continued reliance on outright 'super-homeownership' redistributed within extended families rather than transacted on the market, could, absolutely speaking, be expected to result in improved housing outcomes across the board.





Table 1.1. Key indicators of European housing-welfare regimes (2023, EU-SILC individual-level results, weighted)

Housing-welfare regime		HO-rate (%)	Mortgaged HO (%)	Renting market rate (%)	Renting reduced rate (%)	Rent-free + co-residence (%)	Gross Domestic Product per capita (GDP)a	GDP-growth, 2009-2023 (%-change)a	Residential Mortgage Debt (RMD)/GDP 2009 (%)b	RMD/GDP, Δ2009-2023b	Real house price index, (2015=100)c	House price-to-income ratio (long-term average=100)c	Rent prices, (Index, 2015=100)d
Social-democratic unitary rental market-countries	DK	60.1	47.3	0.0	39.8	1.5	51511	21.0	93.7	-19.4	118.9	105.1	112.7
	NL	70.1	59.2	4.5	24.7	4.1	52049	15.8	103.8	-23.9	139.6	106.8	118.5
	SE	64.6	49.9	0.0	34.6	2.6	47179	17.9	75.8	11.1	105.0	112.9	113.2
Conservative-corporatist unitary rental market-countries	AT	54.3	23.5	32.6	7.5	12.2	44949	9.3	25.5	3.6	127.1	125.6	132.3
	DE	47.7	23.8	46.8	3.1	6.4	45065	16.3	46.9	-1.5	119.5	103.3	112.6
	FR	63.1	31.3	16.0	19.2	6.9	39484	11.1	37.7	8.4	110.3	103.2	104.8
NWE homeownership countries with a dual rental market	BE	71.9	45.9	19.6	7.4	6.9	44631	14.0	43.8	10.2	106.2	102.9	119.7
	FI	69.2	39.4	15.6	14.5	2.4	40815	7.6	39.5	-0.8	89.3	83.5	114.3
	IE	69.3	36.4	13.9	15.4	12.2	84385	97.6	87.0	-7.1	134.3	95.2	153.6
	LU	67.6	41.8	13.5	17.4	6.9	89996	1.6	46.2	9.2	143.6	132.5	111.1
	NO	79.2	59.8	19.1	0.5	3.4	62849	7.5	67.5	2.1	106.8	118.9	117.7
UK*	65.1	37.5	29.8	4.1	8.3	40945	13.8	77.8	4.1	111.7	123.7	117.3	
SE family-based homeownership countries	CY	68.8	19.9	14.0	0.7	27.5	41532	23.5	55.6	-27.6	100.3	71.1	NA
	ES	73.7	23.4	17.2	5.2	13.7	35244	10.4	57.2	-24.9	123.4	96.6	108.6
	GR	75.3	30.2	15.8	3.4	17.6	26945	-8.8	33.9	-2.1	136.5	103.3	97.9
	IT	69.6	9.9	22.7	1.0	15.9	37344	7.9	26.2	-5.8	91.0	85.1	105.1
	MT	75.2	13.7	16.7	2.1	15.5	45602	66.7	40.0	3.1	128.2	100.1	NA
	PT	76.0	34.5	11.9	4.3	20.0	30889	15.1	63.1	-25.3	169.1	127.8	121.1





Housing-welfare regime		HO-rate (%)	Mortgaged HO (%)	Renting market rate (%)	Renting reduced rate (%)	Rent-free + co-residence (%)	Gross Domestic Product per capita (GDP) ^a	GDP-growth, 2009-2023 (%-change) ^a	Residential Mortgage Debt (RMD)/GDP 2009 (%) ^b	RMD/GDP, Δ2009-2023 ^b	Real house price index, (2015=100) ^c	House price-to-income ratio (long-term average=100) ^c	Rent prices, (Index, 2015=100) ^d
Baltics	EE	81.0	26.8	6.3	3.5	14.1	29773	41.6	43.0	-13.5	132.9	105.3	159.0
	LV	83.1	14.0	6.4	5.1	12.9	27528	56.2	36.5	-24.6	135.7	87.4	112.7
	LT	88.8	16.8	2.3	1.6	11.7	34040	76.1	22.4	-5.5	143.2	90.4	168.4
CEE-countries	BG	86.1	1.8	2.2	1.9	21.4	22823	59.0	10.2	1.8	128.3	58.3	128.7
	CZ	76.0	20.7	18.4	0.9	11.5	34161	24.8	14.1	7.6	144.8	115.1	131.0
	HR	91.2	7.0	1.4	1.1	24.8	28261	38.8	17.0	-2.8	142.3	93.3	119.4
	HU	90.5	13.3	4.2	2.9	12.8	31433	46.8	23.8	-16.2	165.6	102.6	166.5
	PL	87.1	12.2	4.4	0.9	17.4	32932	63.7	16.6	-1.9	124.5	87.9	158.9
	SI	75.2	17.4	5.7	3.6	22.5	34684	26.7	10.8	2.3	146.4	103.8	160.2
	SK	93.6	25.0	3.6	1.5	23.2	33270	40.6	14.8	17	126.3	97.2	113.9
	RO	95.6	1.3	1.3	1.0	18.0	28085	56.4	4.6	1.9	97.5	58.7	130.2

Note: in DK and SE, all renters were re-classified as renting at reduced rate, given overall stricter rent regulation. Co-residence approximates multi-generational living of adult generations and is added to rent-free housing to give an impression of family-supported housing.

^a: UNECE Statistical Division Database, US\$, at prices and PPPs of 2010.

^b: HYPOSTAT, European Mortgage Federation (EMF), various years.

^c: EUROSTAT (tipsho10, tipsho60).

^d: OECD (Analytical House Price Indicators); nominal.

*: EU-SILC 2018. As of November 2017 Housing Associations in the UK are no longer classified by ONS as social housing providers, but as 'private non-financial cooperations'. GDP per capita is for 2022.





Finally, a complex process of tenure restructuring arising from the interplay between changing characteristics of different housing tenures, and enhanced social sorting of vulnerable groups in social and especially private rental housing, has been argued to result in starker polarization between ‘insiders’ (owners of housing resources) and ‘outsiders’ (those who live in housing owned by others). More advantaged households are not only increasingly concentrated in the homeownership segment. Particularly for more advantaged property owners and/or in better locations, housing financialization has enabled for housing pathways to amplify cumulative advantage, through uneven trends in housing wealth gains (e.g. Wind and Hedman, 2018, Galster and Wessel, 2024), but also by enhancing multi-property ownership and the intensified redistribution of resources (i.e. through higher rental payments) from renters to landlords. On the other hand, for less advantaged homeowners, particularly in left-behind regions, value developments have been far more modest (e.g. Dewilde and Flynn, 2021, Flynn and Kurzer, 2025), contributing to wealth polarization between richer and poorer homeowners. Both for poorer owners (over-indebtedness, lower-valued housing) and poorer renters (subject to rentier interests of more financialized landlords), closer relationships with financial markets and market volatility have not only impacted on affordability of housing, but also on security of tenure (Zhang, 2023, Haffner et al., 2017). Energy and climate risks furthermore intensify the cost and impact on living conditions of low-quality housing (Flynn and Kurzer, 2025). In more recent research, therefore, the enhanced concentration of specific combinations of more durable housing problems within more vulnerable social groups has increasingly been conceptualized in terms of housing precariousness (see next section).

1.3 Developments in housing precariousness, 2013-2023

Differences between (ideal-typical) housing-welfare regimes translate into variegated configurations of combined housing problems at the meso-level





(social groups) and micro-level (households and individuals). In this chapter, rather than simply ‘adding up’ housing problems into a summative index³ (e.g. Hochstenbach, 2025, Clair et al., 2019), Latent Class Analysis was used to obtain a multidimensional profiling of housing inequalities across European countries. Given pressures towards increasing housing insecurity over time, affecting especially more vulnerable households, we identified different degrees of housing precariousness (Gielens et al., 2025). To avoid results being driven by comparative and sometimes counter-intuitive differences in income distributions across the European space,⁴ trends in housing precariousness over time are disaggregated for ‘vulnerable’ vs. ‘non-vulnerable’ households, rather than for low-income vs. other households. Vulnerability is defined such that varying causes of vulnerability across countries are taken into account (see further).

1.3.1 Degrees of housing precariousness

Selected housing problems were profiled based on a latent class measurement model aimed at identifying increasingly severe degrees of housing precariousness. This measurement model was derived from EU-SILC-data (2010-2020; 2023), and validated on both a pooled dataset of 31 countries combining all available years, and on data from individual waves. A full description of this analysis is available in Gielens et al. (2025). Given the focus of this chapter on the emerging housing crisis across Europe, trends in housing precariousness were investigated over the last ten years, singling out the years 2013, 2018 and 2023.

There is no generally agreed-upon definition of ‘precarious housing’. Research so far has mostly focused on accumulated housing problems in the private rental

³ Cumulative indexes assume that different (combinations of) housing problems are directly comparable and or interchangeable; various stacked combinations, however, may have different meanings and consequences.

⁴ For instance, across Eastern-European countries, a much higher proportion of elderly has a low income (bottom tertile), in comparison with Western-European countries. Intersections between income and age could therefore drive comparative differences in degrees of housing precariousness, rather than vulnerability as understood in this chapter.





sector (e.g. Listerborn, 2023, Waldron, 2023), where issues of tenure security, quality and affordability are long-standing problems. For many authors, tenure insecurity constitutes a vital component, as indicated by De Luca & Rosen (2022: 345): “*the state of having difficulty acquiring housing, having minimal control over one’s housing, being at risk of losing housing, being uncertain about tenure*”, or Dorling (2014: 20): “*constantly having to move, not when you choose to but when you are forced to*”. Precarious housing, however, is also indicated by housing quality problems, housing unaffordability (in particularly when missed rent or mortgage payments contribute to evictions risks) and neighbourhood problems (e.g. Routhier, 2019, Cox et al., 2017), compromising people’s capabilities to ‘feel at home’. Crucially, precarious housing is characterised by the stacking or cumulation of various housing problems, often in co-occurrence with other vulnerabilities, e.g. health or precarious work/unemployment (Clair et al., 2019, Beer et al., 2016).

Opponents of composite measures of ‘precarious housing’ argue that problems such as housing affordability or housing quality have fundamentally different causes, therefore also necessitate different policy solutions, and are hence better studied as separate outcomes (Hick et al., 2024, Eurofound, 2016). As discussed above, however, from a comparative perspective, different housing provision systems and tenure structures contribute to explaining qualitatively different configurations of housing outcomes (Dewilde, 2017). An exclusive focus on isolated housing problems, furthermore, ignores the theoretical relevance and practical importance of intersections. Households and individuals confronted with multiple co-occurring housing problems constitute a vulnerable group – the ‘precariat’ (Listerborn, 2023, Standing, 2011) – which remains invisible when looking at average trends in separate stand-alone indicators. There is, however, a group of people for whom the stacking of various (housing) problems constitutes a bleak reality that is characterized by a certain persistence. This reality is,





furthermore, created and sustained, in part, by the ways in which housing is provided.

Latent class analysis (LCA) is a statistical method used to cluster respondents (individuals in interviewed households), based on observed answering pattern across a range of theoretically-relevant indicators (Vermunt and Magidson, 2004, Collins and Lanza, 2009). The aim of the original analysis was to identify *combinations of housing problems that have a higher likelihood of co-occurring*.

Table A1.1 in Appendix lists the indicators underlying this latent class analysis. Given that older research in the context of the development of EU-headline indicators of poverty and social exclusion (AROPE) consistently found that, in a European context, neighbourhood problems indicate urban-rural differences rather than situations of vulnerability, these were not included as housing problems (e.g. Whelan and Maître, 2007). Unfortunately, more direct measures of housing insecurity across all waves were not readily available, so we had to rely on rent/mortgage arrears.

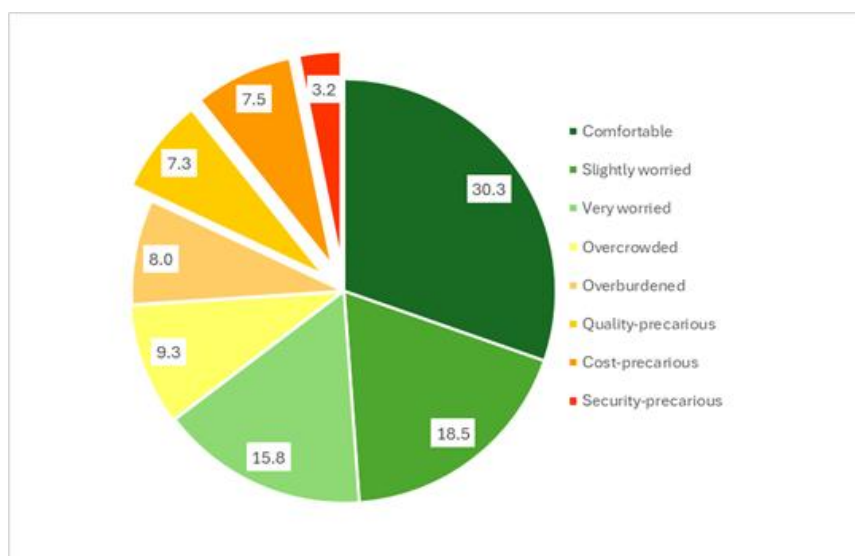
In the original analysis, eight latent classes were identified (see Figure 1.1): comfortable; slightly worried; very worried; overcrowded; overburdened; quality-precariousness; cost-precariousness; and security-precariousness. The latter three classes indicate increasingly severe degrees of housing precariousness. They are characterized by different co-occurring patterns of housing problems (see Table A1.2 in Appendix). The 'quality-precarious' class (7.3 per cent) scores relatively high on energy poverty and housing deprivation. Notably, while this cluster is not objectively overburdened, housing costs are experienced subjectively as a heavy burden, and utility arrears are relatively frequent. This implies that this group faces high costs of living relative to their income, likely in part due to lower housing quality. Those in the 'cost-precarious' cluster (7.5 per cent) are all overburdened in terms of housing costs, in addition to a majority experiencing a heavy subjective burden, and a substantive proportion having difficulties heating their house, and living in overcrowded and low-quality housing. Finally, a small





cluster of ‘security-precarious’ respondents (3.2 per cent) faces more extensive housing problems. All of them have been in rent/mortgage arrears, experience a heavy cost burden, and around half of them has unaffordable housing costs. This is paired with relatively high rates of utility arrears, low-quality housing and overcrowding. Affordability problems in this group seem to have transitioned into arrears, leaving them at a higher risk of being evicted. Across Europe, about 18 per cent of respondents is confronted with some form of housing precariousness, with strong regional variations in terms of type and level (see further). This number is similar to other recent studies on housing precarity (e.g. Clair et al., 2019, who used an additive index based on a larger set of indicators from an ad-hoc module of EU-SILC).

Figure 1.1. Latent Class Analysis of housing problems in Europe (%) (Gielens et al., 2025)



1.3.2 Trends in housing precariousness

Next, we investigate trends in degrees of housing precariousness during the post-crisis period (2013-2018-2023), assessing both absolute levels and relative inequalities. First, we describe results across Europe, for the 26 countries for





which we have data in all three waves. Next, we distinguish between six commonly recognized housing-welfare regimes discussed above (also see Table 1.1).

Rather than looking at aggregate developments, we take an intersectional approach and distinguish between respondents living in ‘vulnerable’ vs. ‘non-vulnerable’ households. To abstract from comparative differences in causes of vulnerability between Western- and Eastern-Europe, vulnerability is defined as: living in a household at risk of income poverty (poverty line based on 60 per cent of median country-specific population income); or living in a single-parent household; or living in a household with three or more children below the age of 16; or living in a household where the household reference person was born outside of the EU;⁵ or living in a household where more than 40 per cent of annual disposable income is derived from either unemployment benefits or social exclusion spending (mostly social assistance benefits). Across years, countries and waves, about 29 per cent of the European population is identified as ‘vulnerable’. In 2023, for instance, the lowest vulnerability rate is found in the Czech Republic (18.5 per cent) and the highest vulnerability rate is found in Estonia (39.7 per cent). Across Eastern-Europe, vulnerability is more closely associated with being income poor, whilst across Western-European countries, other socio-demographic determinants are relatively more important towards identifying a household as vulnerable.

Figure 1.2 addresses trends over time across a pooled sample of 26 European countries. We note that, over the post-crisis period, cost-precariousness has declined steadily from 9.8 to 6.2 per cent, which is likely explained by improving household incomes, thanks to economic recovery (Western-Europe) and economic growth (Eastern-Europe). Cost-precariousness is much higher for

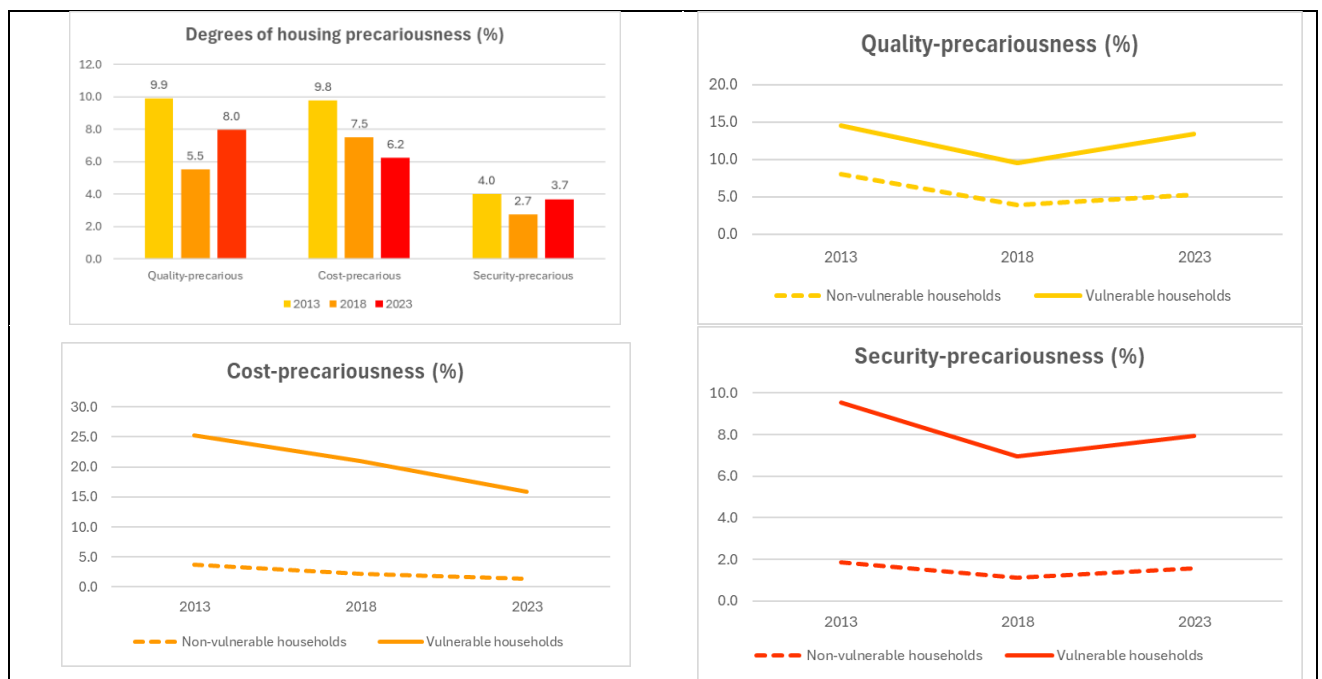
⁵ In Germany, Estonia, Latvia, Malta, Romania and Slovenia, EU-born migrants are not separated from non-EU-born migrants, and were included as ‘vulnerable’.





vulnerable compared with non-vulnerable households (25.3 vs. 8.4 per cent in 2013), but improvements over time were relatively stronger for vulnerable households (15.9 per cent vs. 1.4 per cent in 2023). *Especially cost-precarious vulnerable households seemed to have moved into opposite directions during the period under study: compared to non-vulnerable households, they were somewhat more likely to either ‘promote’ to quality-precariousness, or to ‘slide’ into security-precariousness. This interpretation is supported by the U-shaped pattern for both the least and most severe degree of housing precariousness, which is also somewhat more outspoken for vulnerable households: following a decline in quality- and security-precariousness between 2013 and 2018, the period 2018-2023 is characterized by an upward trend.*

Figure 1.2. Trends in degrees of housing precariousness (26 European countries)



Source: EU-SILC (2013; 2018; 2023).





Figures 1.3 and 1.4 present degrees of housing precariousness for both types of unitary rental market countries. Few non-vulnerable respondents are confronted with any form of precarious housing (mostly below 2 per cent, below 5 per cent in France). When housing precariousness does occur, it is mostly of the most severe type (security-precariousness). We furthermore note small decreases in housing precariousness between 2013 and 2018, followed by small increases between 2018 and 2023, mostly due to increases in quality-precariousness. Though small, such increases could be significant, because they go against a secular trend of gradually improving housing quality linked to economic growth and renewal of the housing stock. In both country groups, vulnerable households are more likely to be confronted with varying degrees of housing precariousness. Risks of housing precariousness are, however, much higher for vulnerable households in conservative-corporatist countries (on average around 20 per cent of vulnerable households), compared with social-democratic countries (on average less than 10 per cent of vulnerable households). This likely reflects differences in welfare state de-commodification (generosity of social benefits) and stratification (unequal division of social benefits). However, even in the more generous social-democratic welfare states, some households still fall through the cracks of the social safety net, and when they do, housing precariousness tends to be of a more severe degree.

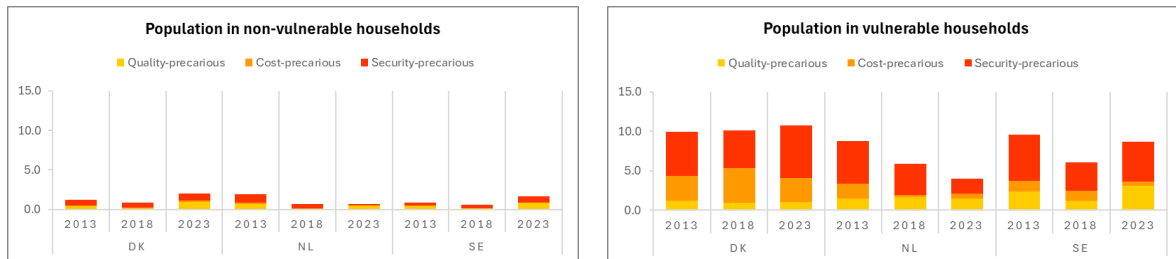
Trends over time are more outspoken for vulnerable households. Apart from the Netherlands, where housing precariousness more than halved between 2013 and 2023, the U-shaped pattern is again discernible, with stronger increases in quality-precariousness and/or security-precariousness between 2018 and 2023. Both in terms of absolute levels as in terms of relative differences between vulnerable and non-vulnerable households, housing inequality *increased* during the last five years (the Netherlands constituting an exception). This is not so much driven by changes in cost-precariousness, but rather by either higher quality-





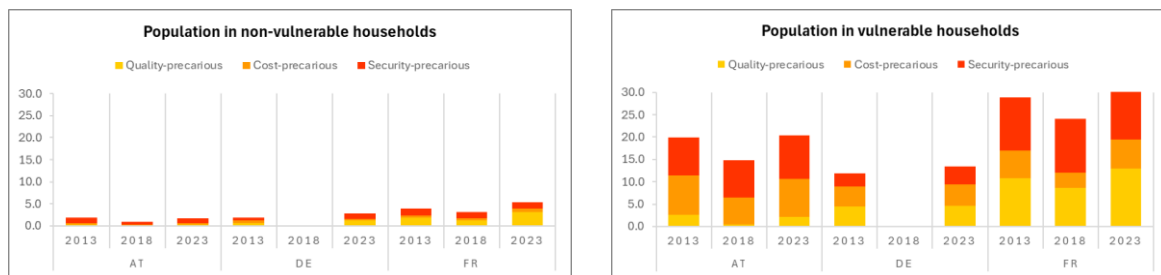
precariousness or by more severe housing insecurity characterized by housing cost arrears.

Figure 1.3. Trends in housing precariousness, social-democratic unitary rental markets



Source: EU-SILC (2013; 2018; 2023).

Figure 1.4. Trends in housing precariousness, conservative-corporatist unitary rental markets



Source: EU-SILC (2013; 2018; 2023).

Figure 1.5 shows developments for the so-called dual rental-market countries of North-Western Europe. Again, with the exception of Ireland in 2013, respondents in non-vulnerable households are not likely to experience any form of housing precariousness (below 5 per cent). In most countries, security-precariousness is again the most common form of housing precariousness, when it does occur. Within this cluster of countries, housing precariousness rates for vulnerable households clearly depend on the type of welfare state, with low rates of mostly security-precariousness in Finland and Norway (below 10 per cent). Much higher rates of housing precariousness affect vulnerable households in





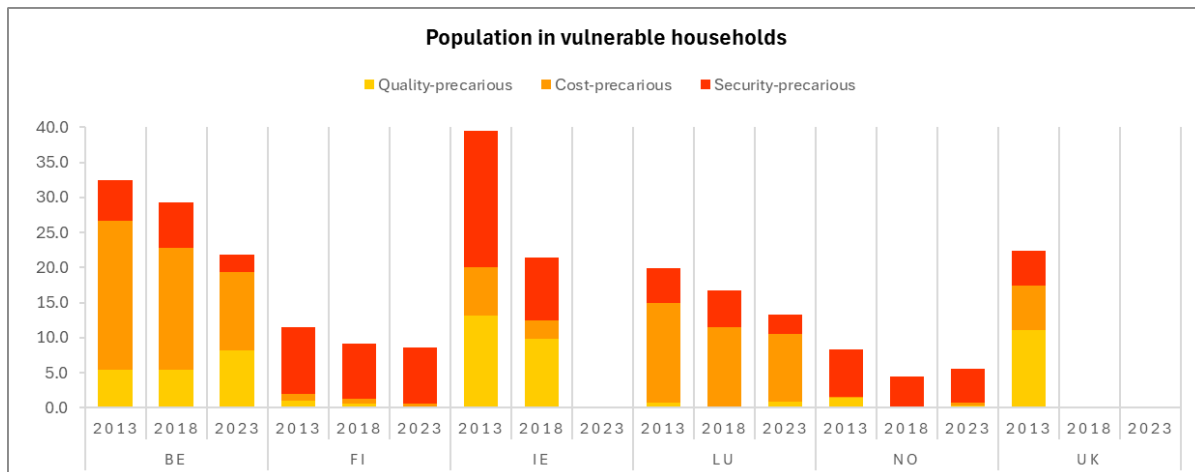
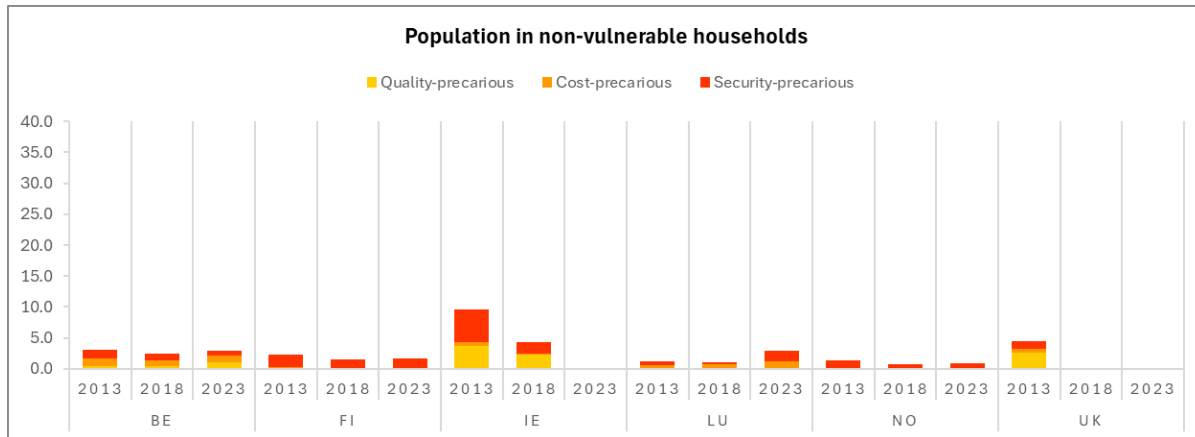
Belgium, Luxembourg, Ireland and the United Kingdom (around 25 per cent), with cost-precariousness being more prominent in this housing-welfare regime. Hence, in dual rental-market countries, social and housing policies (i.e. social transfers) seem important in terms of keeping (rental) housing affordable. Apart from Norway – where a U-shaped pattern is again discernible – there are strong declines in housing precariousness between 2013 and 2023 for vulnerable households in particular, indicating *declining* absolute and relative housing inequality over time. For non-vulnerable households, we note a small increase in housing precariousness over the last five years in Belgium and Luxembourg.

As we move to Southern-Europe (Figure 1.6), relative differences in housing precariousness between respondents in non-vulnerable vs. vulnerable households are again more outspoken (on average across countries, respectively around 15 per cent vs. 50 per cent). In Greece, levels of housing precariousness are high for both groups (respectively around 40 per cent vs. 85 percent), with cost-precariousness being the dominant form of housing precariousness. Otherwise, compared with vulnerable households, non-vulnerable households mostly experience the less severe form of quality-precariousness. Vulnerable households more often experience the more severe forms of cost-precariousness and security-precariousness. This qualifies the common assumption that across Southern-Europe (where most households are outright owners), housing problems tend to be mostly less severe housing quality problems, or that housing inequalities are smaller.



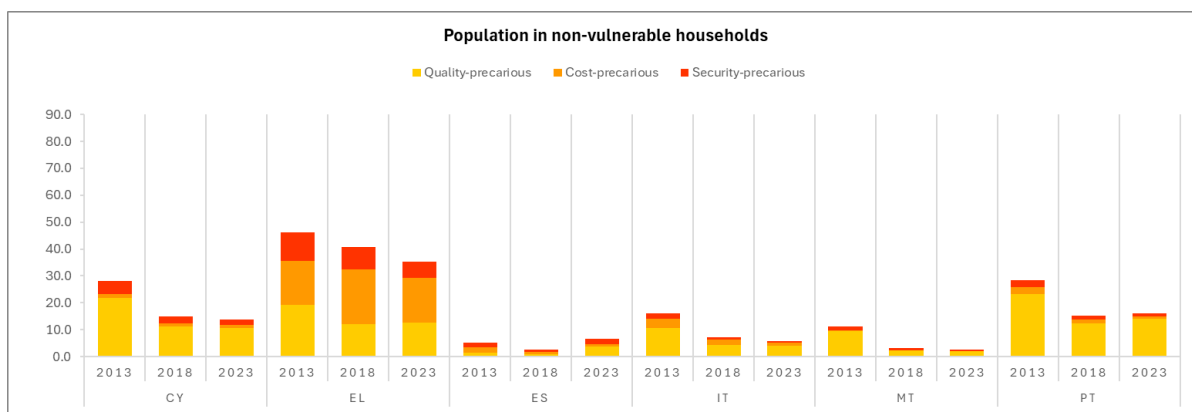


Figure 1.5. Trends in housing precariousness, dual rental market homeownership countries



Source: EU-SILC (2013; 2018; 2023).

Figure 1.6. Trends in housing precariousness, Southern-European family-based homeownership

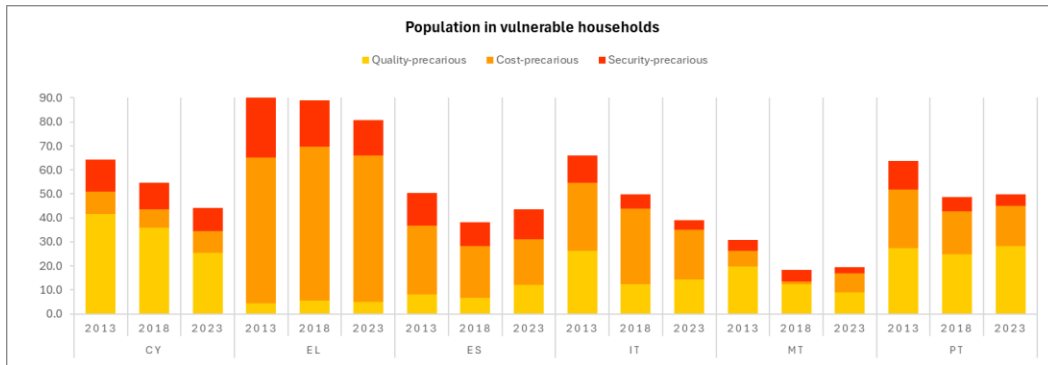


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Figure 1.7. Trends in housing precariousness, Southern-European family-based homeownership
(continued)



Source: EU-SILC (2013; 2018; 2023).

In general, we note a pattern of declining housing precariousness from 2013 to 2023, with somewhat stronger declines for vulnerable households (be it from rather high levels), indicating *declining* relative housing inequality. However, the ‘Northern-European’ U-shaped pattern of slightly increasing housing precariousness between 2018 and 2023 is again visible in Spain and Portugal for both groups of households, and for Malta for vulnerable households. These are the countries that embarked on a more financialized trajectory of housing provision (see Table 1.1).

Strong economic growth in the Baltics (see Table 1.1, Figure 1.7) has resulted in levels of housing precariousness that are generally lower compared with Southern-European countries: on average affecting about 15% of non-vulnerable households (mostly quality-precariousness) and around 40% of vulnerable households (again mostly quality-precariousness). Though this average is driven by the very positive outcomes for Estonia, the Baltic states have clearly progressed in terms of the occurrence of stacked housing problems. Housing precariousness in the Baltics is less severe compared with Southern-Europe, as both non-vulnerable and vulnerable households face less severe degrees of housing precariousness. Security-precariousness is less common, which could be linked to ‘super-high’ levels of outright homeownership. Between 2013 and 2023, we note more or less

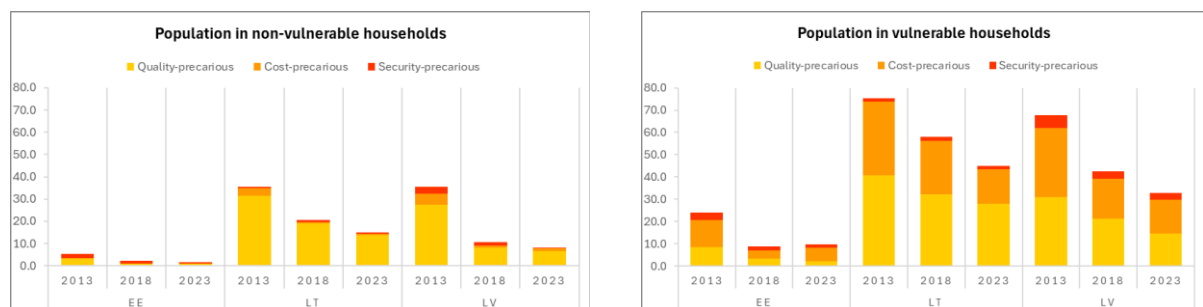




equally strong declines in housing precariousness for non-vulnerable and vulnerable households, indicative of improvements over time of stacked housing problems, absolutely speaking. The only increase between 2018 and 2023 is noted for Estonia, driven by an increase in cost-precariousness.

There are large variations in terms of levels and degrees of housing precariousness between Central-and-Eastern-European countries. Levels of housing precariousness for both non-vulnerable and vulnerable households are comparatively low in the Czech Republic, Slovakia and perhaps Slovenia (mostly less than 5 per cent for non-vulnerable households, mostly cost-precariousness), and comparatively high in Bulgaria (for non-vulnerable households, as high as 61.3 per cent in 2013) and Romania (37.5 per cent, respectively). The higher the level of housing precariousness for non-vulnerable households, however, the less severe these stacked housing problems are, i.e. quality-precariousness. Somewhat similar to the Southern-European pattern, but less outspoken, is the more severe nature of housing precariousness for vulnerable households, predominantly consisting out of cost-precariousness, followed by quality-precariousness. Levels of housing precariousness are very high for vulnerable households in Bulgaria and Romania, affecting between 65 and 95 per cent in all years. Given high levels of outright homeownership across Central-and-Eastern Europe, the overall level of security-precariousness is again lower (though not absent) in comparison to Southern-European and North-Western-European countries.

Figure 1.8. Trends in housing precariousness, Baltics



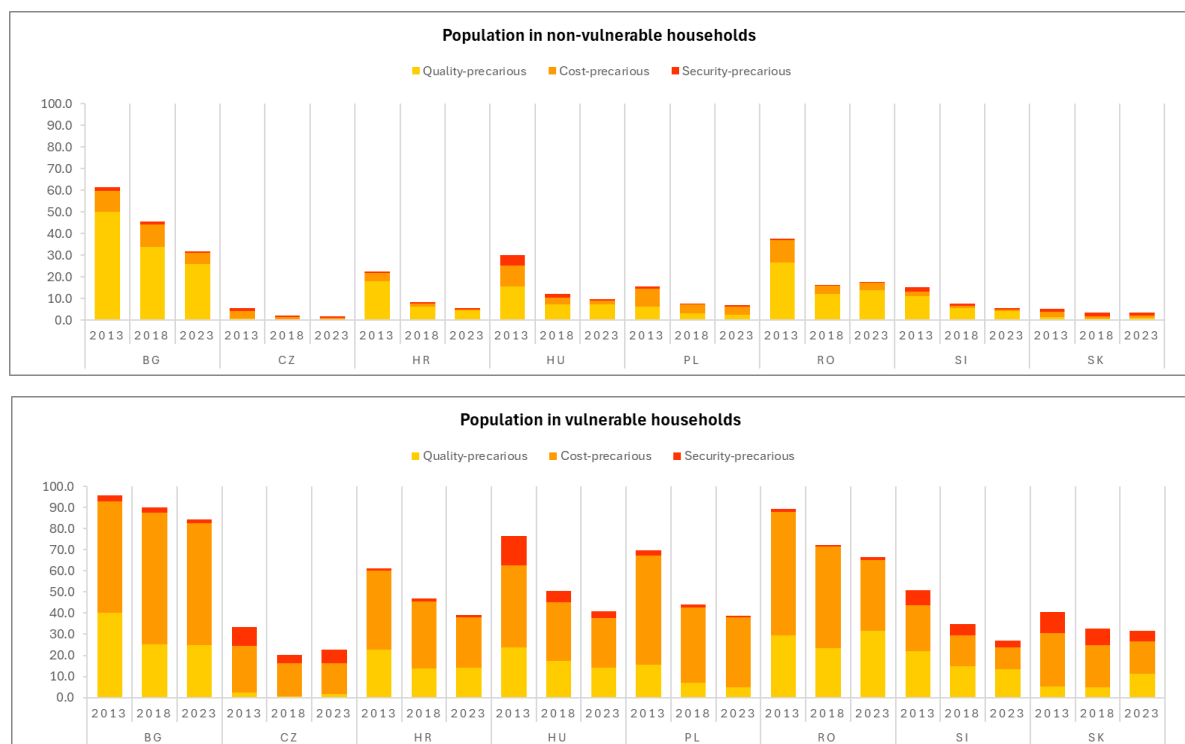
Source: EU-SILC (2013; 2018; 2023).





Apart from the Czech Republic and Slovakia, where we see a stagnation of much lower levels of housing precariousness between 2018 and 2023, for other countries in this group we note stronger declines in various degrees of housing precariousness between 2013 and 2023. For most countries, this decline furthermore seems stronger for vulnerable compared with non-vulnerable households, indicating lessening housing inequality in both an absolute and a relative sense. We note declines in all three forms of housing precariousness, though for vulnerable households the main decline seems to take place with regard to cost-precariousness, sometimes contributing to increasing quality-precariousness (e.g. Romania).

Figure 1.9. Trends in housing precariousness, Central-and-Eastern European countries



Source: EU-SILC (2013; 2018; 2023).





1.4 Conclusion and discussion

This chapter: 1) provided an integrated review pertaining to the antecedents of Europe's alleged housing crisis; and 2) used a newly developed multidimensional measurement approach to identify degrees of housing precariousness – capturing meaningful differences with regard to typical combinations of increasingly severe housing problems – to explore the 'European housing crisis'. We argued that, as opposed to both singular indicators and additive indexes used in previous research (e.g. Dewilde, 2022, Hick et al., 2024, Clair et al., 2019), this measurement approach allows for a more nuanced investigation of comparative differences across European housing-welfare regimes, operationalized in terms of levels and trends in typical combinations of absolute housing outcomes vs. relative housing inequalities. The latter in particular are not only influenced by qualitative differences in housing provision, but also by long-term trends of housing re-commodification and financialization, leading to tenure restructuring dynamics (especially, enhanced social sorting of vulnerable households in rental tenures) and starker polarization of housing resources between owners and renters, and richer and poorer homeowners. Stronger connections to global finance, furthermore, enhance insecurity of housing for vulnerable households. We therefore focused on the intersection between degrees of housing precariousness and vulnerability, and investigate developments over the post-crisis period, focussing on the years 2013, 2018 and 2023.

1.4.1 Interpretation of results

In line with expectations, overall housing precariousness is generally low in North-Western-Europe. Both absolute levels and relative inequalities between non-vulnerable and vulnerable households gradually increase as we move from unitary rental market-countries of social-democratic heritage to unitary rental market-countries of conservative-corporatist heritage to dual rental market homeownership countries. Within this broader group of more affluent countries, de-commodification of housing and welfare systems independently contribute to improving housing outcomes and lowering housing inequality. The combined





effect of both can be deduced from the overall lowest levels of housing precariousness and inequality in Denmark, Sweden, and the Netherlands. However, even in these more generous social-democratic welfare states, some households still fall through the cracks of the social safety net, and when they do, housing precariousness is of a more severe degree. What is more, in both types of unitary rental market-countries (excepting the Netherlands), an initially declining trend over time seems to have reversed (2013-2018), as both quality-precariousness and/or security-precariousness increased in recent years (2018-2023). This trend is more outspoken for vulnerable households. A similar U-shaped pattern can be discerned for vulnerable households in Norway, Spain, Portugal and Malta. This indicates that stronger financialization of housing could be associated with growing housing precariousness, absolutely and relatively speaking. Hence, notwithstanding a general European-wide decline in degrees of housing precariousness during the time period under study, more recently vulnerable households across significant parts of Western-Europe became more exposed to, in particular, the more severe form of security-precariousness. *It is here that a European housing crisis is emerging from under the waterline.*

In line with older research, housing precariousness is higher in contexts with higher levels of pre-commodified outright homeownership, i.e. Southern and particularly Eastern-Europe. Though often associated with lower housing quality, our analysis also shows that housing precariousness across this broader cluster of countries is rather more unequal than commonly assumed. Though in many countries a comparatively larger proportion of non-vulnerable households is confronted with predominantly quality-precariousness, vulnerable households are clearly worse off, and are confronted with higher levels of cost-precariousness and/or security-precariousness. As opposed to Western-Europe however, the trend in Eastern-Europe is towards improving housing outcomes over time. This trend is often somewhat more outspoken for vulnerable households, hence implicating stable or declining housing inequality. Stronger economic growth in the Baltic states could perhaps be associated with lower or less severe housing





precariousness compared with CEE-countries. For Eastern-Europe, our multidimensional measure of housing precariousness reveals starker housing inequalities than expected, but no signs of a housing crisis.

Finally, when considering both levels and degrees of housing precariousness, vulnerable households across Southern-European countries are the most disadvantaged of all, with comparatively high levels of cost- and particularly security-precariousness. Southern-Europe seems to be stuck between two logics – pre-commodified vs. mortgaged homeownership –, in a context of slow economic recovery following a deep housing and/or economic crisis. *It is here that a housing crisis has been clearly visible above the waterline for quite some time.*

A general conclusion is that the aggregate pattern across the European sample is explained by a move of Eastern-European vulnerable households out of or towards less severe forms of housing precariousness, combining with a move of Western-European vulnerable households into more severe instances of security-precariousness. Policy responses, therefore, need to take these regional variations into account.

1.4.2 Further discussion

Next to known data limitations pertaining, for instance, to the definition and availability of housing problems in EU-SILC, our analysis of Europe's (emerging) housing crisis needs to be qualified in a least two further ways. While we were able to detect signs of a housing crisis emerging from under the waterline in several countries, other signs tend to remain hidden below the waterline. Our focus on degrees of housing precariousness, based on typical combinations of housing problems, does not capture a number of other developments. A first development concerns the deteriorating of housing opportunities for young adults across European countries (Lennartz et al., 2016). The concept of housing opportunities extends beyond precarious housing, and in particular pertains to declined opportunities to acquire independent housing, whether owned or rented. Whilst in some countries, deteriorated homeownership access has translated into





prolonged stays in (private) renting, in other countries there has been an increase in co-residence with parental generations. Opposite patterns are, again, apparent across Europe: stronger increases across Southern-Europe and also Ireland combine with declining co-residence across Eastern-European countries (see Table A1.3 in Appendix). To the extent that this does not imply overcrowding, prolonged involuntary stays in the parental home do not count as precarious housing, but can still affect living conditions, quality of family relationships, and family formation.

Another issue concerns those households confronted with more severe forms of housing exclusion. In our discussion of trends in social housing, we already commented on how a somewhat contradictory trend of increased low-income targeting in social housing has become accompanied by increased conditionality, for instance in terms of a wealth-test, or strengthened work and language requirements (e.g. Grander, 2024, Gielens and Dewilde, 2025a). This results in a more limited access to social housing for the most vulnerable. As these households also have difficulties obtaining affordable private rental housing, they risk being pushed out of the housing market altogether. An upward trend towards enhanced forms of housing exclusion, ranging from couch surfing to rough sleeping, has been reported for quite some time now, with recent worrying developments in countries such as Finland and Denmark (e.g. Fondation Pour Le Logement/Feantsa, 2025).

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Appendix

Table A1.1 Description of housing problem indicators used in the LCA (Author, Gielens et al., 2025)

Indicator	Description	Categories
Housing cost burden	Person living in household where total housing costs exceed a variable threshold of disposable income ('net' of housing allowances). Variable threshold: 25% for 1st quintile, 30% for 2nd quintile, 40% for 3rd quintile, 50% for 4th-5th quintile.	Overburdened, Not overburdened
Subjective cost burden	Person living in household experiencing a financial burden of the total housing cost, including mortgage/rent payments and insurance/service charges. Question: to what extent are these costs a financial burden to you?	A heavy burden, A slight burden, No burden
Perceived energy poverty	Person living in household experiencing the inability to keep the home adequately warm. Question: can your household afford to keep its home adequately warm?	Yes, No
Utility arrears	Person living in household with arrears on utility bills in the past 12 months. Question: in the past twelve months, has the household been in arrears, i.e. has been unable to pay the utility bills (heating, electricity, gas, water etc.) of the main dwelling on time due to financial difficulties?	Yes (once, twice or more), No
Rent/mortgage arrears	Person living in household with arrears on mortgage or rental payments in the past 12 months. Question: in the past twelve months, has the household been in arrears, i.e. has been unable to pay on time due to financial difficulties for (a) rent (b) mortgage repayments for the main dwelling?	Yes (once, twice or more), No
Overcrowding	Person living in household with less rooms available than required given the composition of the household. Following EUROSTAT, except we do not consider one-person households living in studio apartments as overcrowded.	Overcrowded, Not overcrowded
Housing deprivation	Person living in household with one or more of the following dwelling problems: Leaking roof / damp walls / floors / foundation or rot in window frames; Accommodation too dark; No bath/shower; No indoor flushing toilet for sole use of the household.	Yes (one or more problems), No (no problems)

Table A1.2 Stacked housing problems in Europe (individuals in interviewed households) (Gielens et al., 2025)

	Quality-precarious	Cost-precarious	Security-precarious
Latent class size	7.3%	7.5%	3.2%
Housing cost burden	0.0%	100.0%	48.9%
No subjective housing cost burden	3.7%	0.4%	4.0%
Slight subjective housing cost burden	30.7%	25.6%	19.0%
Heavy subjective housing cost burden	65.7%	74.0%	77.1%
Perceived energy poverty	44.7%	29.1%	33.7%
Utility arrears	32.2%	26.7%	68.2%
Rent/mortgage arrears	0.0%	0.0%	100.0%
Overcrowding	43.6%	34.5%	34.3%
Housing deprivation	52.4%	34.4%	41.9%

Source: EU-SILC (2010-2020; 2023, pooled sample).





Table A1.3 Young adults' housing outcomes across countries (% , aged 25-40, not in education)

Housing-welfare regimes		2011			2019		
		Co-residing	Renting	Owning	Co-residing	Renting	Owning
NWE-unitary rental markets	AT	24.6	45.4	30.0	17.1	48.4	34.5
	DE	9.4	55.5	35.1	8.2	60.8	31.0
	NL	0.4	36.5	63.1	3.7	38.1	58.2
	FR	13.4	40.0	46.6	11.8	40.1	48.1
	DK	1.1	39.5	59.4	1.3	52.5	46.2
NWE-dual rental markets	SE	2.0	39.4	58.6	3.4	42.5	54.1
	BE	13.2	30.3	56.5	16.4	30.4	53.1
	LU	19.0	36.9	44.0	18.1	33.6	48.3
	NO	10.4	16.8	72.8	3.6	31.1	65.3
Southern-Europe	FI	3.0	35.7	61.3	3.1	42.0	54.9
	IE	11.6	36.0	52.4	21.5	43.5	35.0
	ES	32.2	17.5	50.3	40.5	24.4	35.1
	GR	45.1	23.1	31.8	48.4	27.1	24.5
Baltics	IT	42.4	18.2	39.4	47.4	23.1	29.5
	PT	43.7	11.3	45.0	44.2	17.9	37.9
	CY	32.7	16.7	50.6	40.1	24.2	35.7
	EE	33.4	6.8	59.8	29.9	12.4	57.7
Central- and Eastern-Europe	LV	44.3	10.5	45.2	36.8	13.2	50.0
	LT	36.2	2.7	61.1	30.2	3.8	66.1
	CZ	23.0	18.0	59.1	28.5	20.8	50.7
	SK	49.6	8.1	42.3	54.1	6.8	39.1
	HU	37.7	7.6	54.7	29.7	12.3	58.1
	PL	50.5	6.4	43.1	44.2	9.0	46.9
	SI	47.2	9.4	43.4	46.4	12.8	40.9
HR	63.0	4.8	32.3	63.2	2.9	33.9	
BG	71.2	4.1	24.8	61.0	6.3	32.7	
RO	44.3	3.0	52.7	44.1	3.8	52.1	

Source: EU-SILC (2011 & 2019, own calculations).
Co-residence is defined as living with parents or in-laws, across all tenures. Young adults are classified as renting or owning when they themselves, or their partner, are head of household, with no (in-law) parents living in the household. A small number of respondents lives rent-free, for instance in family-owned housing; they were added to the first category given that these young adults, in terms of housing, are not fully (financially) independent.





2 Chapter 2. The Residualisation Paradox: Resilient Housing Conditions in Europe's Regulated Rental Sector

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2.1 Introduction

As the overheated housing market increasingly violates the 'right to decent and affordable housing' (Bengtsson 2001; see also Clair, Fledderjohann & Knowles 2021), the role of social housing is once again under debate. Particularly low-income groups in Western-European countries are finding it increasingly difficult to access homeownership (e.g. Gielens & Dewilde 2025), while private rents are claiming a growing share of tenants' incomes (e.g. Dewilde 2018; Hick, Pomati & Stephens 2024). Social housing, a form of government intervention in the housing market, offers a solution for those for whom the 'right to housing' falls short. Although the European Union (EU) has set ambitious goals to promote affordable and sustainable housing (European Commission 2025), it remains uncertain to what extent these investments will benefit *social* housing, or whether the sector will instead give way to new forms of public-private partnerships aimed at promoting *affordable* housing. The future role of social housing is thus uncertain.

This European-comparative chapter examines recent developments in Europe's social rental sector, but advocates for a broader perspective on residualisation. We argue that the increased concentration of low-income households in the sector – a frequently used outcome measure indicating residualisation (e.g. Angel 2023; Borg 2019; Pearce & Vine 2014) – only provides a limited view of changes in social housing. Policy developments, in particular enhanced selectivity and conditionality, additionally entail a higher concentration of more vulnerable households in the sector. These more vulnerable tenants





often constitute a specific subgroup of low-income households, struggling with accumulated social and financial difficulties (see also Van Echtelt, Eggink & Sadiraj 2023). This group furthermore faces a more extreme accumulation of severe housing problems (Gielens, Seo & Dewilde 2025; see also Clair et al. 2019; Beer et al. 2016). Building on a latent class analysis of cumulative housing problems in Europe (Gielens, Seo & Dewilde 2025, also see Chapter 1), we, firstly, investigate to what extent the growing concentration of low-income households in the regulated rental sector has been associated with trends in increasingly severe degrees of housing precariousness. Secondly, we investigate whether degrees of housing precariousness in the regulated rental sector are associated with levels of (between-country) and trends in (within-country) housing (rental) market liberalisation.

We begin this chapter by advocating for a broader perspective on residualisation. We then discuss the role of housing market liberalisation in the process of residualisation. Analyses in this chapter are based on aggregated country-year data from EU-SILC (EU Statistics on Income and Living Conditions, 2010–2020; 2023), covering 21 countries. Our main conclusion is that an increasing concentration of low-income groups in social housing, overall, does not necessarily result in more cumulative housing problems. On the contrary, social landlords appear quite capable of addressing more complex problems, despite the influx of low-income tenants – perhaps due to more effective collaboration with other social service providers. This might, however, be less the case for the most vulnerable households (headed by a non-EU migrant), who are increasingly confronted with more severe forms of housing precariousness.

2.2 A more nuanced perspective on the ‘residualisation’ of social housing

Since the 1980s, public investment in housing has been scaled back gradually, whilst taxes on social landlords increased. New construction and renovation





within the sector have stagnated due to a lack of financing, as well as rising construction and maintenance costs (e.g. Beeckman et al. 2023). Given reduced rental income streams and declining government subsidies, social housing furthermore became increasingly based on market principles, such as the introduction of ‘affordable’ (rather than ‘social’) rents for households with higher incomes (Blackwell & Bengtsson, 2023; Kennett et al., 2013; Stephens, 2020).

The reduction of government subsidies has led to a contraction of the social housing sector in many European countries, even in countries with traditionally larger and more accessible social housing sectors, such as the Netherlands or Germany (Hoekstra, 2017; Kholodilin, Kohl & Müller, 2024; Kofner, 2017). Such contraction has been accompanied by enhanced selectivity (e.g. stricter eligibility criteria in terms of income or assets, more temporary rental arrangements) and/or higher conditionality (e.g. work or language requirements). In other words, social housing became more targeted towards low-income and, specifically, vulnerable households (e.g. Scanlon 2014; Malpass & Murie, 1982). Policy choices hence led to what is known as the ‘residualisation’ of the sector, resulting primarily in a stronger sorting of low-income households into social housing arrangements (e.g. Angel 2023; Borg 2019).

Other studies, especially in the context of housing quality issues, emphasize the resilience of social housing. In a comparative case study of Sweden, Denmark, and the United Kingdom (UK), Blackwell & Bengtsson (2023: p. 284) state that “*in terms of standards and quality the social rental housing stock has proven generally resilient*”. Despite the stagnation of new build and renovation, as well as the selective sale of more attractive housing units, tenants are not significantly less satisfied with the quality of their homes, and energy efficiency appears better than in the private sector. On the other hand, issues with housing quality generally do occur relatively more often in the so-called ‘regulated rental sector’ compared to the private sector (Borg 2015), a difference which is explained by the concentration of vulnerable households in urban areas within the regulated





rental sector (Hick, Pomati & Stephens 2024). Most of these studies, however, lack a longitudinal component, making it unclear how housing quality has developed over time, and how this compares with trends in the market rent sector. Relative differences between social and private rental housing, furthermore, differ between countries, depending on the nature of private renting and social housing (see Deliverable 3.1).

Empirical studies on residualisation tend to focus mainly on the shrinking of the sector (e.g. Kholodilin, Kohl & Müller 2024) and on the concentration of low-income households within it (e.g. Borg 2019; Angel 2023; Hoekstra 2017; see also Pearce & Vine 2014). This focus is understandable, given explicit income thresholds and the wider availability of income data, but it simultaneously conceals variation in the level of vulnerability within the broader segment of low-income households. The focus on income alone may underestimate the process of residualisation, because social housing is not only increasingly targeted at low-income households but also at vulnerable households, who are confronted with multiple, intersecting, problems. *Residualisation hence extends beyond income and obscures heterogeneity amongst low-income tenants*: it also involves housing former homeless individuals, psychiatric patients increasingly living outside institutions, people with criminal records, refugees with war trauma, ... Croon, Hoekstra, and Dubois (2024: p. 3), for example, argue that residualisation “*implies that available social housing is increasingly allocated to people with very low incomes and marginalised groups with ‘urgent status’, such as migrants, persons with mental health issues, or those recovering from personal crises like divorce*”. This process reflects developments in, for example, social assistance – often accessed by low-income groups eligible for social housing – where health issues, debt problems, and psychiatric conditions are not uncommon (see Van Echtelt, Eggink & Sadiraj 2023, for the Netherlands). While our focus on accumulated housing problems (i.e. from housing quality issues to more severe forms of housing precariousness) does not capture all these aspects,





we take account of this most vulnerable group within social housing, thereby offering a broader view on residualisation that goes beyond the concentration of low-income households in the sector.

2.3 Housing precariousness in a liberalised housing market

The residualisation of social housing is part of a broader trend toward increased market orientation in the housing sector, resulting in more housing problems amongst a relatively vulnerable group of low-income households, in particular (private) tenants (Dewilde, 2022; Hick, Pomati & Stephens, 2024). The ongoing liberalisation of the housing market since the 1980s has influenced the housing systems of many (Western) European countries (e.g. Dewilde & Haffner 2022; Forest & Hirayama 2018). In recent decades, the share of first-time buyers on the homeownership market has declined, the social housing sector has shrunk, and the importance of the private rental sector has grown – partly under pressure from European regulations aimed at promoting a ‘level playing field’ for public and private actors in the housing market, especially in so-called unitary rental market-countries with a large and more accessible social housing sector (e.g. Elsinga & Lind 2013). In the Netherlands, for example, since the financial crisis of 2009, the liberalisation of social housing entailed reforms such as the landlord levy (revoked in 2023) and other changes to the Housing Act. Many measures were aimed at strengthening the competitive position of private landlords and at reserving social housing for low-income households and other vulnerable groups (Van Gent & Hochstenbach 2020).

Based on these general developments, we expect that the ongoing liberalisation of the housing market has resulted in a stronger accumulation of quality and affordability problems, in the private but also in the social rental sector. We distinguish between two contributing factors: cuts to social housing (measured as a shrinking proportion of social rental dwellings) and the reduction of tenant protection in general (measured by the rental market regulation index





(Kholodilin 2020) as well as by access to housing allowances). Because of the variety in social housing arrangements across European countries, there is no clear-cut distinction between social and private renting. In countries with housing allowances, such allowances tend to be available to both social and private renters (though often with limitations in the latter case). We allow for such institutional ‘uncertainty’ by investigating the impact of overall rental regulation, as it in part also affects renters in more regulated (social) parts of the rental market (also see below).

A well-known and important limitation is furthermore that EU-SILC does not apply the standard distinction between private and social rental housing. Instead, it distinguishes between *renting at prevailing or market rate* and *renting at reduced rate*. *Renting at reduced rate* generally corresponds, in most countries, to what is strictly defined as social housing, i.e. non-profit rental provided by housing associations or similar organisations. However, this category also includes households renting privately at reduced rates, for example as part of employment packages or due to legal rental agreements with private parties (EUROSTAT 2017: p. 172). Therefore, in this chapter – and in relation to our own and other prior research based on EU-SILC – we refer to the so-called *regulated rental sector*. For *renting at market rate*, we use the term *private rental sector*. In some unitary rental market-countries with strict rent regulation, such as Denmark and Sweden, where there is no clear distinction between market-rate and subsidised rents, we recoded all tenants as *renting at reduced rate* (rather than *renting at market rate*, as classified in the original data). For the Netherlands, we use the annually-indexed liberalisation threshold to distinguish between the regulated (mostly social) and the private rental sector. In the UK, the classification of Housing Associations changed in 2018 from *reduced rate* to *market rate*, rendering the most recent wave virtually unusable. In this chapter, in relation to prior and current research based on EU-SILC, we use the terms ‘regulated rent’ and ‘market rent’.





2.3.1 Social housing reforms

In social housing, subsidies have been scaled back (OECD 2021), and levies on social landlords have further strained their financial position. Income thresholds for access to strictly regulated rental housing also became more stringent (Scanlon 2014), social landlords introduced market-based rents in parts of their stock, and in nearly all European countries, low-income households became increasingly concentrated in regulated rental housing (e.g. Angel 2023). The contraction of the social housing sector can theoretically be linked to expected increases in both housing quality and affordability problems.

Quality issues may increase due to the selective sale of social housing. The sale of social housing to households – such as through ‘Right to Buy’ in the UK – and institutional investors is a selective process in which higher-quality homes are sold more frequently, whilst lower-quality dwellings are retained (Elsinga, Stephens & Knorr-Siedow 2014; Disney & Luo 2017). Social landlords in many countries also struggle to meet targets for renovation and new construction. On the hand, however, the sale of lower-quality dwellings has recently been cited as a strategy to finance renovation and new development (Housing Europe 2024). All in all, there is little empirical research on the actual relationship between housing quality in social housing, and the continued sale of such housing in recent years.

It is also plausible that the sector’s contraction coincides with housing affordability issues due to changes in the composition of tenants. The initial wave of ‘Right to Buy’-sales involved not only higher-quality dwellings but was also primarily an option for middle-income households (e.g. Forrest & Murie 1988; see also Pearce & Vine 2014), at a time when mortgage access was relatively easy. This selective outflow of higher-income renters coincided with an increasing concentration of disadvantaged groups in social housing. In recent years, stricter criteria regarding income and assets have further ensured that new entrants are





increasingly those with the least chance of securing housing in the private rental sector (e.g. Scanlon 2014; Hoekstra 2017).

Considering a potential compounding effect of stigmatisation associated with enhanced selectivity and conditionality, we expect that a smaller social (or regulated) housing sector is associated with a higher concentration of low-income households (Borg 2019; Angel 2023). A further extension of this expectation is that the share of people experiencing various degrees of housing precariousness increases as the sector shrinks.

2.3.2 Tenant protection

The reduction of tenant protection is the second key component of the liberalisation process. On the supply side, tenant protection includes rules for private landlords, especially regarding eviction and rent increases (Weber & Lee 2020). This is directly relevant to tenants in the private rental market, where deregulation leads to higher housing costs and a greater risk of eviction. However, deregulation also affects tenants in so-called unitary rental markets, such as Denmark and Sweden, where the distinction between private and social rental is less pronounced (Kemeny 1995; see also Stephens 2020), and where, due to EU-SILC limitations, we were obliged to classify all tenants as renting in the regulated sector.

Deregulation of the rental market affects market dynamics by encouraging private rental investment and by pushing potential homeowners to buy, and coincides with a shrinking supply of regulated rental housing (Kholodilin & Kohl 2023; Kholodilin, Kohl & Müller 2024). Furthermore, deregulation of the private rental sector indirectly affects social housing. Rising rents increase pressure on social housing as demand rises while fewer people move out of social housing (Wiesel & Pawson 2015; see also Angel 2023).

Tenants are protected from high housing costs through compensation mechanisms such as housing allowances and similar income-support measures like energy subsidies. Housing allowances are an important source of income





support for low-income households in Western Europe (Griggs & Kemp 2012), and housing problems amongst low-income groups tend to be less severe in countries where housing allowances are more generous and universal (Dewilde 2022).

All in all, we expect that a decline in overall tenant protection over time (rental deregulation and reduced receipt of housing allowances) is associated with increasing housing precariousness for renters in (parts of) the regulated rental sector.

2.4 Data and variables

2.4.1 Data

In this chapter, we examine developments in, and explanations for, the accumulation of housing problems within a country's regulated rental sector. The analysis is based on aggregated data (all adults and children forming part of an interviewed household) from 21 countries (AT, BE, CH, CY, CZ, DE, DK, EL, ES, FI, FR, IE, IT, LU, LV, MT, NL, NO, PT, SE, UK) and 12 repeated cross-sections (2010–2020; 2023) from EU-SILC. The dataset comprises $N = 234$ available country-years. Countries where the rental sector (market and reduced) equals less than 5% of the housing market are excluded from the analyses. In practice, this excludes most Eastern-European countries, with a few exceptions, as their (formal) rental sectors are too small for reliable estimation and are of limited relevance to housing system developments. Cross-sectional weights are used to adjust country-year-level percentages for sample-to-population differences.

2.4.2 Operationalising accumulated housing problems

In this chapter, we use an operational definition of *degrees of housing precariousness*, based on a latent class analysis (LCA) of housing problems (Gielens, Seo & Dewilde 2025), derived from EU-SILC data (see below). Our broader perspective on residualisation aligns well with recent work on precarious housing, mostly focusing on the private rental sector (e.g. Waldron 2023; Listerborn 2023).





The exact definition of precarious housing remains debated. This literature emphasizes, on the one hand, housing insecurity, including “*difficulty finding housing*” (DeLuca & Rosen 2022, p. 345) or “*frequent moves*” (Dorling 2014, p. 20). On the other hand, precarious housing also refers to the absence of affordability, a safe neighbourhood, and decent living conditions (e.g. Routier 2019; Cox et al. 2019). Crucially, precarious housing refers to the accumulation of housing problems, that furthermore often coincide with difficulties related to employment and health (e.g. Clair et al. 2019; see also Beer et al. 2016).

Not everyone agrees on the value of composite indicators based on multiple housing problems. Critics argue that affordability issues and maintenance problems have fundamentally different causes, require different policy responses, and should therefore be studied separately (EUROFOUND 2016; Nolan & Winston 2011; see also Hick, Pomati & Stephens 2024). On the other hand, an exclusive focus on isolated issues overlooks the theoretical and practical significance of intersections between housing problems and other issues. Households for whom various problems converge form a particularly vulnerable group – often referred to as the precariat – that remains invisible in averages referring to singular problems (e.g. Standing 2011; Listerborn 2023; see also Bulmer 1989). For these households and individuals, problems are interlinked. In social housing allocation, for example, the lowest-income households are more often placed in older, lower-quality housing, a practice known in the Dutch context as “*passend toewijzen*” (Hoekstra 2017, p. 36). The most vulnerable tenants thus frequently end up in the same housing blocks (Musterd & Van Gent 2016; Brattbakk & Sorvoll 2024). Due to their elevated risk of health and/or employment problems (Pevalin et al. 2017), this group also requires the most support.

LCA is a statistical method used to group respondents based on observed response patterns across multiple indicators (Vermunt & Magidson 2004; Collins & Lanza 2009). In our case, we model the accumulation of housing problems to identify common stacking patterns. The algorithm assigns individuals into one of





a predefined number of classes, and the grouping with the fewest prediction errors of observed responses is considered 'optimal' (Vermunt & Magidson 2004). Simply put, the latent grouping is plausible when it explains the occurrence (and co-occurrence) of housing problems. The solution with eight clusters ($k = 8$) yielded the lowest classification error rate (11%) and highest entropy R^2 (84%), indicating it best distinguished respondents across latent classes. This chapter focuses more specifically on the three clusters where a clear accumulation of housing problems is visible, as presented in Table 2.1. These classes were labelled in terms of increasingly severe degrees of housing precariousness.

Individuals were clustered based on well-established indicators of housing problems: housing deprivation (e.g. dampness, rot in window frames, lack of sanitary facilities), overcrowding, excessive housing costs relative to income, arrears on rent/mortgage payments and utilities, and the subjective burden of housing and energy costs. This clustering yields profiles, i.e. combinations, of housing problems that frequently co-occur (see Table 2.1). Further detail on the exact measurement of these variables can be found in Appendix A. A full description of procedures is available in Gielens, Seo & Dewilde (2025).

Table 2.1. Stacked housing problems in Europe (individuals interviewed households) (Gielens, Seo & Dewilde, 2025)

	Quality-precarious	Cost-precarious	Security-precarious
Latent class size	7.3%	7.5%	3.2%
Housing cost burden	0.0%	100.0%	48.9%
No subjective housing cost burden	3.7%	0.4%	4.0%
Slight subjective housing cost burden	30.7%	25.6%	19.0%
Heavy subjective housing cost burden	65.7%	74.0%	77.1%
Perceived energy poverty	44.7%	29.1%	33.7%
Utility arrears	32.2%	26.7%	68.2%
Rent/mortgage arrears	0.0%	0.0%	100.0%
Overcrowding	43.6%	34.5%	34.3%
Housing deprivation	52.4%	34.4%	41.9%

Source: EU-SILC (2010-2020; 2023, pooled sample).





By identifying common combinations (or latent classes) of housing problems, a more complete – but also more complex – picture of housing precariousness emerges. A significant portion of the European population (about 18%), especially in the rental sector, is affected by multiple, overlapping housing problems (Gielens, Seo & Dewilde 2025; see also Clair et al. 2019). The latent class analysis suggests three increasingly severe *degrees of precariousness*.

Quality-precariousness involves a combination of housing deprivation, overcrowding, and perceived difficulty keeping the home warm, along with arrears on energy, water, and other bills. This measure is conceptually similar to the European indicator pertaining to *severe housing deprivation* (see e.g. Hick, Pomati & Stephens 2024).

Cost-precariousness includes the above, plus housing cost overburden – defined as spending more than 25% of household income on housing costs in the lowest income quintile, rising to 50% in the highest quintile (see also Heylen 2023).

Security-precariousness includes problems with both quality and affordability, with the crucial complication of arrears in rent/mortgage payments. All individuals in this group are behind on rent/mortgage payments, and more than two-thirds have arrears on utility bills, suggesting underlying debt issues and a higher risk of eviction.

2.4.3 Variables

Descriptive statistics for the variables included in our country-year dataset are presented in Table 2.2. To disentangle the development of income concentration and cumulative housing problems (i.e. degrees of housing precariousness) in social housing from general trends in the population, we construct four indices. The underlying logic is that an increase in housing problems in social housing does not imply further concentration if this increase is mirrored across other housing market segments.





Table 2.2. Descriptive statistics (N=234 country-years)

	Variable description	Mean	Sd.	Min.	Max.	N
Quality-precarious (Δ%)	Concentration of quality-precarious tenants in regulated rent relative to the share of quality-precariousness in the population at large.	7.4	8.9	-3.5	41.6	236
Cost-precarious (Δ%)	Concentration of cost-precarious tenants in regulated rent relative to the share of cost-precariousness in the population at large.	2.5	7.0	-30.2	24.3	236
Security-precarious (Δ%)	Concentration of security-precarious tenants in regulated rent relative to the share of security-precariousness in the population at large.	8.9	8.3	-2.7	52.5	236
Low-income share (Δ%)	Concentration of low incomes (Q1) in social housing in a country-year, relative to the share of low incomes in the population at large (Pearce & Vine 2014).	30.1	13.3	-20.6	54.0	236
Reduced rental market (%)	Proportion of individuals living in regulated rental housing.	8.5	7.8	0.1	33.4	236
Rental market regulation index	Index based on the degree of tenant protection against eviction and rent increases, and degree of regulation of the housing stock (Kholodilin 2020).	43.1	15.1	20.8	81.5	236
Access to housing allowances	Proportion of households receiving any level of housing allowances.	10.4	9.7	0.0	69.1	234
Non-EU migrant (%)	Proportion of regulated renters with a non-EU migration background as head of household	14.7	9.4	0.0	59.3	236

Note: Multi-level regressions are based on N = 234 valid cases (two country-years are missing for the variable 'access to housing allowances'. Apart from the rental market regulation index, all indicators have been aggregated from EU-SILC.

Our index of income concentration is based on the widely-used index by Pearce and Vine (2014). It ranges from -1 to 1 and takes the value 0 if the share of low-income households (1st quintile) is the same in the regulated rental sector as in the general population. The index R is calculated as:

$$R = L * 2 - 1$$

$$L = \sum_{i=1}^5 \frac{1}{2} [F(p_i) + F(p_{i-1})] (p_i - p_{i-1})$$

Here, p_i is the weighted proportion of households in the full sample at or below income quintile i , and $F(p_i)$ is the weighted proportion of regulated renters at or below quintile i .





For the three degrees of housing precariousness, we calculate the difference in weighted prevalence of problems between the regulated rental sector and the overall population:

$$W = F(p_i) - p_i$$

As indicators of housing market liberalisation, we include the following:

Size of the regulated rental sector in a country – measured as the weighted share of the population renting at reduced rate. In integrated rental markets like those in Denmark and Sweden all rental housing is considered regulated rental housing (as indicated before). For the Netherlands, we use the annually-indexed liberalisation threshold to distinguish between regulated (mostly social) and private market renting.

Housing allowances are a direct form of government intervention in housing costs for low-income households, primarily consisting of rent allowances. We aggregate these from household-level data, measuring the share of households receiving such housing allowances in each country-year (Otto 2018; Van Oorschot 2013).

Migrant concentration – for all individuals living in regulated rental housing we compute the weighted share of those whose household head is a non-European migrant. In this way we include co-resident children (i.e. second-generation migrants) who experience the same disadvantages as their parents.

All percentages are multiplied by 100 to make regression coefficients more interpretable: a 1 percent change is noted as 1.0 instead of .01.

2.4.4 Method

We use a multilevel linear regression model, with years nested within countries, to model changes in aggregated percentages of households experiencing quality-, cost- and security-precariousness at the country-year level. We estimate separate models for each of the three types of cumulative housing problems. The model includes random intercepts to capture country-level





variation but does not include random slopes, since interactions between country and time are not tested.

Using a within–between decomposition of effects (Fairbrother 2014), we distinguish between cross-sectional between-country differences and within-country changes over time. For instance, the between-country effect of the percentage of low-income households is measured as the average per country across all years. The within-country effect over time (level 1) is centred on each country's mean and reflects deviations from that mean. This decomposition analytically separates temporal change from structural differences between countries. The approach is comparable to a fixed-effects panel regression, with the added benefit of also including between-country effects.

2.5 Results

We first describe how the accumulation of housing problems (i.e. degrees of housing precariousness) has developed over time. We then explore the extent to which these changes are related to the liberalisation of the (regulated) rental sector and the changing composition of tenants.

2.5.1 Housing precariousness over time

Figure 2.1 shows the general trends in the three forms of accumulated housing problems and income over the period 2010–2023, broken down by market-rate and regulated rental housing. First, we confirm that low income-respondents are indeed increasingly concentrated in the regulated sector (see also Angel 2023; Borg 2019). The share of low-income tenants in the regulated sector increased from 32.3 percent in 2010 to 39.8 percent in 2023, while in the market-rate rental sector there is instead a slight decrease, from 32.5 percent in 2010 to 29.6 percent in 2023. Low-income households are increasingly sorted into regulated rental housing.

The development of housing precariousness paints a different picture. The most severe form of precarious housing – *security-precariousness* – is decreasing





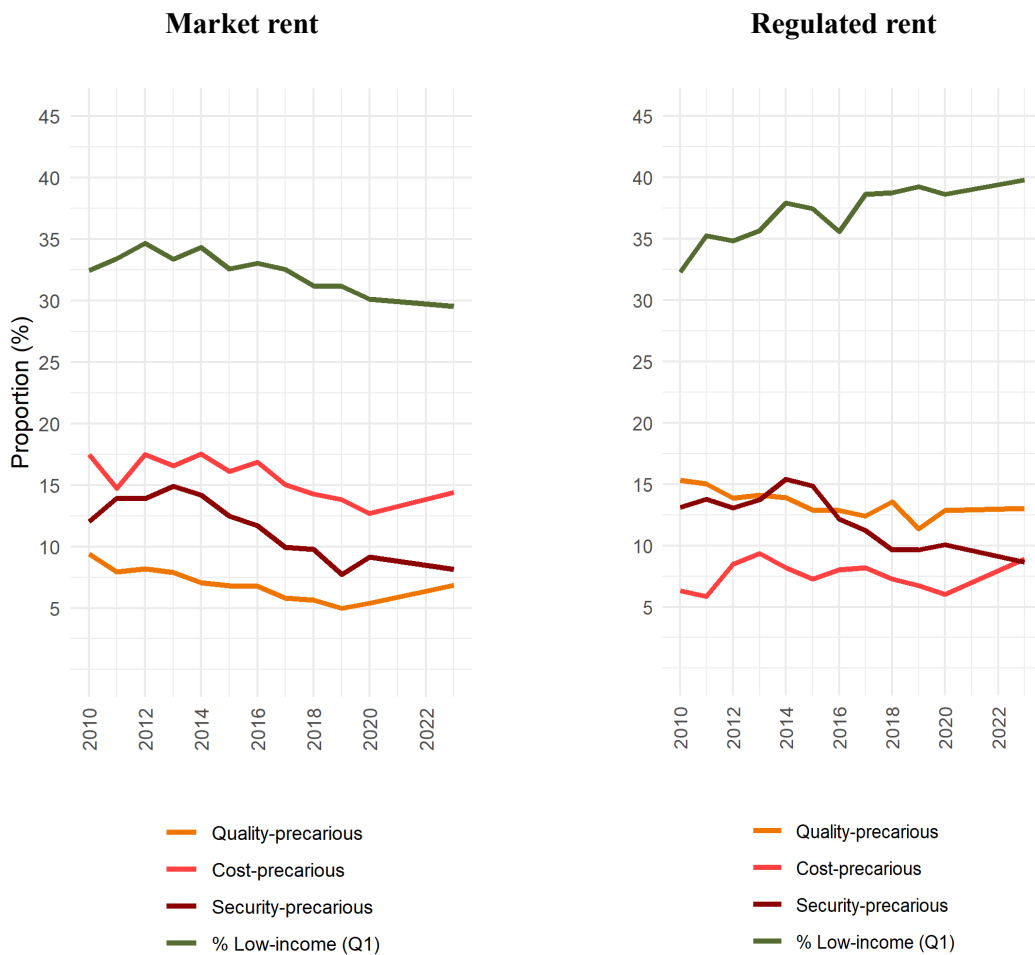
in both the market and the regulated rental sector. In the market-rate rental sector, security-precariousness decreases from 14.9 percent at its peak in 2013 to 8.2 percent in 2023. In the regulated rental sector, we see a peak around the same year, where 15.4 percent of respondents is classified as security-precarious in 2014, which then falls back to 8.7 percent in 2023. A partial explanation for this decline may lie in a general decline in income poverty rates, combined with economic recovery, as well as a long-term secular trend of improving housing quality. The average relative income poverty risk in the countries we observed rises from 15.2 percent in 2010 to 15.9 percent in 2016 and then falls again to 15.3 percent in 2023 (EUROSTAT 2025).

Quality-precariousness decreases to a comparable extent in both rental sectors: in the regulated rental sector from 15.3 percent in 2010 to 13 percent in 2023, and in the market-rate sector from 9.5 percent in 2010 to 7.5 percent in 2023. A decrease in quality-related issues is normally expected, particularly in growing economies where old homes are renovated and/or replaced with new construction (e.g. Borg 2015; Dewilde 2022). The comparison between the market and regulated rental sector is therefore more interesting. Quality-related issues structurally occur more frequently in social housing, but there is no indication that social housing is further drifting away from the private rental market, particularly because of the unexpected increase in quality-precariousness in the market-rate rent sector from 5.4 percent in 2020 to 6.8 percent in 2023. For now, the stagnation in new construction and renovation does not appear to be an exclusive issue for social housing (Beeckman et al. 2023), and the sector indeed appears to be ‘resilient’ (Blackwell & Bengtsson 2023) in terms of housing quality. More data points are needed to assess whether this trend will continue.





Figure 2.1. Trends in the prevalence of housing-precariousness and share of low income-respondents in European rental sectors



Note: UK and Germany are excluded from this figure to prevent composition effects due to incomplete time series. Source: EU-SILC.

In 2010, the level of *cost-precariousness* was about three times as high in the market-rate rental sector (17.5 percent) in comparison to the regulated rental sector (slightly above 5 percent), where rents are modulated according to income. During the period 2012-2020, the level of cost-precariousness declined in the market-rate sector, while for both rental sectors we note a small increase as of 2020. In 2023 the difference between both sectors was reduced to ca. 5% percent (twice as high in the market-rate rental sector compared with the regulated rental sector).



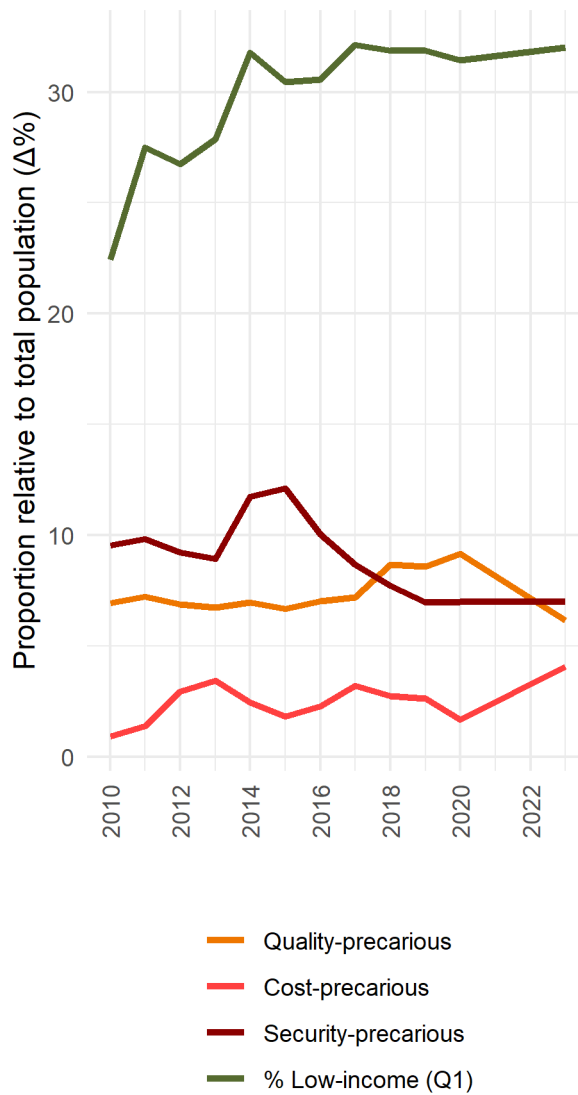


To confirm changes in the relative position of renters in regulated renting, we additionally look at the development of income concentration and accumulated housing problems relative to the total population in Figure 2.2. The picture that was sketched in the figure above is confirmed. In 2010, low income-respondents were 22.1 percent more likely to live in regulated rental housing than in the general population, and this concentration increases to 32.6 percent in 2023. *Security-precariousness* is relatively prevalent in regulated rental housing in 2015 (+13.3 percent more than the overall population) but decreases to a +7.6 percent difference in 2023. *Cost-precariousness* became slightly more concentrated in regulated rental housing over time, whilst *quality-precariousness* remained relatively stable, also in comparison to the general population.





Figure 2.2. Concentration of degrees of housing precariousness and low income-respondents in the regulated rental sector, relative to the total population



Note: UK and Germany are excluded from this figure to prevent composition effects due to incomplete time series. Source: EU-SILC.

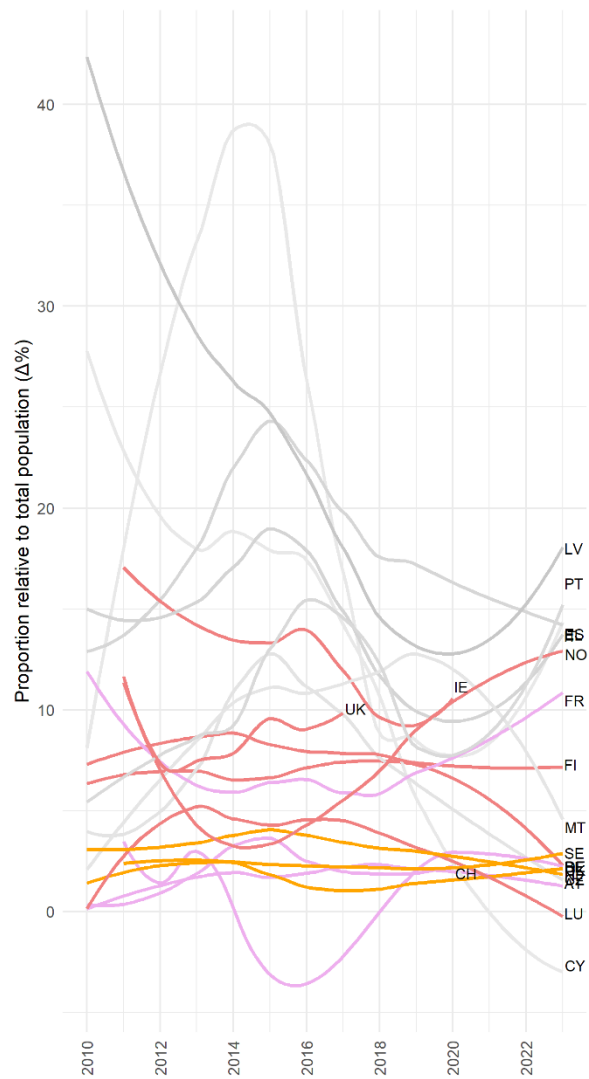
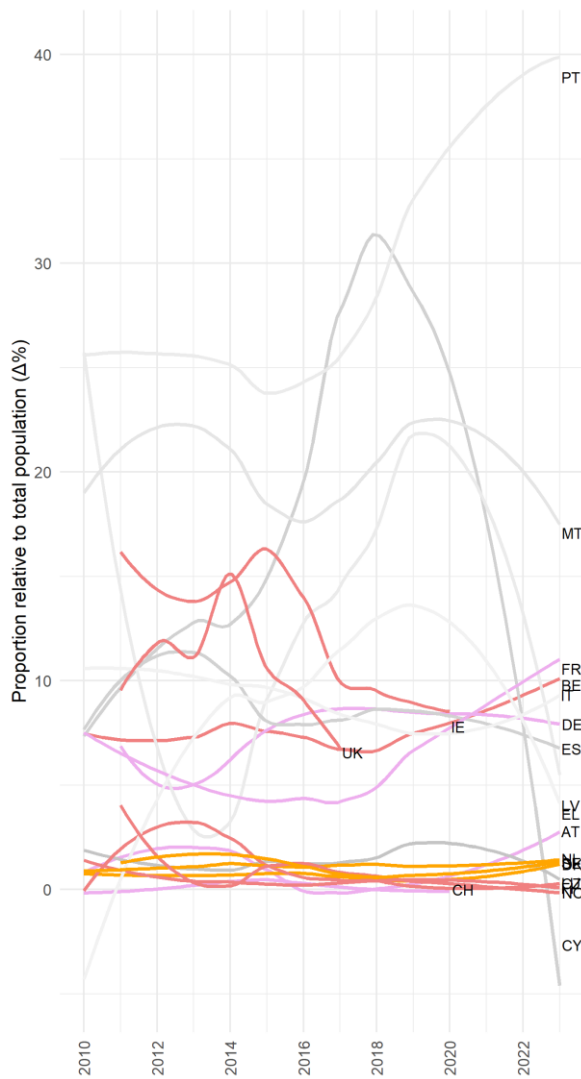




Figure 2.3 Concentration of housing precariousness in the regulated rent sector

Quality-precariousness

Security-precariousness



Note: Lines smoothed with loess curve to aid interpretation.

Colours refer to housing-welfare regime typology:

Orange – social-democratic countries with unitary rental market

Purple – conservative-corporatist countries with unitary rental market

Red – North-West European countries with a dual rental market

Grey – South- and Eastern-European countries





These overall trends mask significant differences between countries. In Figure 2.3, we present developments in quality- and security-precariousness in regulated rental housing by country. In many Western-European countries (e.g. the Netherlands, Denmark, Germany, Norway), quality-related housing problems remained fairly stable. In some Southern- and Eastern-European countries (Cyprus, Malta, Latvia), there is a strong decline in quality-precariousness. An increase in quality-precariousness in the regulated rental sector is however visible in France, and also in the last five years, in Belgium. In the smaller sectors of Southern-European countries such as Portugal, Italy, Greece, and Spain we note an increase quality-precariousness in recent years. The considerable fluctuation in trends indicates that the measurement of especially quality-related problems is somewhat uncertain/unstable, particularly in countries with a relatively small regulated rental market. Despite this variance, however, observed developments in quality-precariousness are not a statistical artefact. A robustness analysis based on EUROSTAT's 'severe housing deprivation' (combining overcrowding and housing deprivation) – included in Appendix A – shows, for example, that this more stable measure also increases in France and Belgium, particularly in the past five years.

Security-precariousness in the regulated rental sector, in contrast, appears to decrease in nearly all countries or at least remain stable over time. A decrease is visible in countries that were hit hardest by the economic crisis and subsequently recovered (e.g. Greece, Ireland), as well as in countries that experienced strong economic growth (e.g. Latvia). In most Western-European countries, the share of precarious housing situations is stable or slightly decreasing. This confirms the previous conclusion: the enhanced concentration of 'more vulnerable' tenants in regulated rental housing does not necessarily coincide with an increase in precarious housing situations.





2.5.2 Paradoxical trends in the European regulated rental market

Finally, we test the extent to which the liberalisation of rental markets affects the concentration of low income-households in the regulated rental sector, as well as different degrees of housing precariousness affecting these respondents. This regression analysis is presented in Table 2.3. First, housing market liberalisation coincides with the sorting of low incomes into regulated rental housing. In countries where the regulated rental sector is shrinking, there is also an increased concentration of low income-households. This relationship is very strong: if the regulated sector shrinks by one percent, the share of low-income households increases on average by 0.775 percent ($b=-.775$, $p<.01$). Deregulation of the private rental market over time is also associated with a higher concentration of low incomes in regulated rental housing ($b=-.407$, $p<.001$). This supports the assumption that when private rents rise, demand for social housing grows and low-income tenants extend their stay in the social housing sector (Wiesel & Pawson 2015; see also Angel 2023). Broader access to rent allowances over time, on the other hand, has no significant effect on the degree of income concentration in regulated rental housing ($b=-.132$, $p>.10$).





Table 2.3. Multilevel linear regression on the relative concentration of low incomes and degrees of housing precariousness in the regulated rent sector (unit of analysis: country-years)

	Low incomes		Quality-precarious			Cost-precarious			Security-precarious			
	(a)		(a)	(b)		(a)	(b)		(a)	(b)		
Intercept	23.1	**	11.4	-300.3	+	-3.3	-131.4		15.1	**	1139.0	***
	(8.7)		(5.7)	(184.5)		(4.4)	(151.7)		(4.4)		(202.4)	
Year	.503	***	.090	.156	+	.116	.062		-.284	**	-.558	***
	(.124)		(.088)	(.091)		(.069)	(.075)		(.100)		(.100)	
Regulated rental sector size (country)	-.056		-.327	-.281		-.079	-.018		-.464	+	-.479	+
	(.452)		(.298)	(.310)		(.229)	(.186)		(.229)		(.245)	
Regulated rental sector size (time)	-.775	**	.019	.166		.026	.058		-.213		-.057	
	(.259)		(.184)	(.178)		(.143)	(.146)		(.210)		(.195)	
Rental market regulation (country)	.038		-.072	-.077		.143	.129		-.053		-.046	
	(.185)		(.122)	(.126)		(.093)	(.075)		(.093)		(.099)	
Rental market regulation (time)	-.407	***	-.017	.085		-.094	-.082		-.129		-.074	
	(.105)		(.075)	(.074)		(.058)	(.061)		(.085)		(.081)	
Housing allowances (country)	.326		.139	.037		-.030	-.221		.135		.173	
	(.363)		(.239)	(.268)		(.183)	(.161)		(.183)		(.212)	
Housing allowances (time)	-.132		-.051	-.083		-.057	-.040		-.089		-.001	
	(.149)		(.106)	(.101)		(.083)	(.083)		(.121)		(.111)	
Low-income concentration (country)				.059			.315	**			-.062	
				(.168)			(.101)				(.133)	
Low-income concentration (time)				.167	***		.045				.226	***
				(.047)			(.039)				(.052)	
Non-EU migrant concentration (country)				-.262			-.286	+			.050	
				(.258)			(.155)				(.204)	
Non-EU migrant concentration (time)				-.252	***		.050				.269	***
				(.058)			(.048)				(.064)	
Variance components												
Residual variance	.005		23.1	20.6		14.0	14.0		30.0		24.9	
Intercept variance	.014		59.9	63.8		35.1	22.3		33.6		38.6	
N level 1 (country-year)	234		234	234		234	234		234		234	
N level 2 (country)	21		21	21		21	21		21		21	

Notes: *** p < 0.001, ** p < 0.01, * p < 0.05, + p < .10.

Source: EU-SILC.

Otherwise, there is no evidence that a liberalising housing market produces more precarious housing conditions: our indicators of liberalisation have no significant effect on the concentration of housing precariousness in regulated rental housing. Countries with a larger regulated rental sector have marginally fewer cases of security-precariousness affecting households in this sector (b=-





.464, $p < .10$), but this does not apply to cost-precariousness ($b = -.079$, $p > .10$) and – perhaps due to fluctuation in the measurement – quality-precariousness ($b = -.327$, $p > .10$). The shrinking of the regulated rental sector over time is not significantly associated with any of the degrees of housing precariousness in the sector. This suggests that accumulated housing problems in the regulated rental sector do not directly worsen due to (or despite) cuts in the sector, and deregulation of the private rental sector.

Housing precariousness, however, does appear to be an *indirect* result of liberalisation. As discussed above, liberalisation leads to a stronger concentration of low income-households in regulated rental housing, which in turn is associated with more quality-precariousness ($b = .167$, $p < .001$) and higher security-precariousness ($b = .226$, $p < .001$). The influx of non-European migrants into regulated rental housing also leads to more security-precarious housing situations ($b = .269$, $p < .001$). Whilst in general over time, as became evident in Figures 2.1-2.3, there is a secular decline in security-precarious housing situations in the reduced rental sector ($b = -.284$, $p < .01$) without controlling for the increase in vulnerable households, this negative trend is even stronger when we do control for tenant characteristics ($b = -.558$, $p < .001$). Such a suppressor-effect could be taken to indicate that the increase in vulnerable households in the sector has rendered this time trend less negative (i.e. more positive) than would have been the case when tenant characteristics would have remained stable over time. This is in line with the above noted positive association between a stronger influx of low-income and non-European migrant households in the sector, and the increased incidence of security-precariousness. The increased concentration of non-EU migrants in the regulated rental sector unexpectedly coincides with a decline in quality-precariousness ($b = -.252$, $p < .001$). In other words, countries that increasingly sort non-western migrants into the social housing sector tend to have better housing quality over time, at least compared to the total housing stock. This effect is similar without control variables in the model (results not





reported). We have no explanation for this effect other than a suspicion of spuriousness: countries that receive many non-European migrants are also specifically countries with high housing quality and a large regulated rental sector (e.g. Sweden, the Netherlands).

2.6 Conclusion

The broad perspective on residualisation we argued for in this chapter points to a somewhat paradoxical development in European regulated housing. On the one hand, the residualisation of social housing in Europe continues, if we look exclusively at the concentration of low income-households in the sector. Low-income households are increasingly sorted into social housing: they are not only more frequently excluded from the homeownership market (Gielens & Dewilde 2025) but also rent less often in the private rental sector. This is partly attributable to the ongoing liberalisation of the housing market (Van Gent & Hochstenbach 2020), as well as to a higher degree of targeting (selectivity) in countries that previously preferred a more accessible social rental sector. The greater concentration of low income-households coincides with a shrinking of the sector (Angel 2023; Thunstall 2023), as well as with the deregulation of the private rental market. This suggests that – when implemented in a way that does not discourage landlordship – more regulation of the private rental sector could relieve pressure on the social sector, for instance by facilitating the transition out of the sector of middle-income households and easing demand for social housing amongst low-income households. As prior studies also suggested, there is convincing evidence that the liberalisation of the housing market is linked to the sorting of low-income households into regulated housing. This also implies that across countries, the ‘convergence’ toward a dual rental market, driven by European legislation, has been increasingly materialising (e.g. Malpass 2014).

At the same time, housing precariousness is stable or declining in the regulated rental sector, suggesting that a more dualized rental market model





appears to be working for all but the most vulnerable group of tenants. Precarious housing has become less common since the financial crisis (2009), in society at large, but especially within social housing. This trend is independent of the liberalisation of the housing market and persists despite the grown concentration of low-income households and non-European migrants in social housing. On the other hand, the decline in housing precariousness would have been even stronger, had the tenant composition remained stable over time. We can only speculate on the different causes of this somewhat unexpected tendency. For one, the integration of social services may explain why rental market segregation does not necessarily lead to more but rather to less precarious housing in social housing (Parsell et al. 2022). If social housing is more often linked to access to (mental) health care, employment support, and debt counselling, then the segregation of low-income households may yield positive outcomes for more vulnerable tenants – at least those that manage to gain entry to the social housing system. Through more intensive support, social housing could potentially become a more integral part of an increasingly selective welfare state. However, this strengthened role of social housing must be accompanied by structural funding, as the internal redistribution mechanisms of social housing – where higher incomes/rents compensate for lower incomes/rents – are under pressure due to the concentration of low income-households in the sector.

The overall downward trend in security-precariousness could also be attributed to a general decline in income poverty rates. Poverty rates have been slightly declining over the past decades, as economies recovered from the Global Financial Crisis of 2009. To illustrate, the average relative poverty risk in the countries we observed rises from 15.2 percent in 2010 to 15.9 percent in 2016 and then falls again to 15.3 percent in 2023 (EUROSTAT 2025). In some countries, this trend aligns with a decline in rent/mortgage arrears, which is one of the key indicators of security-precariousness. Since rent is generally the last bill to be





postponed, more disposable income means fewer arrears (Spicker, 2014; Doling, 1999).

A final interpretation of the decline in security-precariousness regards potential distortion due to selective sampling. It is well-known that EU-SILC excludes those in various stages of homelessness from their sampling framework (e.g. Hick, Pomati & Stephens 2022). It is possible that the most vulnerable tenants are increasingly barred from social housing due to recently enhanced conditionality (e.g. language or work requirements) (Coene et al. 2025, various chapters), and thus more often end up in homelessness or unstable housing situations. If the inflow of new 'problem cases' tends to become more limited, the share of precarious situations amongst regulated tenants would also decrease. This aligns with the idea that poverty is declining overall but is increasingly concentrated on vulnerable groups where it does occur (Hick, Pomati & Stephens 2024). Considering these explanations have very different implications, the precise causes of the decline in precarious housing in the regulated rental sector therefore warrant further investigation.

Housing quality problems are also stable in most countries and slightly declining overall, both in absolute terms and relative to the general population. This may indicate that stagnation in new construction and renovation is not limited to the social sector, but affects the entire housing market. At the same time, this confirms the image of a 'resilient' social sector (Blackwell & Bengtsson 2023), where housing quality remains fairly stable despite ongoing austerity measures and rising costs. Altogether, the increasingly explicit role of social housing as a provision for low-income households does not (yet) seem to lead to the deterioration of the sector, and income concentration even coincides with a decline in precarious housing, though not for the most vulnerable households, who are confronted with multiple problems that extend beyond the domain of housing. Nevertheless, the selective access to social housing, possibly combined





with more intensive social support, in general appears to have a positive impact on the housing situations of most social housing tenants.

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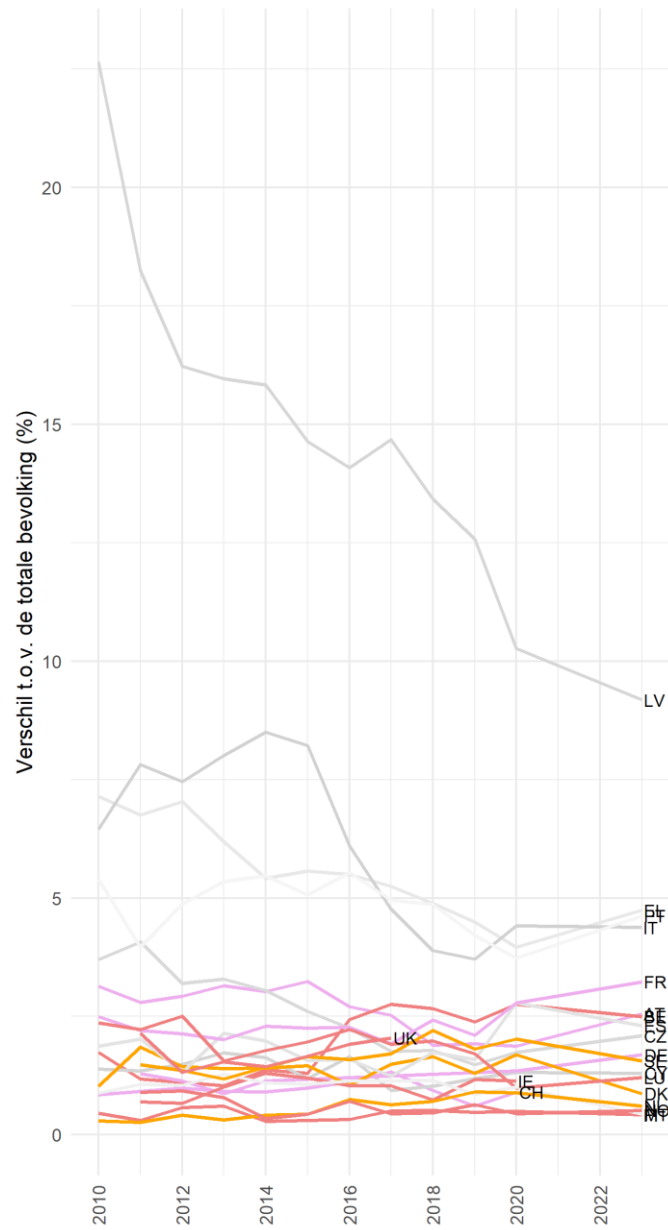
Appendix A

Table A1. Description of housing problem indicators used in the LCA (Gielens, Seo & Dewilde 2025)

Indicator	Description	Categories
Housing cost burden	Person living in household where total housing costs exceed a variable threshold of disposable income ('net' of housing allowances). Variable threshold: 25% for 1st quintile, 30% for 2nd quintile, 40% for 3rd quintile, 50% for 4th-5th quintile.	Overburdened, Not overburdened
Subjective cost burden	Person living in household experiencing a financial burden of the total housing cost, including mortgage/rent payments and insurance/service charges. Question: to what extent are these costs a financial burden to you?	A heavy burden, A slight burden, No burden
Perceived energy poverty	Person living in household experiencing the inability to keep the home adequately warm. Question: can your household afford to keep its home adequately warm?	Yes, No
Utility arrears	Person living in household with arrears on utility bills in the past 12 months. Question: in the past twelve months, has the household been in arrears, i.e. has been unable to pay the utility bills (heating, electricity, gas, water etc.) of the main dwelling on time due to financial difficulties?	Yes (once, twice or more), No
Rent/mortgage arrears	Person living in household with arrears on mortgage or rental payments in the past 12 months. Question: in the past twelve months, has the household been in arrears, i.e. has been unable to pay on time due to financial difficulties for (a) rent (b) mortgage repayments for the main dwelling?	Yes (once, twice or more), No
Overcrowding	Person living in household with less rooms available than required given the composition of the household. Following EUROSTAT, except we do not consider one-person households living in studio apartments as overcrowded.	Overcrowded, Not overcrowded
Housing deprivation	Person living in household with one or more of the following dwelling problems: Leaking roof / damp walls / floors / foundation or rot in window frames; Accommodation too dark; No bath/shower; No indoor flushing toilet for sole use of the household.	Yes (one or more problems), No (no problems)



Figure A1. Trends in severe housing deprivation in regulated rental housing relative to the total population



Source: EU-SILC.





3 Chapter 3. Explaining Trends in Housing Wealth Inequality and Concentration

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3.1 Introduction

Homeownership and housing wealth (or various broader concepts of property wealth)⁶ have recently been ‘discovered’ as important determinants of cross-national differences in overall wealth inequality and concentration (e.g. Fuller et al., 2020; Pfeffer & Waitkus, 2021). Whilst Chapter 6 of Deliverable 3.1 provided a cross-sectional profile of housing wealth inequality across Europe, the current chapter takes a more longitudinal perspective. Studies on the contribution of *developments* in housing (property) wealth to *trends* in overall wealth inequality are scant. Furthermore, it remains unclear *what drives such developments in housing wealth inequality* in the first place. This lack of systematic comparative evidence constitutes a blind spot, given the argument that across western countries, the housing market has become a vehicle for wealth generation, extraction, and intergenerational transmission (Adkins et al., 2019; Forrest & Hirayama, 2018; Hochstenbach, 2022; Maclennan & Miao, 2017; Soaita et al., 2020). On the one hand, while the private rental sector has grown, homeownership became less accessible and more socially stratified, especially for new cohorts of young adults (Dewilde, 2020; Gielens & Dewilde, 2025; Howard et al., 2024). Given the importance of the tenure structure (i.e. the homeownership rate) as the main determinant of overall wealth inequality and concentration (Brzezinski & Salah, 2021; Kaas et al., 2019, also see Deliverable 3.1), both delays in and durable exclusion from homeownership access for younger and/or poorer households should

⁶ The term housing wealth is used throughout this chapter, but our conceptualization is somewhat broader, and also includes other real estate property not used for business purposes (see Section 3.3 for further explanation).





constitute an important contributing factor to explaining trends in (housing) wealth inequality and concentration. On the other hand, wealthier households have been argued to benefit from disproportionate price increases of more valuable (urban) properties and from rising multi-property ownership (Galster & Wessel, 2024; Kadi et al., 2020; Ronald et al., 2017; Wind & Hedman, 2018). To uncover the role of housing as a driver of trends in wealth inequality and concentration, this chapter uses HFCS-data (Household Finance and Consumption Survey) for 4 waves (2010-2021) and 22 European countries, to:

1. Describe *trends* across time and space regarding housing (property) wealth inequality and concentration (capturing different aspects of the housing wealth distribution), across countries and age cohorts;
2. Model the impact of various *drivers* explaining trends in housing wealth inequality and concentration, across countries and age cohorts.

The chapter is structured as follows. In the first section, we briefly review the main findings discussed in Chapter 6 of Deliverable 3.1. Next, we rehearse data, concepts and methods, highlighting differences with the aforementioned chapter. The results-section explores and further investigates trends over time. We distinguish between developments in housing wealth inequality and concentration for all households – investigating whether there has been a polarization of housing wealth between so-called *housing market insiders* (i.e. owners) and *outsiders* (i.e. renters) – and homeowner-households only – investigating whether there has been a polarization of housing wealth *within* the homeownership segment, between high wealth/income and low wealth/income homeowners. See Chapter 1 of this Deliverable for a short recap of the conceptual framework set out in Deliverable 3.1.





3.2 Cross-sectional pattern of housing wealth inequality across Europe

Chapter 6 of Deliverable 3.1 explored cross-sectional patterns in (housing) wealth inequality across 23 European countries, present in the fourth wave of the HFCS (2010-2021; data from Poland were taken from wave 3). We advanced the state-of-the-art by: 1) conceptualizing alternative measures of *gross* housing wealth and non-housing wealth that are more in tune with the comparative literature on housing-welfare regimes (see Chapters 1 and 2 of Deliverable 3.1) and account for cross-national differences in mortgage finance as well as differing housing wealth accumulation trajectories over the life-course; 2) investigating and qualifying established relationships for a larger sample of countries from this alternative angle; 3) broadening the focus from relative inequality to absolute levels of (housing) wealth, and to the concentration of (housing) wealth across the income distribution (hence, explicitly addressing the intersection with household income); and 4) analysing further intersections with age group/cohort and degree of urbanization.

Notwithstanding the often-stated importance of housing wealth in the wealth portfolio of households across the enlarged European Union (EU), wealth inequality research has only recently started to analyse relationships between homeownership rates, relative housing wealth inequality and relative total wealth inequality (usually measured in terms of 'net worth'). Most of these more econometric papers have analysed/decomposed summary inequality measures, in particular the Gini-coefficient. Based on country-level samples of varying sizes, a strong and statistically significant negative relationship is reported: the higher the homeownership rate, the lower relative (net) total wealth inequality. Put differently, comparative differences in relative 'net worth' inequality are centrally driven by the tenure structure, and by associated (net) housing wealth inequality.

A first conclusion from Chapter 6 of Deliverable 3.1 was that, using alternative measures of gross (housing) wealth and wealth inequality on a larger sample of countries, on the surface, still produces well-known stylized relationships.





Differences between concepts of gross and net (housing) wealth do not seem to make much difference: the majority (2/3) of homeowners across the enlarged EU does not have any outstanding mortgage debt. In particular, **a strong country-level negative association between homeownership rates and housing/total wealth inequality and concentration was established**: to the extent that specifically lower-wealth/income households are able to accumulate housing wealth, the overall level of (housing) wealth inequality tends to be lower. **Homeownership rates drive the distribution of housing wealth, while housing wealth inequality drives total wealth inequality**. These associations are particularly strong, indicating a much smaller role for other (far more investigated) drivers of comparative differences in wealth inequality.

This negative country-level association between higher homeownership rates and (gross) wealth inequality is likely explained by regional clustering,⁷⁸ and comes about through different ‘compositional’ mechanisms, such as a **higher preponderance of housing wealth in the wealth portfolio of lower-income households as we move from North to South and from West to East**, combined with the fact that, across countries, **non-housing wealth tends to be more unequally distributed than housing wealth**. At the country-level, **higher relative inequality in housing wealth due to lower homeownership rates is, hence, not compensated for by higher equality of non-housing wealth**. At the household-level, to the extent that homeownership stretches to include lower-income households, the latter own both housing wealth and some level of non-housing wealth. Furthermore, low-income owners tend to own (much) higher levels of non-housing wealth compared to low-income renters. To the extent that rental options

⁷ As explained in Deliverable 3.1 and Chapter 1 of the current report, different housing-welfare regimes produce qualitatively different housing provision systems and types of homeownership, including different relationships between income, wealth, tenure and housing outcomes (e.g. value of housing).





are limited and unattractive, renting furthermore becomes more selective of poorer households.

From the negative country-level association between homeownership and relative wealth inequality, it should not be inferred that increasing homeownership would necessarily result in lower wealth inequality. In the countries belonging to the unitary rental market housing-welfare regime, for instance, levels of non-housing wealth inequality tend to be lower in comparative perspective (though still similar to levels of housing wealth inequality). The (relative) inequality-reducing impact of homeownership/housing wealth in the countries with a unitary rental market is, therefore, far more limited and even non-existent in Austria, compared with other countries. The rather unique position of unitary rental market-countries indicates that (historical) housing policies play an important role, in particular in terms of influencing owners' and particularly renters' opportunities to accumulate non-housing wealth (Lersch & Dewilde, 2018; Wind et al., 2017). The social selection of higher-income households into homeownership (and of lower-income households into renting), as well as housing policies that have traditionally disproportionally favoured wealth accumulation of homeowners vs. renters, rather than homeownership rates *per se*, are key factors explaining comparative differences driving the negative country-level association between homeownership and wealth inequality (also see Causa & Woloszko, 2020; Wind et al., 2017).

Moving the focus to absolute wealth levels, across all European countries, the wealth rate of renters is very low: median gross total wealth of renters amounts to less than half (42.4%) of their gross annual household income. The total wealth of homeowners amounts to seven times their gross annual household income. The average tenure wealth gap across Europe, defined as median gross total wealth of owners divided by median gross total wealth of renters, amounts to 25.1 (ranging from 16.5 in Austria to 38.0 in Ireland): ***owners own far more total wealth than renters.*** The tenure wealth gap is lower in





housing-welfare regimes with a unitary rental market, where renter-households comparatively own higher levels of (non-housing) wealth. It is also smaller in Eastern-Europe, but this is explained by comparatively lower wealth levels of homeowners, partly reflecting lower housing quality. On average, homeowners also own about three times more non-housing wealth than renters (who mostly do not own any housing wealth).⁹ With the exception of Luxembourg, where the median renter is comparatively rich, ***across European countries the level of non-housing wealth owned by renters is so low that, for most and based on these resources alone, obtaining a mortgage/entering homeownership is ‘mission impossible’.*** This is an important policy issue, as high-quality affordable (private) rental options in many European countries are limited. For an important subgroup of renters with no or few financial resources, it is unlikely that higher-quality homeownership will be in reach at some future point in time.

Lastly, Chapter 6 of Deliverable 3.1 investigated the concentration of (gross) housing wealth across the income distribution. If housing wealth would be equally distributed across the income distribution, then each income quintile would own 20% of housing wealth. ***Across European countries, housing wealth is unequally concentrated across the income distribution:*** on average (across all households), the bottom income quintile owns 11.9% of total gross housing wealth, whilst the top income quintile owns 34.5% of total gross housing wealth. Notwithstanding between-country differences within each housing-welfare regime group, ***the concentration of (gross) housing wealth across the income distribution becomes less severe when we move from North to South, and from West to East. Again, this pattern is driven by cross-national differences in homeownership rates:*** abstracting from the tenure structure,¹⁰ the concentration of housing wealth across income quintiles is, in fact, remarkably similar across

⁹ See Chapter 6 of Deliverable 3.1 for a note on dual tenure of homeowners that rent their main residence.

¹⁰ When looking at the concentration of gross housing wealth amongst homeowners only.



countries in the enlarged EU. Nevertheless, lower-income homeowners are more likely to own smaller levels of housing wealth, and higher-income homeowners are more likely to own larger levels of housing wealth (the top quintile owns about 30% of gross housing wealth, vs. 15% owned by the bottom quintile).

Particularly across Western-Europe, (gross) housing wealth is more concentrated in each younger age cohort: younger high-income households own a larger share of total housing wealth compared with older counterparts, and younger low-income households own a smaller share of total housing wealth compared with older counterparts (calculations based on cohort-specific income bands to account for varying relationships between age and income across European countries). A similar trend is (much) less outspoken in Eastern-European countries, and mostly comes about by lower housing wealth shares of low-income young households. **In North-Western-Europe, compared with thinly populated areas, in densely populated areas higher-income households own a comparatively larger share of total housing wealth, whilst lower-income households own a comparatively smaller share of total housing wealth,** which could be linked to the so-called financialization of urban housing markets (Galster & Wessel, 2024; Haffner & Hulse, 2021; Hulse & Reynolds, 2018; Wetzstein, 2017). In the Southern-European countries for which degree of urbanization is available, a similar but less intense difference regarding the concentration of housing wealth comes about by the comparatively smaller housing wealth holdings of lower-income households with an increasing degree of urbanization. Intersections with degree of urbanization are less clear in Eastern-European countries.

In the current chapter, we firstly aim to describe trends in (housing) wealth inequality and concentration across countries belonging to various housing-welfare regimes (see Chapter 1 of Deliverable 3.1). Next, we aim to disentangle the impact of various potential drivers of such trends, including: trends in income inequality; changing tenure structures (in particular trends in the affordability of homeownership access and the generational and/or stratified decline of young





adult-homeownership across European countries); the suspected rise of multi-property ownership and landlordship; house price inflation associated with different capital gains; and the grown importance of intergenerational transfers (e.g. Forrest & Hirayama, 2018; Smith et al., 2022).

3.3 Data, concepts, and measures

3.3.1 Data

In this chapter, comparable data from HFCS (Household Finance and Consumption Survey, ECB, 2010-2021) are analysed (e.g. ECB, 2023a). This repeated cross-sectional survey currently has four waves (2010-2014-2017-2021). 22 countries are present in at least two waves. Though calculated from household data by the author, most analyses in this chapter pertain to the country-level. The main reason for this is that concepts such as ‘inequality’ and ‘concentration’ of wealth cannot be calculated at the individual or household level – these measures can only be defined at an aggregate level. For sample sizes by country and wave, see Tables A3.1 and A3.2 in the Appendix to this chapter. For information about the survey, see Chapter 6 of Deliverable 3.1.

3.3.2 Concepts

Similar to the distributional analysis of income, the distributional analysis of wealth is bound to agreed-upon, but also somewhat arbitrary conventions (e.g. Atkinson & Bourguignon, 2015; Atkinson et al., 2002; OECD, 2013). Though (disposable) (annual) household income, by default, pertains to the household-level, household income is normally attributed to each household member, standardized for the size and composition of the household by means of an equivalence scale (accounting for economies of scale and assumed lower costs of younger children). The welfare of each individual in the population, including children, is hence accounted for. While income measures attempt to capture the flow of resources, wealth, on the other hand, pertains to the stock of resources accumulated over time (including over generations) and pooled by different household members. Wealth inequality measures, therefore, usually pertain to the





household as an economic unit, and tend not to be equalized. In recent years, however, interest in the so-called ‘joint distribution of income and wealth’ has increased. In the latter approach, the income and wealth distributions are not analysed separately as independent proxies of economic well-being, but assessed together. When combining information from both distributions, it makes sense to equalize household wealth, in the same vein as is done for disposable household income (e.g. Skopek et al., 2015). In this chapter, the level of analysis is the household level (as in the regular analysis of wealth), while both wealth and income are equalized (as in the regular analysis of income). We use the modified OECD-equivalence scale.¹¹

Given the specific focus of EqualHouse on housing inequality, we also divert from some other more typical conventions (similar to e.g. Dewilde & Flynn, 2021). To start with, the main distinction made in this chapter is between *gross housing wealth* and *non-housing wealth* (Dewilde & Flynn, 2021; Owen & Pryce, 2024). Both the amortization of mortgages over the life-course, as well as the opposite process of equity withdrawal, might lead to significant differences between a household’s net housing equity, and the amount of gross housing wealth they will theoretically own (or have owned). Substantive interest, furthermore, lies with unequal opportunities terms of housing wealth accumulation pathways, and the factors impacting on this, such as uneven capital gains arising from differential house price appreciation (intersecting with socio-economic (dis)advantage or degree of urbanization), or the uptake of Buy-to-Let mortgages by high-income households in order to finance the procurement of multiple properties. In this report, we are more interested in the life-time accumulation of housing wealth, rather than in “*snapshots of net wealth at arbitrary time points*” (Owen & Pryce, 2024, p. 72). A focus on gross housing wealth also facilitates comparisons of housing wealth

¹¹ This scale attributes a weight of 1 to the first adult (aged 14 years or older) in the household, further adults count for 0,5 whilst children receive a weight of 0.3.





between countries with different levels and patterns of mortgage finance, especially since our focus includes Eastern-European countries, and allows for cohort comparisons.

Research on so-called multi- or secondary- property ownership (SPO) is limited, and – depending on the purpose of the research as well as data availability – tends to use varying definitions and operationalizations. On the one hand, one could argue that various types of real estate property constitute assets with a market value, that can generate wealth and/or (rental) income for their owners. Households pursue different types of real estate property for various reasons (consumption, investment, or both), and various types and uses all have an impact on the functioning of the housing market at large (e.g. Wind et al., 2020). On the other hand, one could argue that the concept of housing wealth should be limited to properties that provide living space, either for one's own use (incl. rent-free living benefitting extended family members) or to let as (small-scale) landlord (e.g. Kadelke, 2024). Stricter definitions however ignore more blurry types of secondary properties, such as second homes used as weekend or holiday retreat, where the value resides in the land rather than in the building (which can be a simple structure, e.g. chalets, dachas). In more affluent rural regions with more expensive (luxury) holiday or secondary homes, ownership of rural land comes into play, as selective gentrification of rural areas entails a preference for open views 'surrounded by unbuilt areas' (Kordel & Naumann, 2024, p. 3029, on Alpine gentrification or Verhüttelung). Such rural touristification/gentrification is argued to limit the housing and economic opportunities of local communities, similar to impacts of touristification by short-term rentals (e.g. Airbnb) in urban regions. Yet another form of SPO concerns urban property (i.e. *pied-à-terre*) owned by weekly commuters to and from their country-side family homes. Finally, typically in homeownership countries, (extended) families often own or purchase unbuilt land with an eye to the future construction of housing for the next generation(s). The term 'residential real estate' constitutes an intermediate perspective, as it can be





taken to refer to both residential buildings (to be used as housing) as the land intended for this purpose.

In this chapter and for above-mentioned reasons, gross housing wealth is approximated by the current market value of the main residence as well as other real estate property¹² owned by household members, but excludes property reported as directly related to the households' own business activities (e.g. shop, workshop). Our approximation of housing wealth hence pertains to additional properties of different types aside from the household main residence, but these types are likely closely associated to some use or investment-function related to housing or housing markets. Housing wealth is in most countries assessed by respondents themselves.¹³ Recent research comparing objective and subjective (self-reported) home values has shown that the latter generally are a good proxy for the former, specifically in relation to the study of wealth inequality (e.g. Tomal, 2022). Non-housing wealth includes total financial assets plus non-real estate assets: vehicles, other valuables (e.g. jewellery), as well as the value of value of self-employed businesses, including real estate property related to one's business activities. Total wealth is the sum of housing and non-housing wealth.

As also explained in Chapter 6 of Deliverable 3.1, we employ a joint income and wealth-perspective, as a way to address the intersection between (housing) wealth and income. This means that analyses in this chapter not only pertain to the (housing) wealth distribution as such, but also describe levels of (housing) wealth across income quintiles or tertiles. Not all country-level sample sizes are large, which is why we opt for income tertiles when investigating sample selections pertaining to young households/homeowners. Sample sizes for different sample selections in Wave 4 (2021) are reported in Table A3.2 in Appendix.

¹² Properties that can be listed are: house or flat; apartment building; industrial building/warehouse; building plot/estate, field, garden, forest, and arable land; garage; shop; office; hotel; farm, other.

¹³ In some countries, income and wealth data are taken from register data (ECB, 2023b).





The choice to assess the concentration of housing wealth across household income quantiles is based on substantive as well as methodological arguments. For one, though access to housing finance and property-ownership is strongly determined by the income level of a household, income and wealth are themselves not highly correlated. As a stock-measure (and accumulated across generations), wealth inequality tends to be higher than income inequality, and – at the aggregate level – the level of wealth inequality is not systematically related to the level of income inequality (Causa et al., 2019; Keister & Moller, 2000). Describing intersections between different economic dimensions contributes to identifying and understanding configurations of economic and material well-being vs. vulnerability (e.g. Kuypers & Marx, 2019). Assessing levels of (housing) wealth across income groups is furthermore helpful in capturing different aspects of wealth dynamics. For example, summary housing wealth inequality measures could, in theory, remain relatively unchanged (e.g. when house prices decline, on average, to the same extent for all levels of housing wealth), whilst at the same time housing wealth could become more or less concentrated within particular income groups, as some income groups acquire more (valuable) properties whilst other income groups do not manage to access homeownership in the first place (Dewilde & Flynn, 2021). Thirdly, whilst regular wealth or income summary inequality measures usually apply to the whole population (few households have literally zero income or wealth), housing wealth only pertains to those who own houses. In countries where the majority of households rents, the median level of housing wealth is 0. This complicates the calculation, interpretation and comparison of various measures, such as the wealth-based GINI-coefficient, the P90/P10 ratio or housing wealth holdings/shares by wealth groupings (e.g. wealth deciles).





3.3.3 Measures

In the HFCS, only gross household income is available. Income inequality in this chapter is measured by means of the Gini-coefficient.¹⁴ Regarding the wealth distribution, we report the wealth-based Gini-coefficient as well as one measure capturing (trends in) wealth concentration intersected with income: the ratio of the housing wealth share (%) owned by the top income quintile (tertile) to that of the bottom quintile (tertile), indicated as ‘quintile (tertile) share ratio’. Whereas the Gini-coefficient takes into account all households relative to one another (and hence obscures differences in terms of where in the income/wealth distribution exactly the largest relative inequalities are located), the latter measure simply compares rich and poor segments of society. This measure also ‘compensates’ for the well-known fact that the Gini-coefficient is more sensitive to changes around the middle of the distribution than at the extremes. Both summary-measures hence capture different aspects of the relative inequality distribution. We also report the concentration of housing wealth itself within income quintiles or tertiles (depending on sample sizes, in Appendix). To assess the concentration of wealth, we take the amount of wealth each income quantile holds as a share of the sum total of all wealth (for the relevant sample selection). We describe these wealth inequality measures as ‘across the income distribution’ to highlight the additional context they provide. Income quantiles are defined at the level of the sample selection to which the respective analyses pertain (see further). Income and gross wealth variables were bottom-coded at 1; income has been top-coded at 10 times the median and wealth variables at the 99th percentile. All measures are country-specific and appropriate weighting factors (see below) have been applied in their calculation.

¹⁴ Generalized S-Gini index with aversion parameter set at 2 (the most-used Gini-coefficient) and allowing for negative values. We used the STATA set of commands (yadap: inequaly, povery, percentils) made available by Philippe Van Kerm (<http://www.vankerm.net/stata>).





Analyses in this chapter use survey-provided weights (correcting for unequal probabilities of households being selected into the sample due to survey design (e.g. oversampling of wealthy households) and selective non-response), as well as the five imputates arising from the multiple imputation of missing income and wealth components (ECB, 2023a). As the focus of this chapter is on the importance and distribution of housing and non-housing wealth across the general population, no additional efforts have been made to adjust for likely remaining under-reporting of wealth ownership at the very top of the wealth distribution.

3.4 Trends in inequality and concentration of housing wealth across all households

3.4.1 To what extent did housing wealth become more unequally distributed over time?

This first section explores developments, across European countries, in the distribution and concentration of gross housing wealth over time. As discussed previously, the tenure structure/homeownership rate is the main factor explaining comparative differences in housing wealth as well as total wealth inequality. The aim of this section is to investigate whether – in line with arguments arising from the more theoretical literature discussed in Chapter 1 of Deliverable 3.1 – a polarization of housing wealth between housing market insiders (homeowners) and outsiders (renters) can be discerned.

Given the time period under consideration (2010 to 2021), there are two important limitations to discuss. A first limitation is the rather short time period: traditionally, wealth inequality has been studied over much longer time frames, spanning several centuries even (e.g. Piketty, 2014; Piketty & Zucman, 2014; Roine & Waldenström, 2015). Secondly, the distribution of wealth is, more than income, sensitive to economic fluctuations. A common finding regarding financial wealth has been that growing prosperity is associated with increasing wealth inequality, whilst inequality tends to decrease during economic downturns (Keister & Moller, 2000). In times of crisis, wealth destruction tends to mostly affect the higher end





of the wealth distribution. In the course of April 2025, Donald Trump's trade war, for instance, wiped out trillions of dollars of asset wealth in a matter of days. Though housing values are influenced by housing markets rather than financial markets, the period under consideration has been characterized by high house price volatility, which affects the value of housing, and hence our dependent variables. Such volatility (strong decline around the Global Financial Crisis (GFC, 2008-9) followed by strong or more gradual increases during the post-crisis period, depending on the indicator used) was more outspoken in Southern- and Eastern-European countries, but also in, for instance, the Netherlands. House price volatility is, furthermore, likely to affect the distribution and concentration of housing wealth, as not all properties are affected equally. One could perhaps expect a decline in the inequality and concentration of gross housing wealth during the aftermath of the GFC. Higher-end properties (e.g. luxury villa's) tend to experience stronger price declines during a recession, and also pick up in housing value later and at a slower pace when the economy improves. Because during a recession more middle- and higher-income households might furthermore look for better-affordable properties, one would furthermore expect that demand pressure on and price competition for lower-end properties increases, also leading to a certain de-concentration of housing wealth. Expected increases in inequality and concentration of housing wealth associated with – for instance – declining and/or increasingly socially-stratified access to homeownership or multi-property ownership, could therefore potentially be offset by a de-concentration of gross housing wealth in the years immediately following the GFC.

Given differential patterns and trends in various housing inequalities established in Deliverable 3.1, we display descriptive trends over time for Western-Europe vs. Eastern-Europe. In Figures 3.1A and 3.1B, we show the trend in the wealth-based Gini-coefficient. In 9 out of 14 Western-European countries, we see a modest or stronger increase in the wealth-based Gini over time. Housing wealth inequality has increased most clearly in Finland and Spain. Only in Belgium there seems to be a decrease in gross housing wealth inequality, mainly between 2010





and the later waves. In several other countries we also see a decrease in gross wealth inequality between 2010 and 2014 (following the GFC), followed by a gradual increase in the later waves (Austria, Netherlands, Malta, Portugal). In Eastern-Europe on the other hand, total gross wealth inequality declined for 5 out of 8 countries; we only note increasing housing wealth inequality in Croatia and Slovenia. In the Baltics, as well as Poland and Hungary, there was a trend towards declining housing wealth inequality





Figure 3.1A Trends in gross housing wealth inequality over time across Western-Europe, wealth-based Gini (HFCS, 2010-2021, household level, weighted results) (all households)

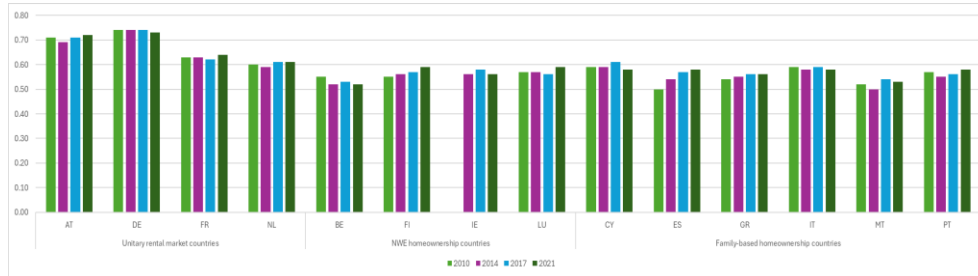


Figure 3.1B Trends in gross housing wealth inequality over time across Eastern-Europe, wealth-based Gini (HFCS, 2010-2021, household level, weighted results) (all households)

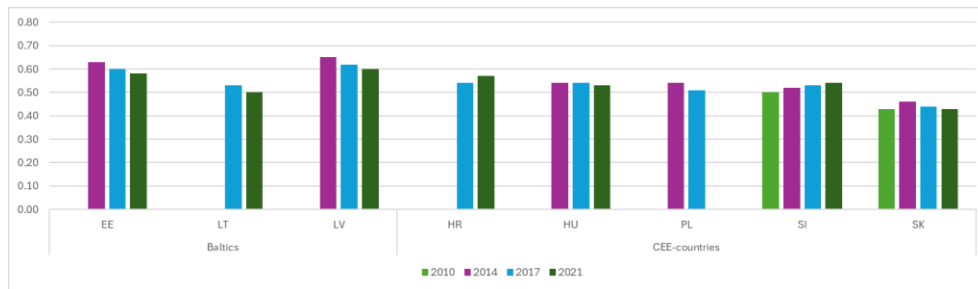
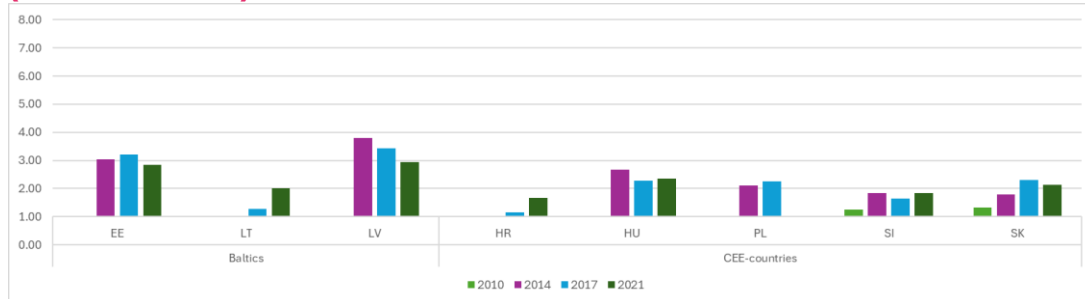


Figure 3.2A Trends in gross housing wealth concentration over time across Western-Europe, ratio of top quintile share vs. bottom quintile share, across the income distribution (HFCS, 2010-2021, household level, weighted results) (all households)





Figure 3.2B Trends in gross housing wealth concentration over time across Eastern-Europe, ratio of top quintile share vs. bottom quintile share, across the income distribution (HFCS, 2010-2021, household level, weighted results) (all households)





Figures 3.2A and 3.2B show developments in gross housing wealth over time, expressed as the ratio of the top quintile share vs. the bottom quintile share, across the income distribution (concentration graphs by housing-welfare regime for different age cohorts are available in the Appendix to this chapter). Increases indicate increasing wealth concentration, either because of growing top wealth shares, declining bottom wealth shares, or both. Again, we note increases in 9 out of 14 West-European countries, with a stronger trends towards increased concentration of wealth in Austria, France, Netherlands, Finland, Spain and Italy. Trends in Germany and Ireland are more diffuse. Gross housing wealth also became more concentrated across income quintiles in 5 out of 8 Eastern-European countries: Lithuania, Croatia, Poland, Slovenia, and Slovakia.

Different age cohorts have acquired housing wealth/homeownership in different age periods and under different macro-economic conditions (e.g. labour market conditions, access to mortgage finance, house price trends, privatization). For various reasons (e.g. a trend towards enhanced income-based stratification of homeownership entry in Chapter 5 of Deliverable 3.1), we could hypothesize that trends in gross housing wealth inequality (across the wealth distribution) and concentration (across the income distribution) would be more outspoken for younger households. Figures 3.3 and 3.4 therefore repeat the analyses above for the subgroups of households with a household reference person aged 40 and younger. Given the strong correlations in some countries between age cohort and household income (see Chapter 6 of Deliverable 3.1), we calculated cohort-specific income tertiles to investigate trends in (gross) housing wealth concentration over time. As evident from Table A3.2 in Appendix, the absolute number of young adult-households is not very large in several countries, which results in larger fluctuations (average sample size across countries is 691). Nevertheless, previous research on the same data for a smaller number of countries has shown that even in this case, some trends were statistically significant (Dewilde & Flynn, 2021).





Figures 3.3A and 3.3B show the time trend in the wealth-based Gini-coefficient for young households. Though stronger increases in gross housing wealth inequality can only be discerned for 6 out of 14 Western-European countries (Austria, Netherlands, Finland, Cyprus, Spain, Greece), there are no countries for which we note a decline. Furthermore, for those countries for which we do note an increase, there are quite large movements in the wealth-based Gini-coefficient: in Cyprus, the wealth-based Gini for young household increases from 0.52 in 2010 to 0.71 in 2021; in the Netherland a similar-sized increase is noted, from 0.55 to 0.70. Even bearing in mind that changes in the Gini-coefficient of gross housing wealth are strongly driven by house price volatility as well as tenure restructuring, and that country samples in HFCS are small, much smaller changes in the Gini-coefficient are generally considered as 'significant'. Across Eastern-European countries, we again see more varied developments, with increases in gross housing wealth inequality for young households in Lithuania (the opposite pattern was noted for the whole population), Croatia and Slovenia. A clear decrease is noted for Estonia (similar to the time trend for the whole population).





Figure 3.3A Trends in gross housing wealth inequality over time across Western-Europe, wealth-based Gini, households with a reference person ≤ 40 (HFCS, 2010-2021, household level, weighted results) (all households)

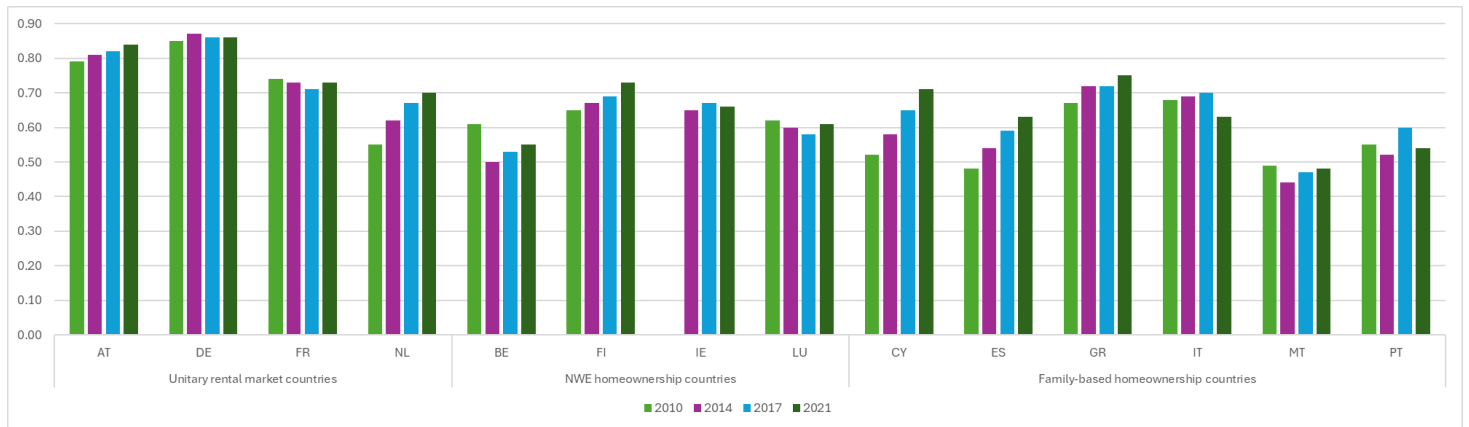


Figure 3.3B Trends in gross housing wealth inequality over time across Eastern-Europe, wealth-based Gini, households with a reference person ≤ 40 (HFCS, 2010-2021, household level, weighted results) (all households)

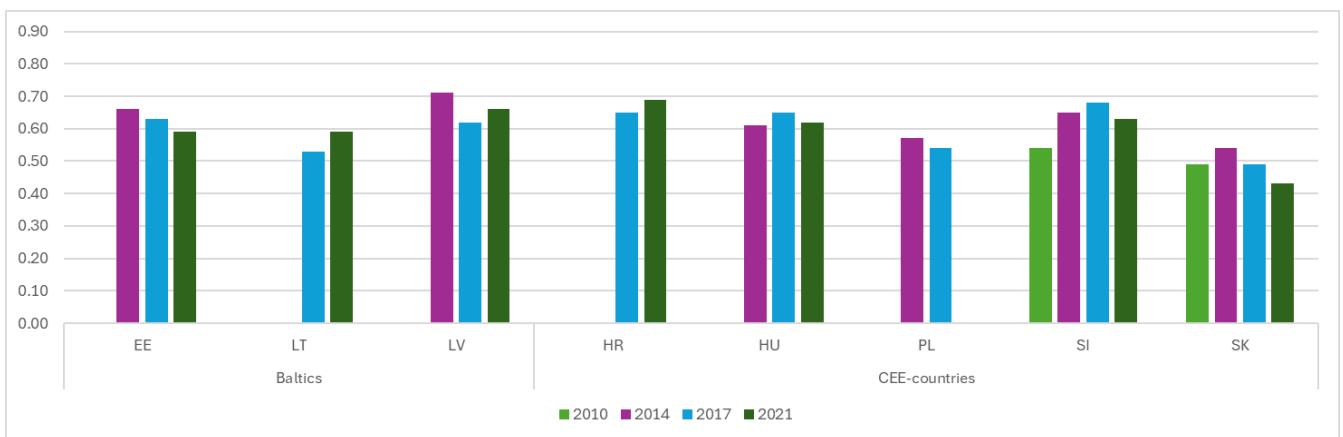




Figure 3.4A Trends in gross housing wealth concentration over time across Western-Europe, ratio of top tertile share vs. bottom tertile share, across the income distribution, households with a reference person ≤ 40 (HFCS, 2010-2021, household level, weighted results) (all households)

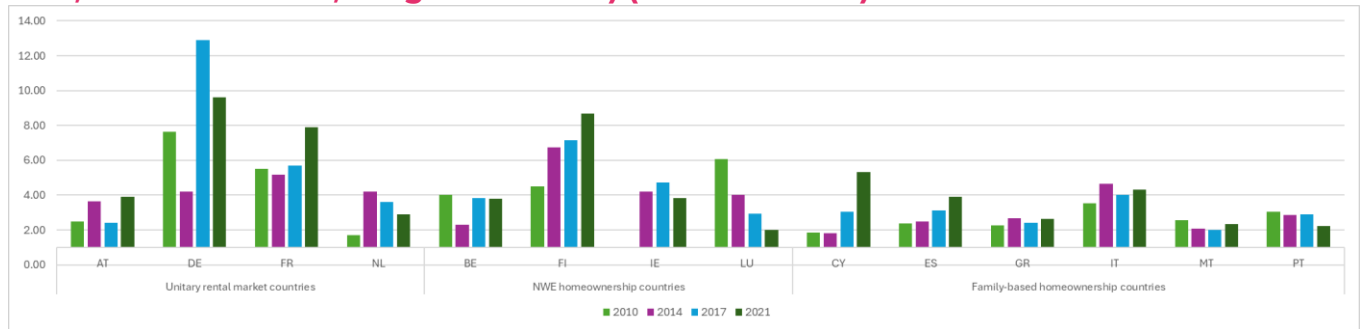
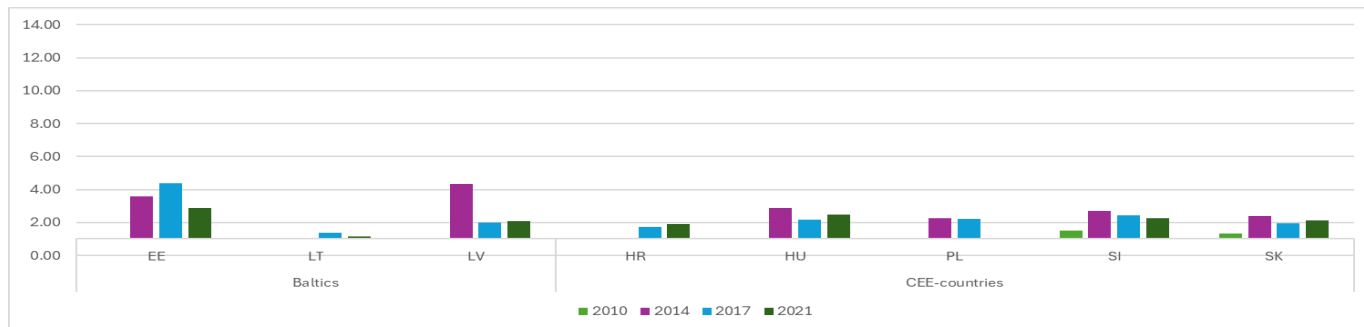


Figure 3.4B Trends in gross housing wealth concentration over time across Eastern-Europe, ratio of top tertile share vs. bottom tertile share, across the income distribution, households with a reference person ≤ 40 (HFCS, 2010-2021, household level, weighted results) (all households)





Figures 3.4A and 3.4B show developments in gross housing wealth over time, expressed as the ratio of the top tertile share vs. the bottom tertile share, across the income distribution.¹⁵ We again note increases in 9 out of 14 countries, with strong increases in housing wealth concentration in Finland, Cyprus, and also Germany. Declines are noted in Luxembourg and also Portugal; in both countries this relates to increases in housing wealth shares by the bottom income tertile and decreases in housing wealth shares by the top income tertile (see Appendix Figure A3.2). Developments in the Netherlands seem somewhat opposite based on both indicators; wealth share ratio's decline between 2014 and 2021, but in 2021 are still elevated from the 2010-level. Across Eastern-Europe, we see somewhat clearer increases in wealth concentration in Slovenia and Slovakia (evaluated from the 2010-value). In Latvia there seems a decline in housing wealth concentration.

3.4.2 Summarizing overview and test of significance

Summarizing overview

Table 3.1 summarizes the visual inspection of trends over time for all households. Overall, we note a trend towards increasing inequality and concentration of (gross) housing wealth, both across the total sample of households and for young households with a reference person ≤ 40 years of age. Such a trend is most consistent in the countries with a unitary rental market and across Southern-European countries. Bar strong and consistent increases in Finland, the trend is less outspoken in the traditional homeownership countries of Western-Europe, with Belgium and Luxembourg standing out in terms of declining inequality and concentration, or a more fluctuating trend. Developments are more varied in the CEE-countries, with more consistent increases in wealth inequality in Croatia, Slovenia, and perhaps Slovakia, and more consistent decreases in Hungary and Poland. In the Baltics (particularly Estonia and Latvia), there

¹⁵ We use age cohort-specific tertiles because of smaller sample sizes in HFCS.





seems to be an overall trend towards declining inequality and concentration of gross housing wealth. Inequality of gross housing wealth trends upwardly most consistently across measures and sample selections in Finland, Austria, the Netherlands, Spain, Slovenia, Croatia and France.

Trends are broadly similar for the total sample and when young households are considered; this could indicate that overall trends in gross housing wealth inequality and concentration are driven specifically by developments affecting subsequent younger cohorts. In other words, increased income-based stratification of homeownership entry is a potentially important driver of overall trends in (gross) housing wealth inequality, as well as wealth inequality in general. Chapter 5 of Deliverable 3.1 specifically investigated to what extent in recent years young adult-homeownership across European countries became 're-stratified'. An important research question was to what extent new cohorts entering the housing market are durably excluded from homeownership, as opposed to merely delaying their transition into homeownership. Based on data from EU-SILC, Chapter 5 tracked the homeownership rates of: (a) young adult age groups from 2005-2023 as well as (b) six birth cohorts, for 29 European countries. We found increasing income-based stratification of homeownership in social-democratic unitary rental-market countries (Netherlands, Denmark, Sweden), to a similar extent as in some homeownership countries with a dual rental market (e.g. UK, Ireland, Finland). New generations with low incomes in these countries are not only increasingly durably excluded from entering homeownership at all, but low incomes also seem to increasingly fall out of homeownership later in the life course. Income-based stratification of homeownership was also on the rise in several Eastern-European countries, either as increased exclusion amongst low incomes (e.g. Estonia, Slovenia) or as disproportionate growth amongst high incomes in Poland. In Southern-Europe, particularly in Spain and Greece, there was a strong generational decline of young-adult homeownership across cohorts and age groups, regardless of income. Finally, middle-class homeownership appeared to be eroding in a number of countries (Sweden, Norway, Denmark, and Ireland, but also Estonia, Slovakia and Slovenia). In the Netherlands, France and Luxembourg, only





low incomes were increasingly excluded, whereas middle-income homeownership rates were stable or even rising.

Table 3.1 Trends in inequality and concentration of gross housing wealth (HFCS, 2010-2021, household level, weighted results) (all households)

Housing-welfare regime	Time	Inequality (all households)	Concentration (all households)	Inequality (young households)	Concentration (young households)	Income-based stratification of young-adult homeownership
Social-democratic unitary rental market-countries						
NL	2010-2021	small increase	increase	increase	small increase	small increase
Conservative-corporatist unitary rental market-countries						
AT	2010-2021	small increase	increase	increase	increase	small increase
DE	2010-2021	Stable	fluctuating	stable	increase	stable
FR	2010-2021	small increase	increase	stable	small increase	small increase
NWE homeownership countries - dual rental market						
BE	2010-2021	small decrease	small increase	small decrease	stable	small decrease
FI	2010-2021	increase	increase	increase	increase	increase
IE	2014-2021	stable	stable	stable	stable	stable
LU	2010-2021	small increase	small increase	stable	decrease	decrease
SE family-based homeownership countries						
CY	2010-2021	stable	stable	increase	increase	small increase
ES	2010-2021	increase	increase	increase	increase	small increase
GR	2010-2021	small increase	stable	increase	stable	stable
IT	2010-2021	stable	small increase	stable	small increase	stable
MT	2010-2021	small increase	stable	stable	stable	small increase
PT	2010-2021	small increase	small increase	stable	small decrease	fluctuating
Baltics						
EE	2014-2021	decrease	stable	decrease	stable	decrease
LT	2017-2021	decrease	increase	small increase	small decrease	small decrease
LV	2014-2021	decrease	decrease	small decrease	decrease	fluctuating
CEE-countries						
HR	2017-2021	small increase	increase	small increase	small increase	small increase
HU	2014-2021	small decrease	small decrease	stable	stable	small decrease
PL	2014-2017	small decrease	small increase	small decrease	stable	small decrease
SI	2010-2017	increase	increase	increase	increase	increase
SK	2010-2017	stable	increase	stable	increase	small decrease

Though conclusions drawn from Chapter 5 depended somewhat on the specific age group and cohort considered, HFCS-data also reveal increased income-based stratification of homeownership amongst households with a reference person ≤ 40 years of age, operationalized in terms of developments in the ratio of young adult-homeownership rates in the top income tertile vs. the bottom income tertile in





subsequent years (see Appendix Figures A3.5A and B).¹⁶ Familiar housing-welfare regime patterns arise, with increased income-based stratification of young-adult homeownership most evident in the countries with a unitary rental market and in Southern-Europe. We see declining income-based stratification of young adult-homeownership across most of Eastern-Europe (bar Slovenia and Croatia). ***On face value, it would appear that trends in gross housing wealth inequality and concentration amongst all households are partly driven by trends in gross housing wealth inequality and concentration amongst young-adult households, in turn driven by increased income-based stratification of young-adult homeownership.*** These overall trends are increasing in the Netherlands, Austria, Finland, France, as well as in most Southern-European countries, Croatia, Slovenia and Slovakia; the trends are decreasing in the Baltics, Hungary, and Poland.

Test of significance

As we are interested in evaluating whether there is a significant within-country trend over time towards increased inequality and concentration of gross housing wealth, we evaluate a (linear) time trend using fixed-effects regression based on a country-year panel data set constructed by the author from HFCS, using the indicators discussed above. Fixed-effects models control for all time-invariant differences between countries (e.g. culture, historically-evolved long-standing differences in institutions), and therefore only capture the causes of change *within* a country. As there are reasons to believe that inequality trends within countries are influenced by their own internal characteristics (i.e. the housing-welfare regime/tenure structure), fixed-effects models are the superior choice (vs. random-effects models), but as all between-country variation is removed from the data by using each country as a control for itself, fixed-effects models also tend

¹⁶ We also evaluated the trend in the absolute %-difference, which delivered very similar patterns.





to be statistically inefficient, certainly when based on a smaller number of time points (e.g. Andreß et al., 2013; Torres-Reyna, 2007).

Models below are estimated on an unbalanced panel of 78 country-years, as well as on a Western-European (55 country-years) and Eastern-European subsample (23 country-years). While the wealth-based Gini-coefficient was more or less normally distributed, the wealth share ratio was log-transformed in order to achieve a normal distribution. Significance tests indicated that for most models reported below, it was not necessary to additionally include time fixed-effects in addition to the linear time trend.

Figure 3.5. Time trends across Eastern- and Western-Europe, wealth-based Gini-coefficient

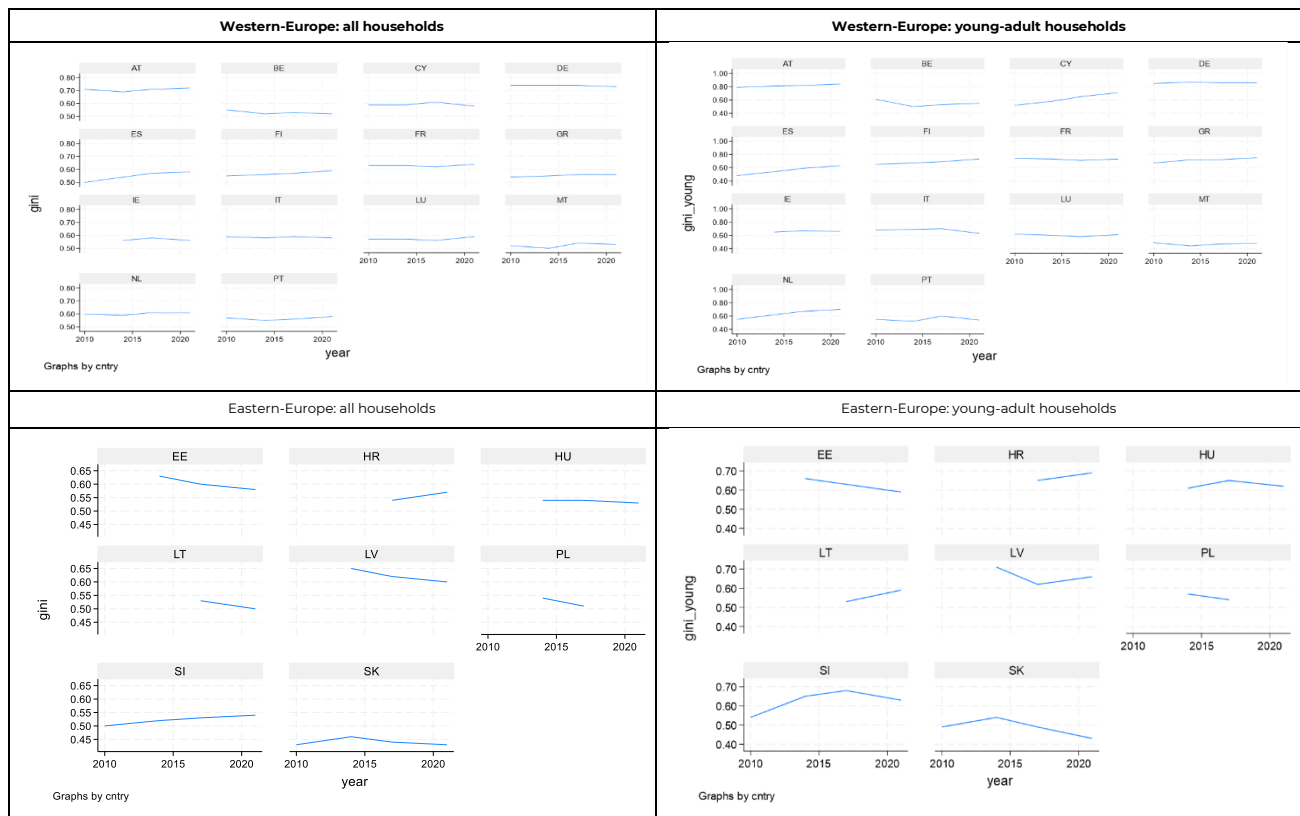


Table 3.2. Panel fixed-effects regression evaluating the existence of a linear time trend towards high housing wealth inequality, all households

	Total sample		Western-Europe			Eastern-Europe		
	(N=78 country-years)		(N=55 country-years)			(N=23 country-years)		
	Coefficient	SE	Coefficient		SE	Coefficient		SE
Year	0.0008	0.0005	0.0012	*	0.0005	-0.0010		0.0013
Constant	-0.9631	0.9768	-1.8610		0.9698	2.5424		2.5949
Sigma_u	0.0643		0.0625			0.0571		
Sigma_e	0.0160		0.0142			0.0193		
Intraclass correlation	0.9414		0.9510			0.8976		
F-test (Prob > F)	2.48		6.40	*		0.60		

Note: (*): p<0.10; *: p<0.05; **p<0.01; ***p<0.001.

Table 3.3. Panel fixed-effects regression evaluating the existence of a linear time trend towards higher housing wealth inequality, young households

	Total sample		Western-Europe			Eastern-Europe		
	(N=78 country-years)		(N=55 country-years)			(N=23 country-years)		
	Coefficient	SE	Coefficient		SE	Coefficient		SE
Year	0.0032	0.0012	0.0041	**	0.0013	-0.0004		0.0030
Constant	-5.7637	2.4169	-7.5996		2.5465	1.3773		5.9539
Sigma_u	0.0946		0.1066			0.0626		
Sigma_e	0.0397		0.0373			0.0442		
Intraclass correlation	0.8506		0.8911			0.6671		
F-test (Prob > F)	7.01	*	10.50	**		0.02		

Note: (*): p<0.10; *: p<0.05; **p<0.01; ***p<0.001.

In line with descriptive findings above, there is a **statistically significant trend toward increasing inequality of gross housing wealth over time across Western-European countries, both for all households and for young adult-households** (Tables 3.2 and 3.3). A similar trend cannot be discerned across Eastern-European countries. **With regard to the concentration of gross housing wealth over time, a trend towards increased concentration can be discerned across the total sample of countries (all households)**, though it is less evident for the Eastern-European subsample. The trend towards increased concentration of housing wealth appears less strong for young households (which could be explained by the fact that less of them become homeowners during this period), and insignificant across Eastern-Europe





(Tables 3.4 and 3.5). **All in all, we can say that across Europe, there is a trend towards increased inequality and concentration of housing wealth, in Western- rather than in Eastern-Europe. Again, the pattern of these findings is in line with an interpretation singling out the potential importance of increasingly stratified access to homeownership in Western-Europe.**

Figure 3.6 Time trends across Eastern- and Western-Europe, wealth concentration (quintile/tertile top to bottom share ratio)

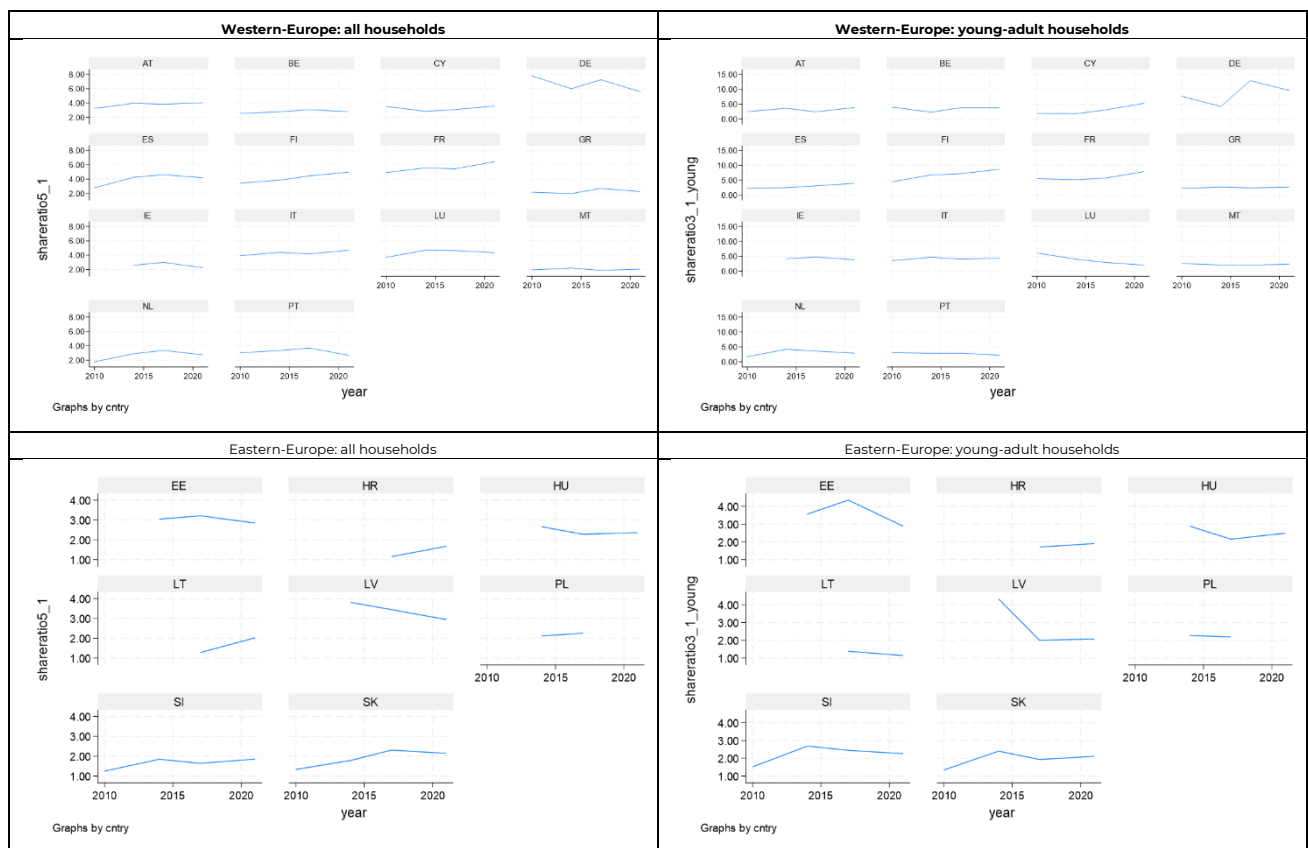




Table 3.4 Panel fixed-effects regression evaluating the existence of a linear time trend towards higher housing wealth concentration (log-transformed), all households

	Total sample			Western-Europe			Eastern-Europe		
	(N=78 country-years)			(N=55 country-years)			(N=23 country-years)		
	Coefficient		SE	Coefficient		SE	Coefficient		SE
Year	0.0144	**	0.0044	0.0121	*	0.0046	0.0231	(*)	0.0112
Constant	-27.9238		8.7832	-23.2363		9.2194	-45.8653		22.5550
Sigma_u	0.4161			0.3377			0.3247		
Sigma_e	0.1441			0.1349			0.1676		
Intraclass correlation	0.8929			0.8624			0.7897		
F-test (Prob > F)	10.92	**		7.05	*		4.27	(*)	

Note:

(*): p<0.10; *: p<0.05; **p<0.01; ***p<0.001.

Table 3.5 Panel fixed-effects regression evaluating the existence of a linear time trend towards higher housing wealth concentration (log-transformed), young households

	Total sample			Western-Europe			Eastern-Europe		
	(N=78 country-years)			(N=55 country-years)			(N=23 country-years)		
	Coefficient		SE	Coefficient		SE	Coefficient		SE
Year	0.0149	(*)	0.0085	0.0184	(*)	0.0098	0.0013		0.0170
Constant	-28.8564		17.1080	-35.7505		19.8466	-1.9121		34.3075
Sigma_u	0.4401			0.3841			0.3045		
Sigma_e	0.2807			0.2904			0.2549		
Intraclass correlation	0.7108			0.6363			0.5881		
F-test (Prob > F)	3.07	(*)		3.48	(*)		0.01		

Note: (*): p<0.10; *: p<0.05; **p<0.01; ***p<0.001.

3.5 Trends in inequality and concentration of housing wealth across homeownership households

3.5.1 To what extent did housing wealth become more unequally distributed over time?

Firstly, we assess whether there is evidence of housing wealth polarization between low wealth/income and high wealth/income homeownership households. From the literature discussed in Chapter 1 of Deliverable 3.1, such polarization *within* the homeowner-segment could arise from several different mechanisms, such as increased cumulative advantage/disadvantage in terms of capital gains returns in relation to initial housing investments (which have also become more socially-stratified in themselves),





the amplifying impact of family support for housing intersecting with socio-economic position (as family support tends to be higher for better-placed young adults compared with less advantaged young adults, allowing the former to purchase more expensive properties earlier in the life-course and in more 'productive' locations), or the suspected growth of multi-property ownership at the high end of the income and wealth distributions.

Given that associations between income and tenure vary across housing-welfare regimes, and that the focus of this section is on mechanisms driving trends in housing wealth inequality and concentration other than the tenure structure (i.e. trends in homeownership rates), concentration shares are calculated using homeowner-specific as well as age cohort-specific (for the subsample of young homeowners) income quantiles.

Though one would perhaps expect much smaller changes over time within the homeowner-segment, we again can discern some general trends over time. Across Western-European countries, we only see a trend towards declining wealth inequality and concentration in Cyprus, Portugal and Germany (Figures 3.7A and 3.7B). In other countries, the trend is either stable or increasing (about 8 out of 14 countries) over time. Increases are most consistent across both measures in France, Finland, Greece and Italy. Across Eastern-Europe, developments are again different (Figures 3.8A and 3.8B). Based on the wealth-based Gini-coefficient, there seems a trends towards a more equal distribution of gross housing wealth (with Slovenia as the exception). Based on the wealth share ratio across the income distribution (top quintile vs. bottom quintile), however, the overall trend is towards increasing concentration of gross housing wealth over time (with Poland, Croatia, Slovenia and Slovakia showing increased concentration, similar to developments for all households); such a trend is less evident in the Baltic states. As indicated in section 3.3, both measures capture different aspects of trends in the distribution of housing wealth.

Figures 3.9A-B and 3.10A-B display trends in wealth inequality and concentration amongst young homeowners. Given the smaller number of young homeowners in, for





instance, countries with a unitary rental market (e.g. Austria), where levels of multi-generational co-residence are high, or with small samples in general (e.g. Cyprus and Croatia), the average sample size is now only 387 (wave 4). It is therefore important not to over-interpret large fluctuations. Again, we see a similar picture emerging, with stable or increasing wealth inequality (based on the Gini-coefficient) across Western-European countries (clearer increases in Austria, Finland, Netherlands, Italy, Greece, Cyprus) and for Slovenia and Slovakia. Small declines in gross housing wealth inequality are limited to Estonia, Croatia and Poland. Increases in the wealth share ratio between the top and bottom income tertile are more common in unitary rental market countries, Southern-European countries and also Central- and Eastern-European countries. During the decade from 2010 to 2021, gross housing wealth became clearly more concentrated in Austria, France, Spain, Italy and also Slovakia.





Figure 3.7 (A) Trends in gross housing wealth inequality over time across Western-Europe, wealth-based Gini (HFCS, 2010-2021, household level, weighted results) (homeowners)

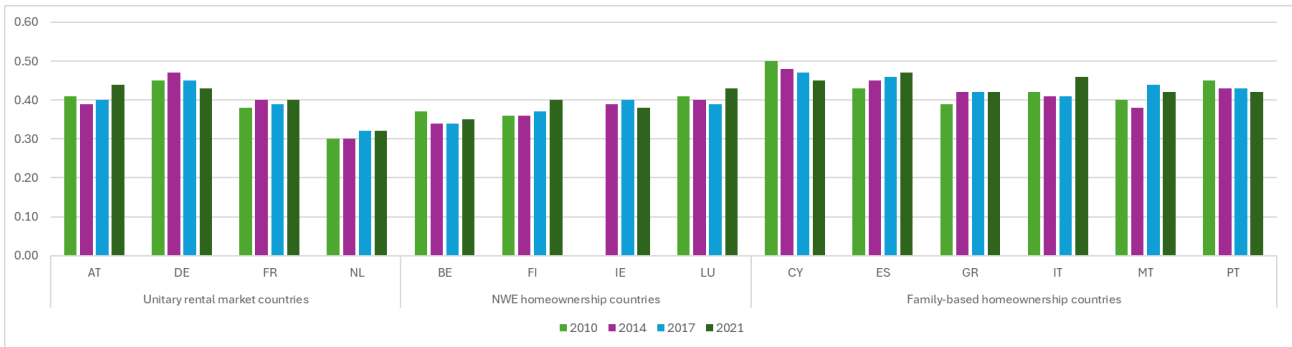


Figure 3.7 (B) Trends in gross housing wealth inequality over time across Eastern-Europe, wealth-based Gini (HFCS, 2010-2021, household level, weighted results) (homeowners)

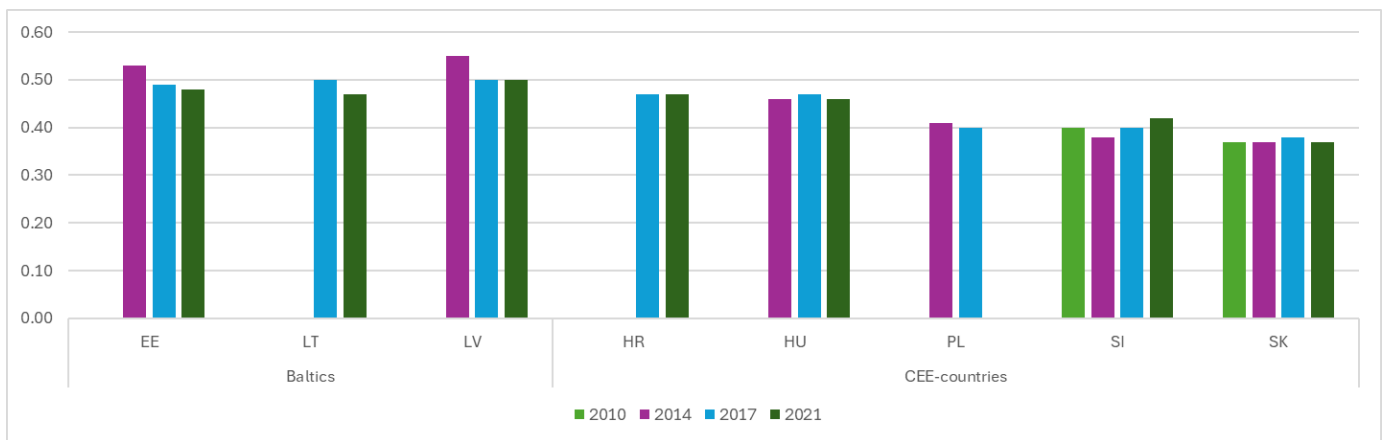




Figure 3.8 (A) Trends in gross housing wealth concentration over time across Western-Europe, ratio of top quintile share vs. bottom quintile share, across the income distribution, (HFCS, 2010-2021, household level, weighted results) (homeowners)

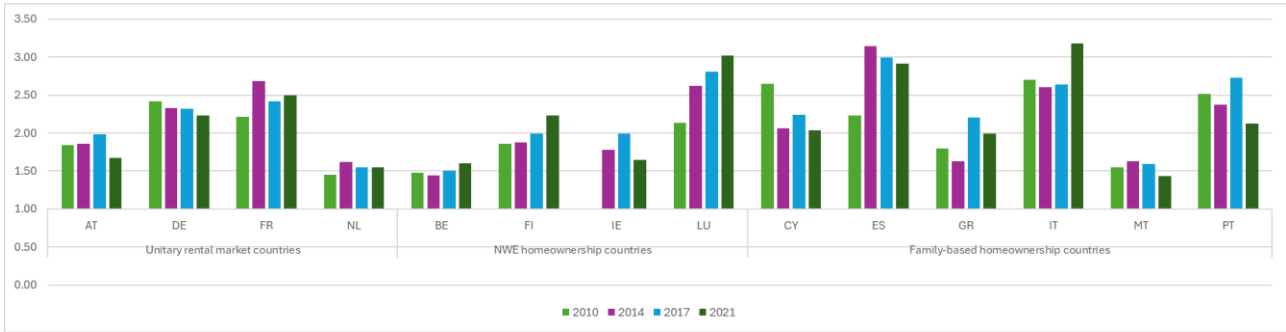


Figure 3.8 (B) Trends in gross housing wealth concentration over time across Eastern-Europe, ratio of top quintile share vs. bottom quintile share, across the income distribution, (HFCS, 2010-2021, household level, weighted results) (homeowners)

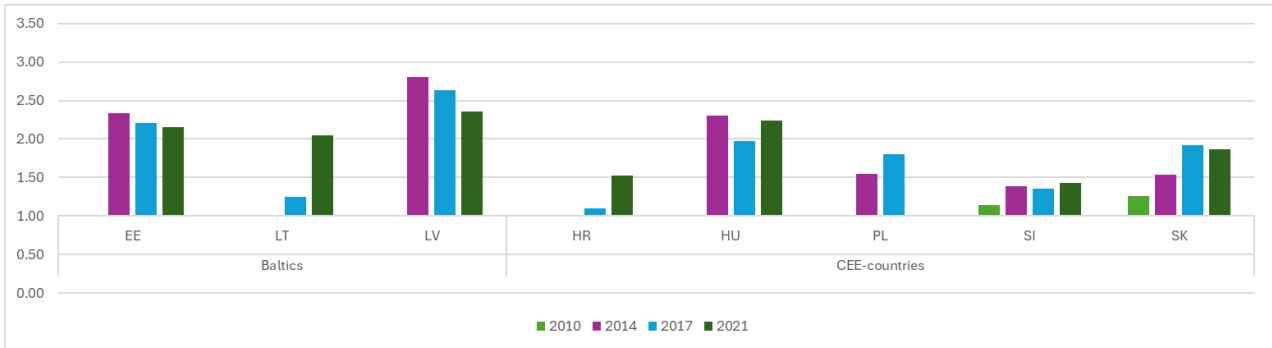




Figure 3.9 (A) Trends in gross housing wealth inequality over time across Western-Europe, wealth-based Gini, households with a reference person ≤ 40 (HFCS, 2010-2021, household level, weighted results) (homeowners)

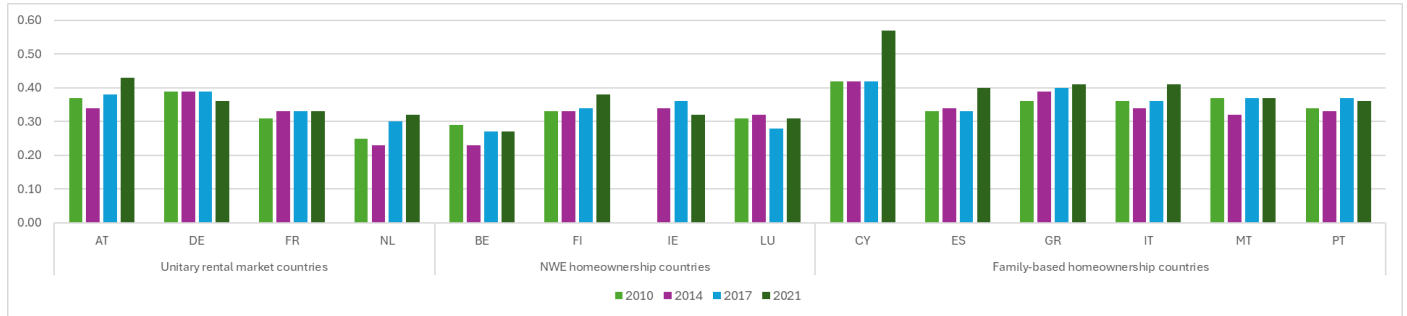


Figure 3.9 (B) Trends in gross housing wealth inequality over time across Eastern-Europe, wealth-based Gini, households with a reference person ≤ 40 (HFCS, 2010-2021, household level, weighted results) (homeowners)

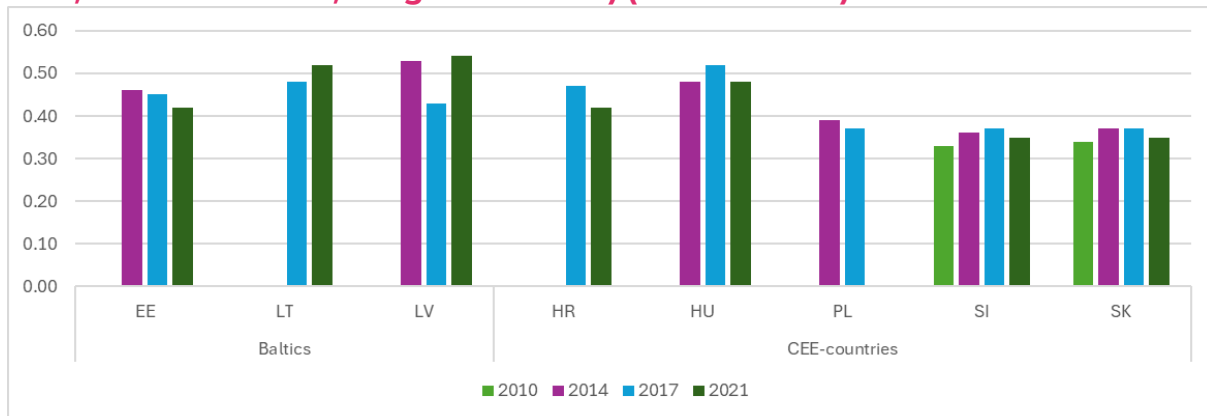
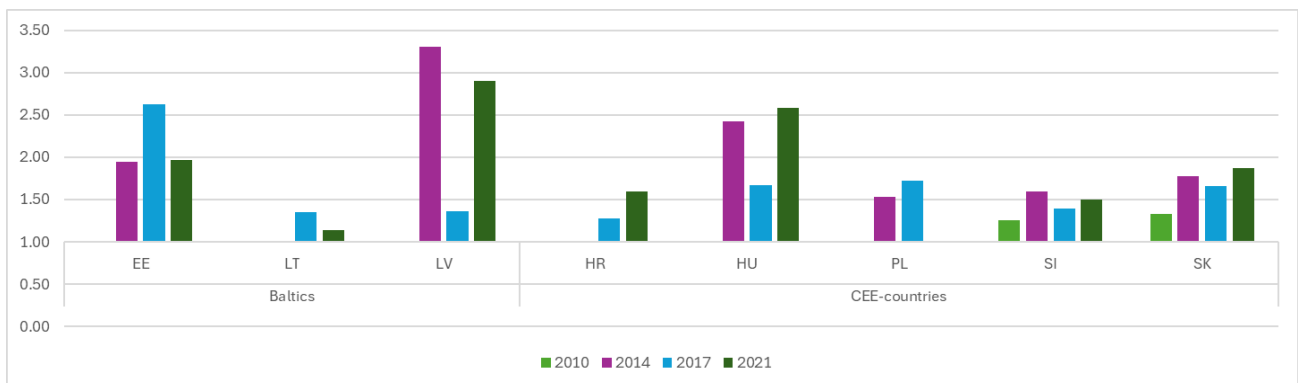




Figure 3.10 (A) Trends in gross housing wealth concentration over time across Western-Europe, ratio of top tertile share vs. bottom tertile share, across the income distribution, households with a reference person ≤ 40 (HFCS, 2010-2021, household level, weighted results) (homeowners)



Figure 3.10 (B) Trends in gross housing wealth concentration over time across Eastern-Europe, ratio of top tertile share vs. bottom tertile share, across the income distribution, households with a reference person ≤ 40 (HFCS, 2010-2021, household level, weighted results) (homeowners)





3.5.2 Summarizing overview and test of significance

Summarizing overview

Table 3.6 summarizes trends in inequality and concentration of gross housing wealth for all homeowners as well as young-adult homeowners. Again, though this time abstracting from trends in the tenure structure, we see a fairly consistent, but somewhat different, pattern of results across housing-welfare regimes. Increases in wealth inequality and concentration within the homeownership segment are most outspoken in Southern-Europe, several unitary rental market countries (bar Germany), and also CEE-countries Slovenia and Slovakia. Finland is again the country with the strongest increase in housing wealth inequality and concentration amongst the traditional homeownership countries of Western-Europe. Trends towards increasing inequality and concentration seem more outspoken for young-adult homeowners, particularly across Southern-Europe. Again, there is a clear trend towards declining inequality and concentration of gross housing wealth in the Baltic states, though more so for the total sample of homeowners than for young-adult homeowners. Increases across measures and groups are most evident in: Finland, Italy, Greece, Slovenia, Spain, Austria, France, the Netherland, and Slovakia. Declines in gross housing wealth inequality and concentration across measures and groups are most evident in: Estonia, Latvia and Germany – with some signs of decrease in Portugal and Cyprus for the total population. Whilst the overall polarization of (gross) housing wealth between owners and renters in the previous section seems to be driven by trends in young-adult homeownership, a polarization of (gross) housing wealth between low wealth/income and high wealth/income homeowners seems to be more specific to young adult-homeowners, with less outspoken developments in the total sample. This might indicate that there is indeed an increased intersection between the socio-economic position of young adult homeowners, and the type of properties they are entering (as was also suggested by Dewilde & Flynn, 2021 for a smaller selection of countries and over a shorter time period).





Test of significance

As before, we evaluate whether there is a statistically significant within-country trend over time towards increased inequality and concentration of gross housing wealth of homeowners as well as young homeowners. Again, we evaluate the (linear) time trend using fixed-effects regression based on the country-year panel data set constructed by the author from HFCS, using the homeowner-specific indicators discussed above. In Figures 3.11 and 3.12, we plot the respective time trends across Eastern- and Western Europe, allowing for an additional visual perspective.

Table 3.6. Trends in inequality and concentration of gross housing wealth (HFCS, 2010-2021, household level, weighted results) (homeowners)

Housing-welfare regime	Time	Inequality (homeowners)	Concentration (homeowners)	Inequality (young homeowners)	Concentration (young homeowners)
Social-democratic unitary rental market-countries					
NL	2010-2021	small increase	stable	increase	small increase
Conservative-corporatist unitary rental market-countries					
AT	2010-2021	small increase	stable	increase	increase
DE	2010-2021	small decrease	decrease	stable	fluctuating
FR	2010-2021	small increase	increase	stable	increase
NWE homeownership countries - dual rental market					
BE	2010-2021	stable	small increase	stable	stable
FI	2010-2021	increase	increase	small increase	small increase
IE	2014-2021	stable	stable	stable	stable
LU	2010-2021	stable	increase	stable	decrease
SE family-based homeownership countries					
CY	2010-2021	decrease	decrease	small increase	small increase
ES	2010-2021	increase	fluctuating	small increase	increase
GR	2010-2021	small increase	small increase	increase	small increase
IT	2010-2021	small increase	small increase	increase	increase
MT	2010-2021	small increase	small decrease	stable	fluctuating
PT	2010-2021	small decrease	small decrease	small increase	stable
Baltics					
EE	2014-2021	decrease	small decrease	small decrease	fluctuating
LT	2017-2021	small decrease	increase	small increase	small decrease
LV	2014-2021	decrease	decrease	stable	fluctuating
CEE-countries					
HR	2017-2021	stable	small increase	small decrease	small increase
HU	2014-2021	stable	stable	stable	fluctuating
PL	2014-2017	small decrease	small increase	small decrease	small increase
SI	2010-2017	small increase	small increase	small increase	small increase
SK	2010-2017	stable	increase	small increase	increase





Table 3.7. Panel fixed-effects regression evaluating the existence of a linear time trend towards higher housing wealth inequality, homeowners

	Total sample		Western-Europe			Eastern-Europe		
	(N=78 country-years)		(N=55 country-years)			(N=23 country-years)		
	Coefficient	SE	Coefficient		SE	Coefficient		SE
Year	0.0005		0.0005	p<0.11	0.0006		-0.0012	0.0012
Constant	-0.6136	1.0674	-1.4938		1.1777		2.7814	2.3334
Sigma_u	0.0502		0.0429				0.0538	
Sigma_e	0.0175		0.0172				0.0173	
Intraclass correlation	0.8913		0.8613				0.9058	
F-test (Prob > F)	0.34		2.60				1.00	

Note: (*): p<0.10; *: p<0.05; **p<0.01; ***:p<0.001.

Table 3.8. Panel fixed-effects regression evaluating the existence of a linear time trend towards higher housing wealth inequality, young Homeowners

	Total sample		Western-Europe			Eastern-Europe		
	(N=78 country-years)		(N=55 country-years)			(N=23 country-years)		
	Coefficient	SE	Coefficient		SE	Coefficient		SE
Year	0.0027	**	0.0009		0.0034	**	0.0010	0.0002
Constant	-5.1615		1.7984		-6.5108		1.9609	4.1214
Sigma_u	0.0653				0.0490			0.0629
Sigma_e	0.0295				0.0287			0.0306
Intraclass correlation	0.8304				0.7449			0.8082
F-test (Prob > F)	9.47	**			12.24	**		0.01

Note: (*): p<0.10; *: p<0.05; **p<0.01; ***:p<0.001.

From Tables 3.7 and 3.8, we conclude that for homeowners across European countries, an increasing trend toward higher inequality of gross housing wealth is not statistically significant. For young-adult homeowners, however, a similar trend is statistically significant in Western-Europe, which also drives the result for the total sample of all country-years. Tables 3.9 and 3.10 show results for our measure of housing wealth concentration. A time trend towards increased concentration of gross housing wealth (driving the overall result) is found across Eastern-Europe when considering all homeowners, and across Western-Europe when considering young-adult homeowners.





All in all, we find that also within the segment of homeowners, inequality and concentration of (gross) housing wealth seem on the increase. Trends are more outspoken when considering the concentration of housing wealth across the income distribution, and/or for younger households. All in all, these results indicate that changes in young-adult homeownership (overall delay/exclusion, increased income-based stratification) are not the only drivers of trends in inequality and concentration of gross housing wealth.

Figure 3.11. Time trends across Eastern- and Western-Europe, wealth-based Gini-coefficient

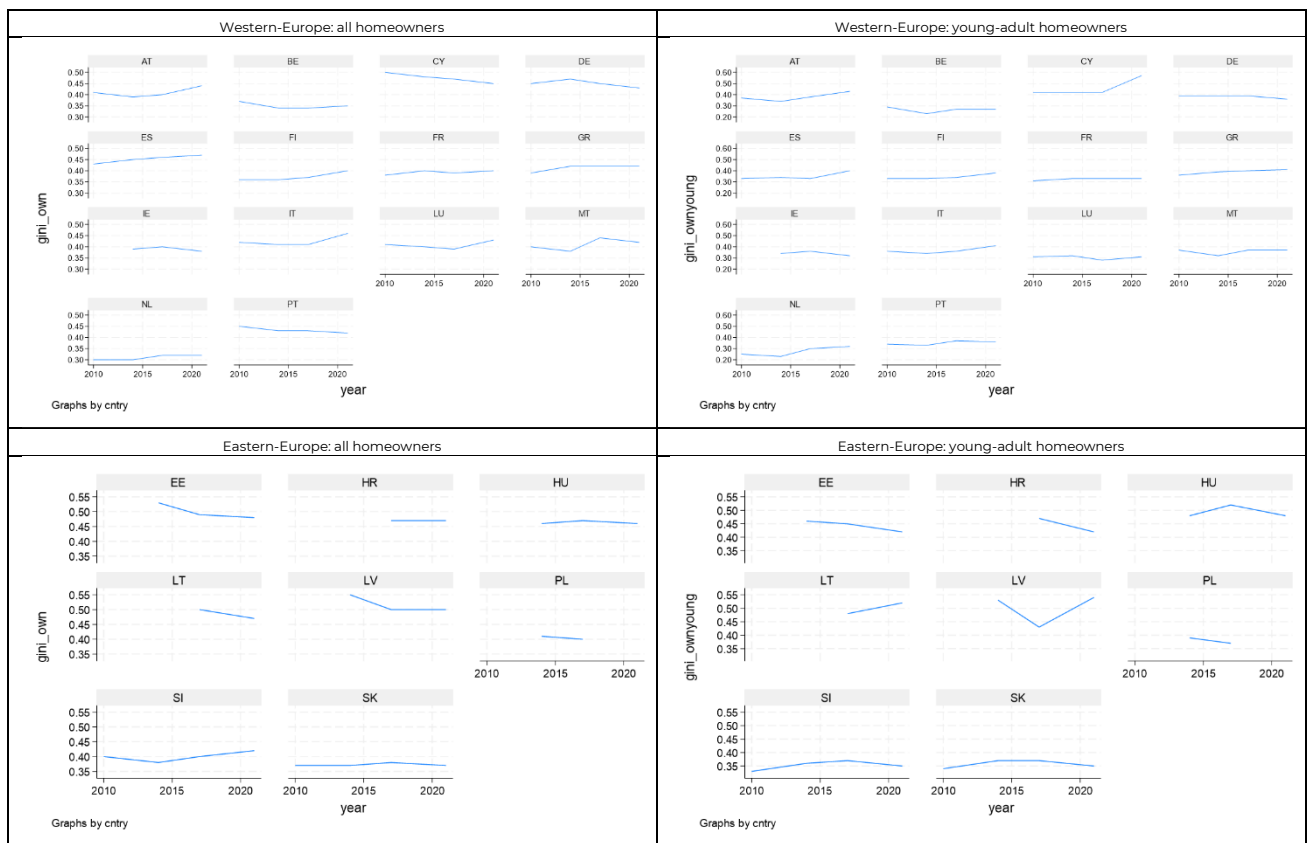




Table 3.9. Panel fixed-effects regression evaluating the existence of a linear time trend towards higher housing wealth concentration (log-transformed), homeowners

	Total sample			Western-Europe			Eastern-Europe		
	(N=78 country-years)			(N=55 country-years)			(N=23 country-years)		
	Coefficient		SE	Coefficient		SE	Coefficient		SE
Year	0.0079	*	0.0034	0.0046		0.0033	0.0207	*	0.0093
Constant	-15.2163		6.8082	-8.5042		6.5803	-41.1580		18.6684
Sigma_u	0.2411			0.2186			0.2520		
Sigma_e	0.1117			0.0963			0.1387		
Intraclass correlation	0.8233			0.8376			0.7676		
F-test (Prob > F)	5.46	*		1.97			5.00	*	

Note: (*): p<0.10; *: p<0.05; **p<0.01; ***:p<0.001.

Table 3.10 Panel fixed-effects regression evaluating the existence of a linear time trend towards higher housing wealth concentration (log-transformed), young homeowners

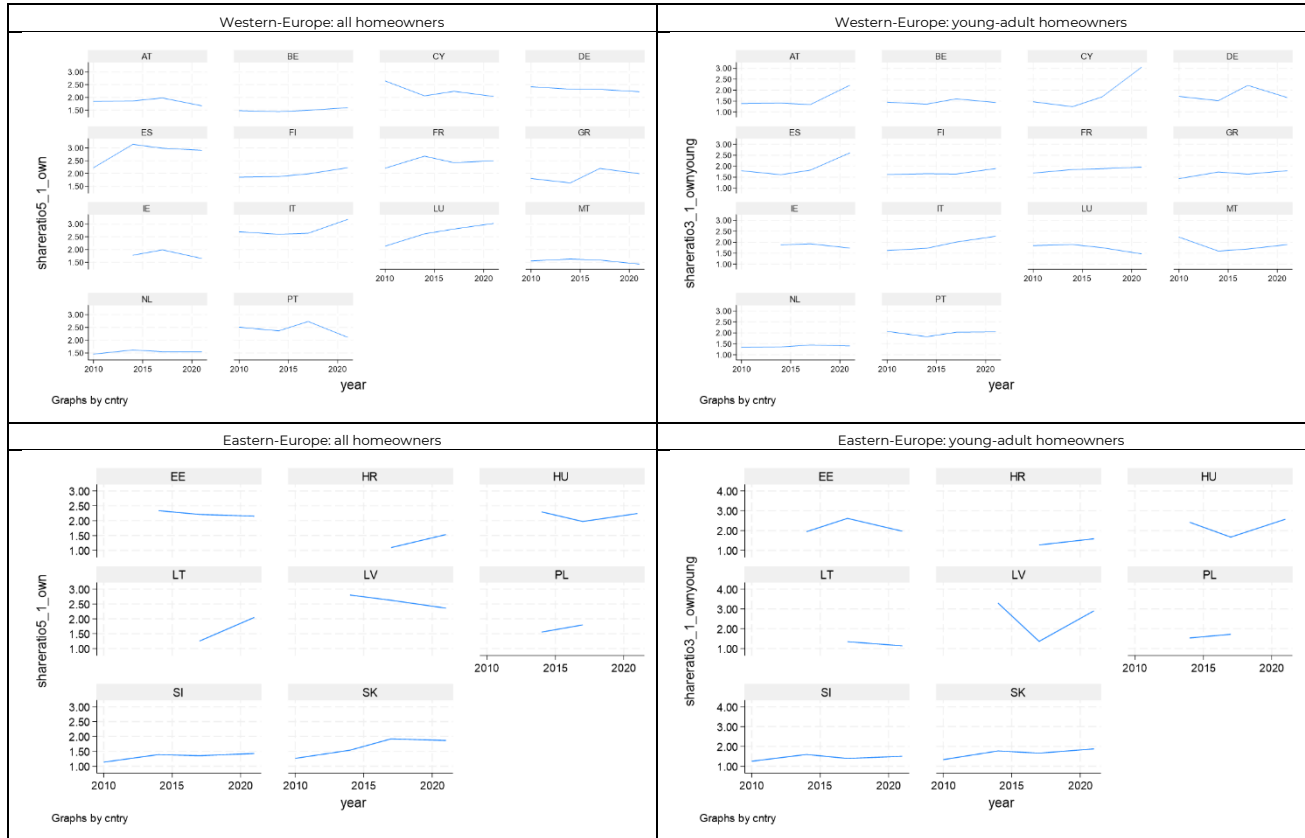
	Total sample			Western-Europe			Eastern-Europe		
	(N=78 country-years)			(N=55 country-years)			(N=23 country-years)		
	Coefficient		SE	Coefficient		SE	Coefficient		SE
Year	0.0143	**	0.0052	0.0146	**	0.0051	0.0132		0.0152
Constant	-28.3686		10.5375	-28.9356		10.3470	-26.1668		30.6770
Sigma_u	0.1616			0.1041			0.2397		
Sigma_e	0.1729			0.1514			0.2279		
Intraclass correlation	0.4663			0.3211			0.5252		
F-test (Prob > F)	7.53	**		8.12	**		0.76		

Note: (*): p<0.10; *: p<0.05; **p<0.01; ***:p<0.001.





Figure 3.12. Time trends across Eastern- and Western-Europe, wealth concentration (quintile/tertile top to bottom share ratio)



3.6 The interplay between income inequality, housing inequality and housing wealth inequality

In this section, we disentangle the various country-level drivers of a mostly statistically significant time-trend over the last decade (2010-2021) towards increased inequality and concentration of (gross) housing wealth across all households and for the subsample of homeowners, both for young-adult households and all homeowners. We distinguish between different groups of macro-level drivers. A conceptual model is depicted in Figure 3.13. We argue that higher inequality and concentration of housing wealth across all households is partly mediated by changing tenure structures and intensified social sorting, in particular declined opportunities to enter homeownership for young and low-income households, resulting in compositional changes in terms of the population

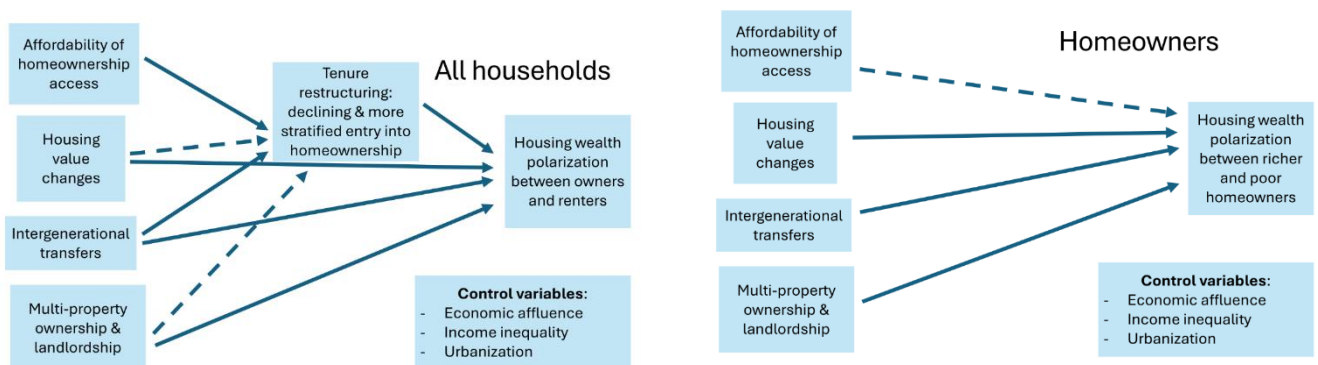




groups that are still able to accumulate housing wealth. For the subsample of homeowners, we expect enhanced housing wealth polarization to arise from the same set of drivers, but we expect no effect of changing tenure structures, given that these households have already successfully negotiated the hurdle of homeownership entry.

Given the larger number of variables and the smaller number of country-waves, we turn to random-effects models rather than less efficient fixed-effects models (modelling *only* within-country change). Whilst the more strict fixed-effects model assumes that unobserved country-level characteristics influence the dependent and/or the independent variables (and hence completely removes this source of variation), the random-effects models assumes that unobserved country-level effects are distributed randomly and are hence not correlated with the predictors and/or outcome. Though countries qualitatively differ from each other in terms of their housing-welfare regime, one could argue that these differences are mostly captured by the different variables included in the conceptual model. The Hausman-test is used to evaluate whether this assumption is valid. When not-significant ($p > 0,05$), this indicates that the more statistically efficient random-effects model could be the more suitable one. This is indeed the case, as indicated in the notes to each results-table. Furthermore, to control for cross-sectional heteroscedasticity and within-country auto-correlation, we estimate cluster-robust standard errors.

Figure 3.13. Conceptual model: drivers of housing wealth inequality and concentration





3.6.1 Macro-level drivers of housing wealth inequality: theory and expectations

Control variables

A first group of drivers pertains to three variables that could be labelled as control variables and/or alternative explanations: trends in economic affluence, trends in household income inequality, and trends in urbanization. From the literature, we could expect that stronger *economic growth* is positively associated with increased inequality and concentration of (housing) wealth. Such an effect, however, also depends on the underlying drivers of economic growth itself and the composition of households' wealth portfolio (e.g. Keister & Moller, 2000). To the extent that economic growth is derived from stock market or housing market booms (rather than more traditional savings), we could expect a trend towards enhanced inequality and concentration of housing wealth. To the extent that economic growth is derived from the growth of labour market incomes, more households could be expected to save for house purchase and hence be enabled to access housing wealth accumulation, in turn leading to declining housing wealth inequality and de-concentration. On the other hand, if more households can pay more for housing (especially when interest rates are low, allowing households to take on more mortgage debt (e.g. Damen et al., 2016)), house prices are also likely to increase accordingly in the long-term. All in all, given the declined power of labour vs. capital in recent decades, along with the increased importance of global capital in mortgage and housing markets (e.g. Aalbers, 2016; Fuller, 2019; Piketty, 2014; Piketty & Zucman, 2014), we expect that the inequality-enhancing effects of economic growth might outweigh inequality-reducing effects. Economic affluence is operationalized as Gross Domestic Product (GDP) per capita in international comparable prices (UNECE, US\$, prices and PPPs of 2010).

Given the positive (though modest) correlation between income inequality and wealth inequality (see Chapter 6 of Deliverable 3.1), we expect that increasing *income inequality* is associated with a trend towards higher inequality and concentration of housing wealth. For richer households, increasing absolute incomes/relative income inequality has been found to result in higher investments in larger, better-quality, or more housing (e.g. Dwyer, 2009). For poorer households, the impacts of increasing relative





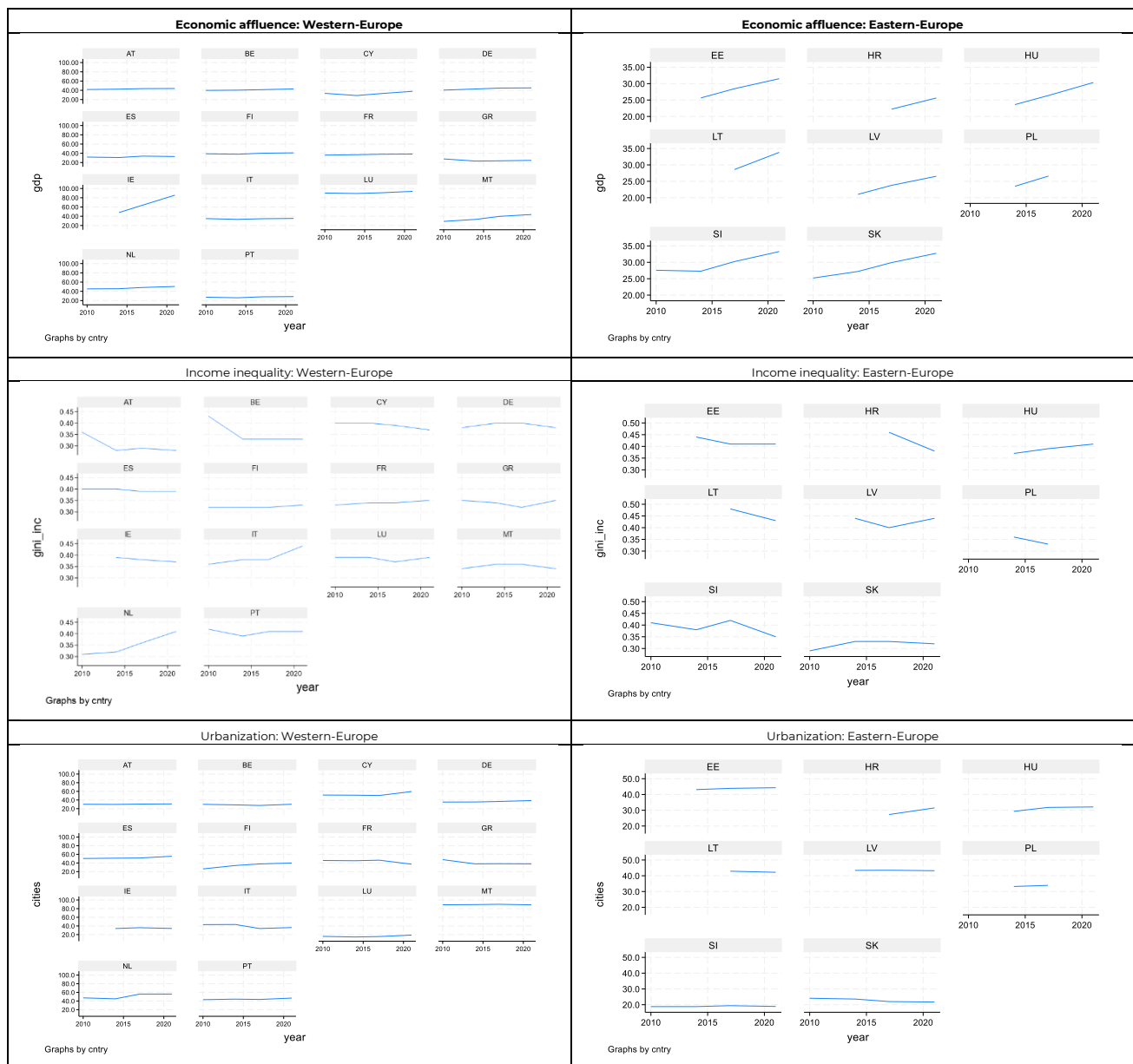
income inequality are rather dependent on a more complicated set of processes (e.g. whether filtering processes take place throughout the income distribution and across all housing market segments (e.g. Matlack & Vigdor, 2008; Rothenberg et al., 1991)). Absolute income deterioration of poorer households, however, is likely associated with enhanced competition for lower-value housing and more difficult entry into or higher exit rates from homeownership (e.g. Beer et al., 2011). Overall, a positive effect on housing wealth inequality and concentration of increasing relative income inequality could be expected. Income inequality is operationalized by means of the Gini-coefficient of (gross) household income, calculated from HFCS (see section 4 of this chapter).

More recently, Galster & Wessel (2024, p. 2) put forward the idea that growing wealth inequality across countries could be (partly) explained by *“the widespread, ongoing movement of population from rural to urban milieus, and the subsequent rural-urban differentiation in patterns of employment and housing”*. The focus of their analysis is however more limited and addresses only an element of this explanation: in Norway (controlling for selective migration patterns), urban residence has an important, independent effect on wealth accumulation. This effect comes about through interactive effects of labour and housing markets, with *“alterations in housing wealth”* appearing as an important causal pathway. Put differently, better-placed individuals not only have a higher chance of becoming an urban homeowner, but they also ascend a more profitable ‘housing value escalator’ by residing at higher levels of the Norwegian urban housing hierarchy for longer periods of time. We hence control for the *level of urbanization*, operationalized as the % of the population living in cities (EUROSTAT).





Figure 3.14 Trends in the control variables



From Figure 3.14, we learn that between 2010 and 2021 economic affluence has grown far more in Eastern-European countries compared with Western-Europe (bar the strong recovery in Ireland from the fiscal and economic crisis following the GFC), that trends in income inequality are more diverse, and that urbanization seems to be trending upwards rather gradually in most countries.





Affordability of homeownership access

A second group of drivers pertains to changes affecting different wealth and income groups in terms of (un)affordability of access to homeownership and housing wealth. A first indicator is the *availability of mortgage credit* (operationalized as the Residential Mortgage Debt to GDP ratio (EMF)), which is an often-used predictor of increasing or decreasing homeownership rates, particularly for young adults (Andrew, 2012; Dewilde, 2020; Scanlon et al., 2008; Whitehead & Williams, 2017). We expect that higher credit availability is associated with lower inequality and concentration of (gross) housing wealth, for younger households in particular. Credit restrictions for young adults, however, could remain hidden when more residential mortgage debt is taken up by (older) so-called ‘investor’-households or entrepreneurial landlords, leveraging mortgage debt to enhance multi-property ownership and landlordship (Desmond, 2012; Ronald & Dewilde, 2017).

A second variable is the often-cited *house price to income-ratio*; in this chapter we use this variable expressed in terms of its deviation from the long-term average (EUROSTAT).¹⁷ House price-to-income ratios are often used to illustrate a growing trend towards the *unaffordability of entering homeownership* for housing market entrants, in particular in so-called debt-driven (mostly Anglo-Saxon) economies (e.g. Ryan-Collins, 2021). We expect that increasing house price-to-income ratios are associated with higher inequality and concentration of housing wealth. An important (an often ignored) drawback of this indicator, however, is that it does not take account of long-term variations in interest rates – lower interest rates allow households to take up comparatively higher levels of mortgage debt. Higher house price-to-income ratios therefore do not necessarily reflect declined affordability of housing, but rather what households can afford to pay for homeownership entry (Damen et al., 2016).

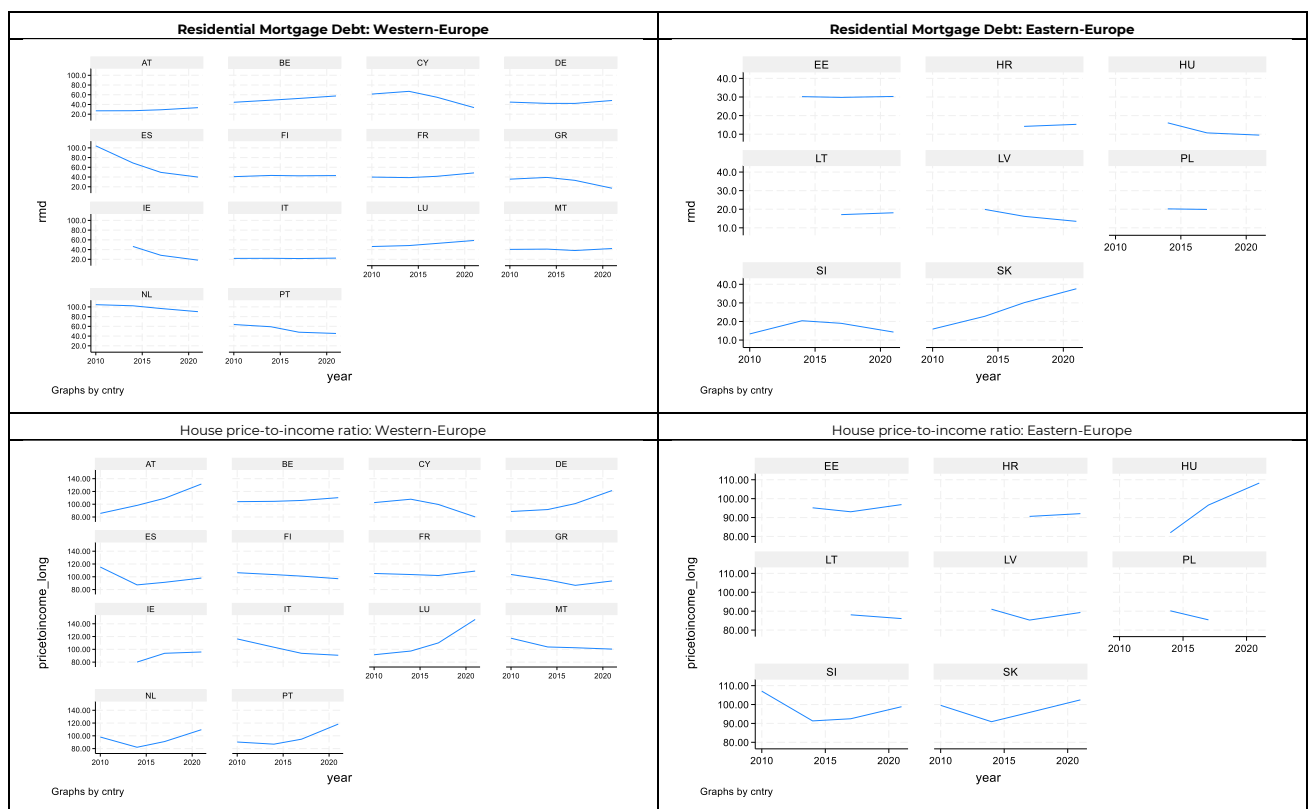
¹⁷ Calculated over the period from 2000 to the most recent data available. Related variants of this indicator (index, annual average rate of change) yielded more or less similar results.





Both variables discussed here mainly impact on the tenure structure (see next section), and are therefore expected to be more influential for the inequality and concentration variables pertaining to all households, rather than for the dependent variables capturing the polarization of (gross) housing wealth within the homeownership segment. Figure 3.15 shows that between 2010 and 2021 trends in availability of mortgage credit vary between countries (though decline seems to be more common), whilst long-term house price-to-income ratios have trended upwards (though not everywhere; the trend furthermore varies somewhat depending on the indicator used (not shown)).

Figure 3.15. Trends in homeownership (un)affordability.



Extent of homeownership stratification

We already discussed intensified income-based stratification of homeownership entry of young adults over time (Gielens & Dewilde, 2025; Howard et al., 2024). Such stratification is of a potentially more durable nature, which could be reinforced by increased



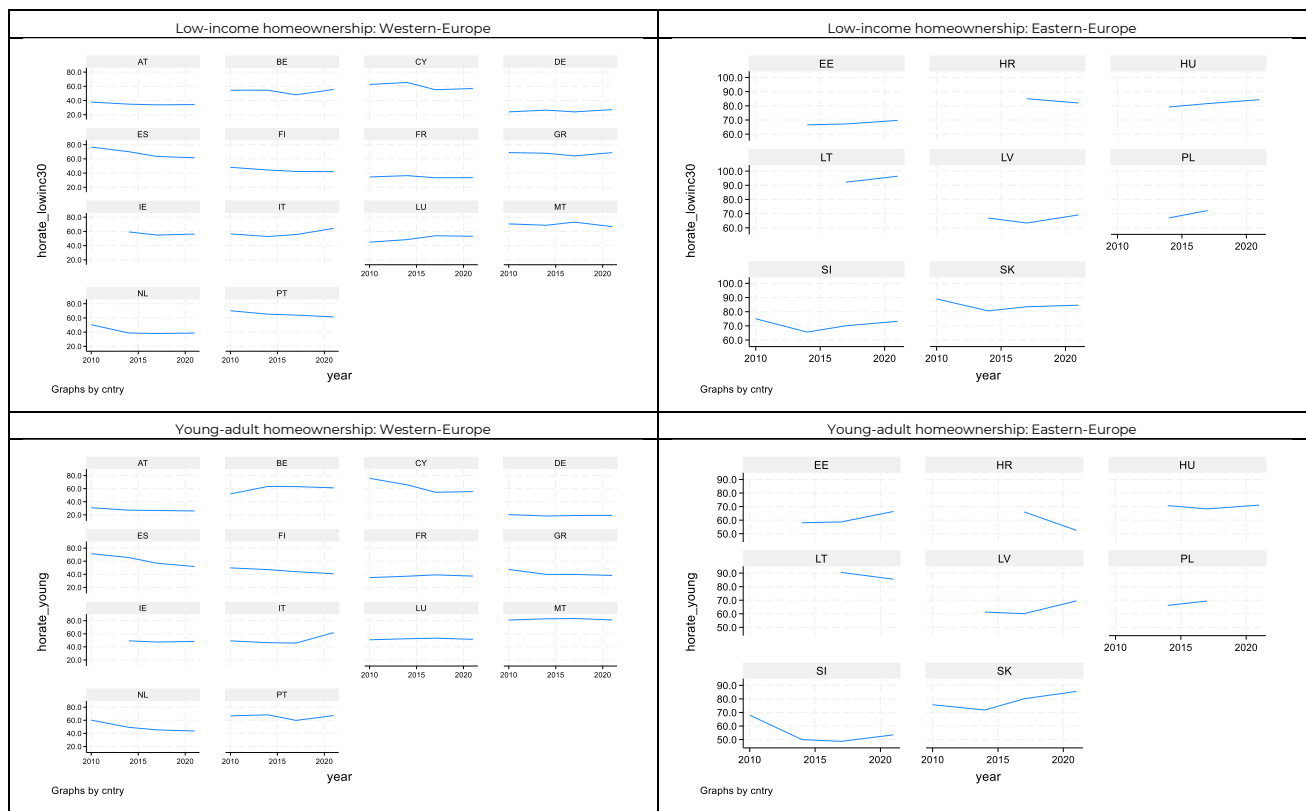


unaffordability of private renting for younger and lower-income households – turning renting from a ‘transitional tenure’ into a ‘forever tenure’. In previous empirical studies, low-income and young-adult households have often been analysed in isolation, notwithstanding some overlaps (e.g. Dewilde, 2022; Dewilde & Haffner, 2022). These overlaps however vary cross-nationally, depending on the income position of the elderly. Whilst in most Western-European countries young adults tend to have a higher chance of belonging to the lowest income tertile, in Eastern-Europe they are less likely to have a low income, given the (far) less advantageous income position of the elderly in most Eastern-European countries. In this chapter, we estimate the effect of cross-country and over-time trends in both: 1) the *low-income homeownership rate* (lowest tertile), and 2) the *young-adult homeownership rate*. We expect that these variables mainly explain trends towards increased inequality and concentration across all households (as they mostly influence the tenure structure): declining access of younger and low-income households to homeownership is expected to result in higher inequality and concentration of (gross) housing wealth. From Figure 3.16, we see that across Western-Europe, the low-income homeownership rate has gradually declined between 2014 and 2021, whilst in Eastern-Europe the time trend is rather indicative of improved access to homeownership for low-income households. In line with known trends in young-adult homeownership (Dewilde, 2020; Lennartz et al., 2016), similar findings pertain to the young-adult homeownership rate.





Figure 3.16. Trends in the extent of homeownership-stratification



Housing value changes

A fourth group of drivers pertains to *changes in the value of housing* (i.e. house price inflation) that could, when capital gains are unevenly distributed across the wealth and income distribution, impact on the inequality and concentration of gross housing wealth (see above).

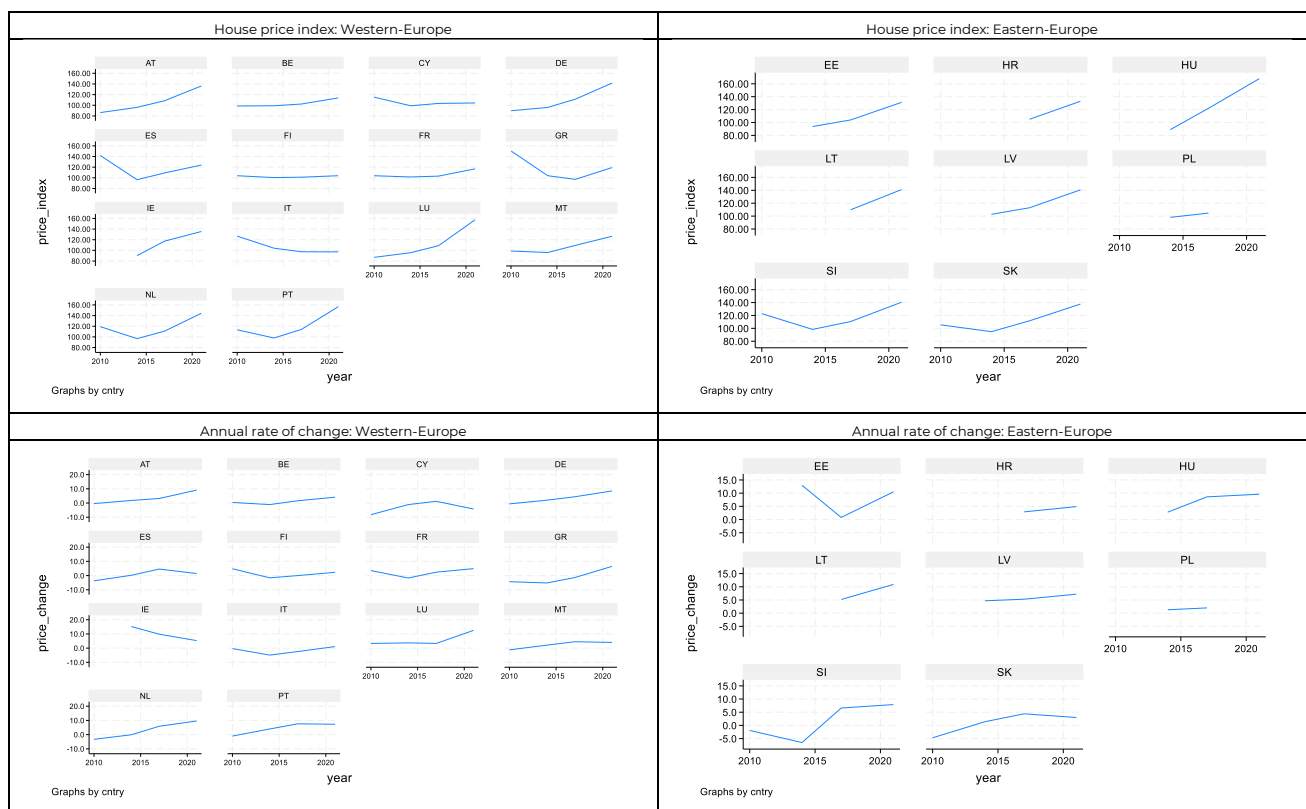
In this chapter, we evaluate the impact of two indicators (EUROSTAT): 1) the annual average (real) house price index (2015=100); and 2) the annual average rate of (real) change, indicating an *acceleration of housing values*. While we expect that gradually increasing real house prices may mainly impact on inequality and concentration of gross (housing wealth) via affordability of access to homeownership, hence through enhancing differences in social selectivity between owners and renters (i.e. for all households), we expect that booming house prices may lead to more uneven outcomes, i.e. lead to more





inequality and concentration of (gross) housing wealth within the subsample of homeownership households. From Figure 3.17, we see that across Europe, there are (strong) increases in real house prices over time. Whilst in several countries house prices were less affected by the GFC, in other countries (e.g. the Netherlands, Spain, Portugal, Greece) a steeper bust took a longer time to recover. The average annual rate of change is generally positive, with some more variations. Nevertheless, in many countries, real house price acceleration is more clearly apparent near the end of the observation period.

Figure 3.17. Trends in the value of housing



Multi-property ownership and landlordship

We look at the impact of cross-country differences and trends in the ‘rate’ and ‘value’ of both multiple properties and ownership of rental properties (i.e. landlordship). A fifth group of drivers hence pertains to *multi-property ownership* and the (gross) real estate





wealth derived from multi-property ownership (expressed as a % of (gross) total wealth for multi-property owners (based on the median)), as well as the average number of additional properties (for multi-property owners).¹⁸ We also evaluate the impact of rental-property ownership (landlordship) and the relative size of rental income streams (expressed as a % of gross household income for landlords (based on the median)).¹⁹ Given enhanced attractiveness and profitability of different types of real estate as an asset class/investment product for both middle-to-higher-income households, we expect that (gross) housing wealth accumulation through multi-property ownership and landlordship has benefited higher-wealth and higher-income households to a larger extent, leading to enhanced inequality and concentration of (gross) housing wealth across all households and within the subsample of homeownership households.

Though this research is focused on explaining drivers of approximated housing wealth (see section 3.3), our independent variable includes all types of properties (i.e. including for business purposes), in line with other recent research on SPO.²⁰ This work argues that a broader perspective on SPO is useful, as the ownership and mixed use (i.e. commercial and non-commercial) of different types of properties has increased in recent years; economic advantage can be derived from all these different ownership types. In many countries, landlordship is a much smaller fraction of multi-property ownership.

Figure 3.18 and 3.19 display trends in these five indicators, which were calculated from HFCS. Multi-property-ownership across Western-European countries is mostly stable with some trending upwards or downwards. Across Eastern-European countries, there are mostly increases. The value of these additional properties in the total wealth portfolio seems to be trending downwards over time, however. This could, however, also indicate that – during the period under consideration – returns on financial assets have

¹⁸ This variable is missing for Finland in wave 1 (2010); the value from 2014 was imputed in order to not lose a country-year observation.

¹⁹ Top-coded at 100%.

²⁰ Private email-exchanges with Alexis Mundt and Karin Wagner, based on their work in progress.





grown more than returns on real estate property.²¹ Typically, in a long-term perspective, investments in residential real estate tend to deliver more stable, but lower returns compared with investments in stocks and shares. The landlordship rate is everywhere quite a bit lower than the multiple-property ownership rate, and seems to be trending upward more clearly across European countries. There is no clearly visible trend in the value of rental income streams relative to gross household income, perhaps because households with increasing rental income streams also derive more household income from other sources (e.g. labour, other investments).

²¹ Findings from Jordà et al. (2019) regarding surprisingly high rates of return to housing assets have been questioned in more recent work using different methodologies, in a special issue on *Real and Private Value Assets*, published by the *Review of Financial Studies* (2021), volume 4, issue 8).





Figure 3.18. Trends in multi-property ownership

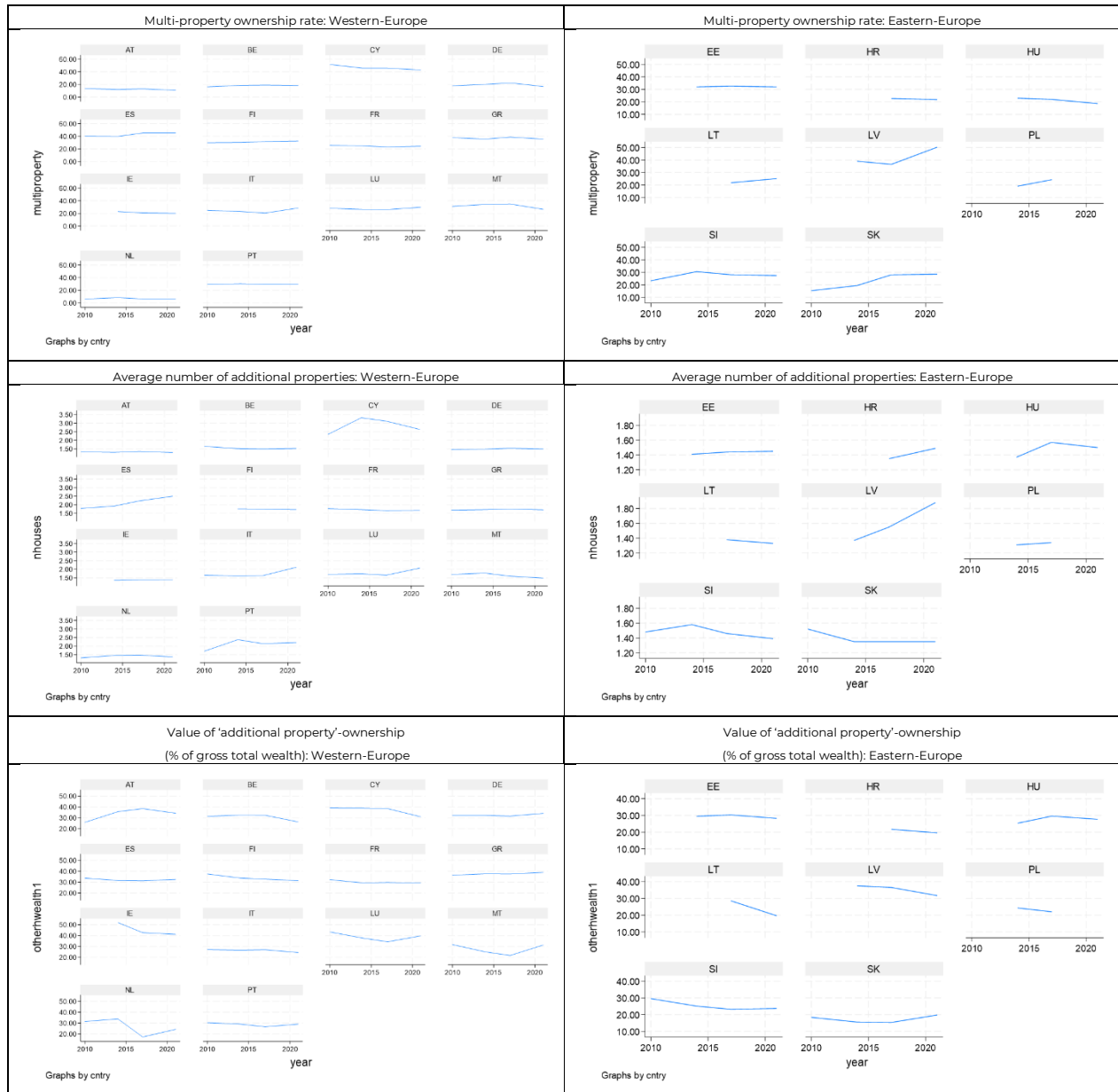
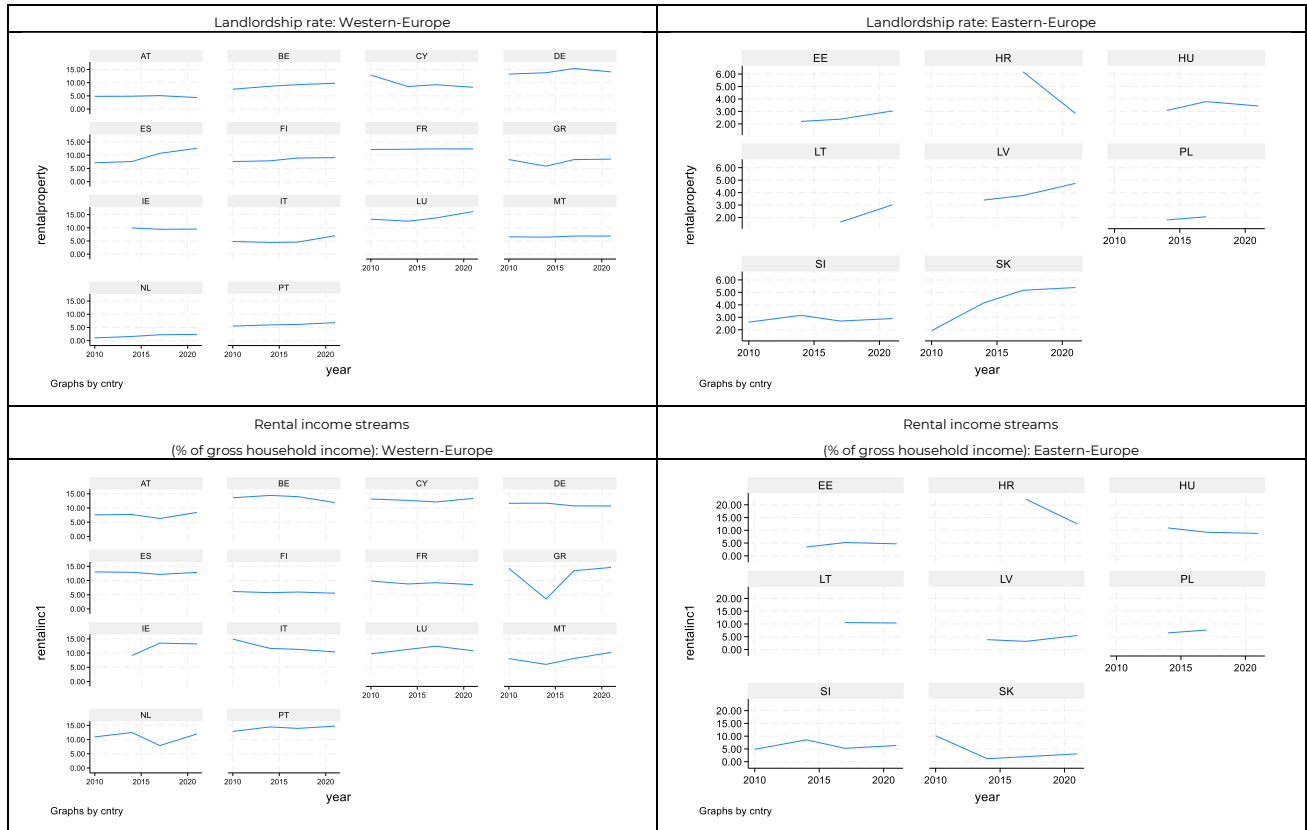




Figure 3.19. Trends in landlordship

Intergenerational transfers



We discuss the final group of indicators last, given that indicators regarding the *rate* and the *size of intergenerational transfers*²² are only available for a subset of country-years. The *rate* of intergenerational transfers is missing for Finland (2010), Italy (2010, 2017, 2021) and Luxembourg (2021). The *size of intergenerational transfers, expressed as a % of gross household income (based on the median)*, is additionally missing for Finland in 2014, 2017 and 2021. This is unfortunate, given that Finland is perhaps the country with the most consistent increases in our different measures of housing wealth inequality and concentration. The same applies to Italy, though to a lesser extent.

²² "Have you/has any member of the household ever received an inheritance or a substantial gift, including money or any other assets (from someone who is not a part of your current household)?".





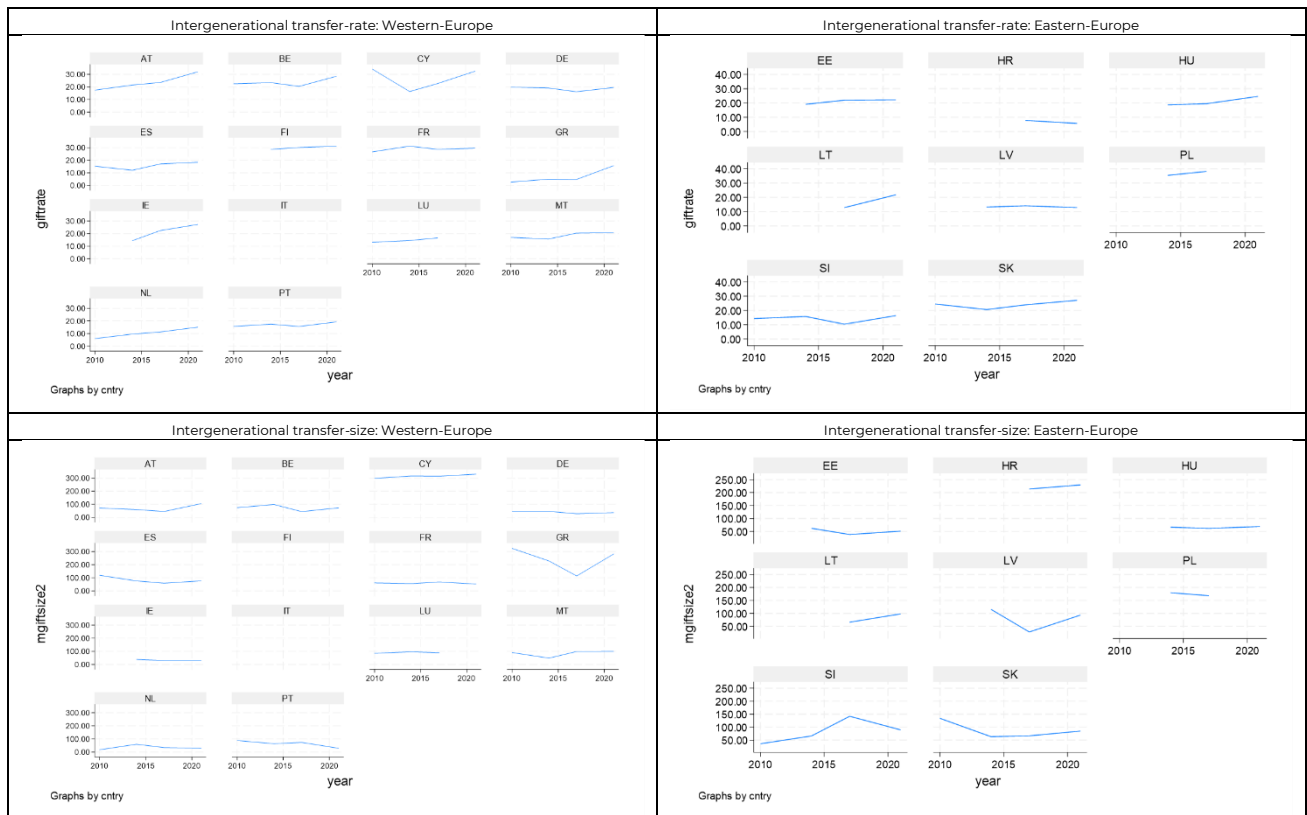
Though mostly discussed in the literature regarding young adults' homeownership entry and consequent opportunities for housing wealth accumulation, intergenerational transfers (gifts and inheritances) matter in various ways. For instance, young adults receiving larger transfers could be expected to buy more valuable properties in more 'productive' locations, and at an earlier point in their life-course. We expect that a growing reliance on intergenerational transfers, particularly across younger cohorts, has contributed to tenure restructuring (stronger income-based stratification of homeownership entry), in turn resulting in growing inequality and concentration of (gross) housing wealth between owners and renters. We expect that, for older cohorts, a higher availability of sizeable inheritances (including of real estate property itself) from elderly generations, has contributed to a growing polarization of (gross) housing wealth within the subsample of homeowners. Such an effect could partly mediate the impact of 'incidental' multi-property ownership and landlordship (which happened by inheritance).

From Figure 3.20, we see that across European countries, the intergenerational transfer-rate has clearly increased over the course of the observation period. In terms of the size of intergenerational transfers, trends are more stable or fluctuating.





Figure 3.20. Trends in intergenerational transfers



3.6.2 Multivariate random-effects panel regressions

Based on the conceptual models depicted in Figure 3.13, we now move on to estimating regression models for each of the eight dependent variables capturing the inequality and concentration of (gross) housing wealth for all households and young-adult households (capturing housing wealth polarization between owners and renters), and all homeowner-households and young-adult homeowner households (capturing housing wealth polarization between richer and poorer homeowners). Given the limited number of country-years (N=78 and N=70 for the models including intergenerational transfers), variables that are always insignificant are dropped from the models when appropriate. GDP and the level of urbanization, for instance, never reach statistical significance. The same goes for the indicators capturing time trends in: the house price-





to-income ratio,²³ the annual average house price index, the average number of additional properties, the value of multi-property ownership and the value of rental income streams. Furthermore, in all models, the linear year-trend is explained by the country-level drivers of wealth inequality and concentration and hence excluded here.

Drivers of housing wealth polarization between owners and renters

Tables 3.11-14 show the results of panel regression (random-effects) models for the four dependent variables calculated across all (young) households. Models are estimated in two steps, which the mediating variables (see Figure 3.13 – changing tenure structures) added in a second step. Models 3 and 4 re-estimate Models 1 and 2 on the more limited sample of country-years (N=70), for which the variables pertaining to ‘intergenerational transfers’ are available and added to the model (see above). Below we summarize the most important results across the four dependent variables.

Increases in **income inequality** are associated with increasing inequality of gross housing wealth, though such a significant effect is only visible after controlling for changes in the tenure structure, i.e. changes in low-income and young-adult homeownership (for the latter variable we noted opposite trends in Western- versus Eastern-Europe). The effect of income inequality is furthermore much stronger for gross housing wealth inequality calculated across young-adult households. Results pertaining to the **availability of mortgage credit** (indicating affordability of homeownership access) reveal an interesting pattern: increasing mortgage credit is associated with lower wealth inequality amongst young-adult households (indicated improved access), but with significantly higher wealth concentration amongst all households. This could indicate the leverage of mortgage credit for the purpose of climbing the housing ladder or for investment purposes, e.g. Buy-to-Let (e.g. Kemp, 2015) by older generations. While house price inflation in itself does not seem to have much influence (see above), greater **house price acceleration** (booming house prices) is associated with increasing inequality of

²³ In line with earlier critical notes, the house-price-to-income ratio seems to have no effect across all models. It is likely that this variable simply captures what households can realistically pay for homeownership in relation to income, taking changing tenure structures into account.





(gross) housing wealth, particularly for young households. There is some empirical support for a similar weaker positive effect on housing wealth concentration (all households). In particular **rental property ownership** seems to enhance the concentration of housing wealth in the hands of richer households (all and young households). Effects of various types of **multi-property ownership** seems to be more limited and contradictory. For all households, a positive effect on housing wealth concentration only becomes apparent after controlling for (differences in) tenure restructuring, whilst for young households, such a suppressed effect is negative (indicating de-concentration of housing wealth inequality) rather than positive. This indicates potential differences in the type and value of multi-property ownership vs. rental property ownership; possibly lower-value multi-property ownership is used as investment strategy by more moderate-income (rather than high-income) households. The **intergenerational transfer rate** has a strong direct positive effect on the concentration of housing wealth across the income distribution of all households, rather than of young households (although the effect here is positive and near-significant when controlling for tenure restructuring). This points at the importance of inheritance, mostly befalling on the older generations. A larger or growing **intergenerational transfer size** is however significantly associated with a *lower* concentration of housing wealth for all households.

Declining (increasing) young adult-homeownership rate appears an important driver of increasing (decreasing) housing wealth inequality and concentration (significant negative effect across all four dependent variables). The **declining low-income homeownership** rate also matters, perhaps more so for explaining gross wealth inequality and concentration amongst all households compared with young households. These two variables also act as (partial) mediator. In particular for the measures calculated across the total sample of households, (positive) effects of house price acceleration and multi-property ownership/landlordship on housing wealth inequality and concentration disappear, or become substantially smaller. In other words, polarization of housing wealth between owners and renters is driven by various trends, mostly changes in available credit (differential effects for different cohorts), differential capital gains associated with house price booms, and trends in multi-property ownership and particularly landlordship.





These have some direct effects on the wealth distribution, but also important indirect effects via changing tenure structures, in particular the extent to which they influence the young-adult homeownership rate.





Table 3.11. Panel regression of trends in gross housing wealth inequality (wealth-based Gini), all households

	Model 1 (N=78)			Model 2 (N=78)			Model 3 (N=70)			Model 4 (N=70)		
	B		SE	B		SE	B		SE	B		SE
Control variables												
Income inequality	0.0645		0.1076	0.1714	(*)	0.0974	0.0739		0.1125	0.1450	(*)	0.0962
Affordability of homeownership access												
RMD (ln)	-0.0032		0.0128	0.0000		0.0071	-0.0041		0.0142	-0.0030		0.0075
Housing value changes												
House price acceleration	0.0009	*	0.0004	0.0005		0.0005	0.0009	(*)	0.0005	0.0004		0.0005
Multi-property ownership & landlordship												
Multi-property ownership	-0.0013	(*)	0.0007	0.0000		0.0005	-0.0012	(*)	0.0007	0.0002		0.0005
Rental-property ownership	0.0043	(*)	0.0028	0.0010		0.0019	0.0042		0.0034	0.0000		0.0024
Intergenerational transfers												
Intergenerational transfer rate							-0.0002		0.0004	-0.0003		0.0003
Intergenerational transfer size (ln)							0.0031		0.0101	0.0016		0.0055
Tenure restructuring												
Low-income homeownership rate				-0.0014	*	0.0006				-0.0018	**	0.0006
Young-adult homeownership rate				-0.0014	***	0.0003				-0.0012	**	0.0004
Constant	0.5640	***	0.0505	0.6631	***	0.0540	0.5523	***	0.0793	0.7052	***	0.0640
Sigma_u	0.065			0.029			0.068			0.031		
Sigma_e	0.016			0.013			0.016			0.014		
Intraclass correlation	0.945			0.836			0.946			0.833		
F-test (Prob > F)	25.09	***		50.15	***		20.36	**		76.39	***	

Note: (*): p<0.10; *: p<0.05; **p<0.01; ***:p<0.001.

Robust standard errors. A Hausman-test based on Model 4 revealed a non-statistically significant difference between fixed- and random-effects estimates (p>0.11).





Table 3.12. Panel regression of trends in gross housing wealth inequality (wealth-based Gini), young households

	Model 1 (N=78)			Model 2 (N=78)			Model 3 (N=70)			Model 4 (N=70)		
	B		SE	B		SE	B		SE	B		SE
Control variables												
Income inequality	0.0531		0.2686	0.2774	**	0.0915	0.1065		0.2917	0.2706	**	0.0884
Affordability of homeownership access												
RMD (ln)	-0.0461	*	0.0232	-0.0304	***	0.0081	-0.0404	(*)	0.0244	-0.0245	**	0.0076
Housing value changes												
House price acceleration	0.0029	**	0.0011	0.0012	*	0.0005	0.0031	**	0.0010	0.0011	*	0.0005
Multi-property ownership & landlordship												
Multi-property ownership	-0.0025		0.0016	0.0011		0.0007	-0.0023		0.0017	0.0011		0.0008
Rental-property ownership	0.0044		0.0054	-0.0023		0.0015	0.0052		0.0063	-0.0030		0.0021
Intergenerational transfers												
Intergenerational transfer rate							-0.0001			0.0006		0.0007
Intergenerational transfer size (ln)							0.0245			0.0150		0.0129
Tenure restructuring												
Low-income homeownership rate				0.0002		0.0005			0.0010	0.0002		0.0006
Young-adult homeownership rate				-0.0064	***	0.0003			0.0167	-0.0064	***	0.0004
Constant	0.7999	***	0.1460	0.9681	***	0.0591	0.6393	***	0.1648	0.8725	***	0.0872
Sigma_u	0.091			0.031			0.087			0.034		
Sigma_e	0.037			0.016			0.037			0.016		
Intraclass correlation	0.856			0.780			0.844			0.823		
F-test (Prob > F)	12.35	*		2199.43	***		26.39	***		1139.64	***	

Note: (*): p<0.10; *: p<0.05; **p<0.01; ***:p<0.001.

Robust standard errors. A Hausman-test based on Model 4 revealed a non-statistically significant difference between fixed- and random-effects estimates (p>0.47).





Table 3.13. Panel regression of trends in gross housing wealth concentration (wealth share ratio, log-transformed), all households

	Model 1 (N=78)			Model 2 (N=78)			Model 3 (N=70)			Model 4 (N=70)		
	B		SE	B		SE	B		SE	B		SE
Control variables												
Income inequality	-1.3447		0.8827	-0.5294		0.6221	-0.9669		0.6577	-0.3527		0.4050
Affordability of homeownership access												
RMD (ln)	0.1286	(*)	0.0661	0.0843		0.0612	0.1510	**	0.0509	0.1208	*	0.0538
Housing value changes												
House price acceleration	0.0071		0.0051	0.0067	(*)	0.0040	0.0088	(*)	0.0046	0.0056		0.0037
Multi-property ownership & landlordship												
Multi-property ownership	0.0028		0.0041	0.0130	**	0.0041	0.0015		0.0037	0.0123	**	0.0038
Rental-property ownership	0.0476	***	0.0132	0.0135		0.0104	0.0376	*	0.0149	0.0043		0.0118
Intergenerational transfers												
Intergenerational transfer rate							0.0107	***	0.0027	0.0107	***	0.0025
Intergenerational transfer size (ln)							-0.1023	*	0.0504	-0.1051	*	0.0464
Tenure restructuring												
Low-income homeownership rate				-0.0141	**	0.0051				-0.0093	(*)	0.0055
Young-adult homeownership rate				-0.0043		0.0040				-0.0087	*	0.0034
Constant	0.7135	(*)	0.4038	1.6171	***	0.2670	0.7786	*	0.3949	1.6677	***	0.3098
Sigma_u	0.325			0.208			0.283			0.179		
Sigma_e	0.144			0.124			0.137			0.111		
Intraclass correlation	0.835			0.738			0.810			0.722		
F-test (Prob > F)	26.43	***		146.30	***		37.29	***		234.46	***	

Note: (*): p<0.10; *: p<0.05; **p<0.01; ***:p<0.001.

Robust standard errors. A Hausman-test based on Model 4 revealed a non-statistically significant difference between fixed- and random-effects estimates (p>0.10).





Table 3.14. Panel regression of trends in gross housing wealth concentration (wealth share ratio, log-transformed), young households

	Model 1 (N=78)			Model 2 (N=78)			Model 3 (N=70)			Model 4 (N=70)		
	B		SE	B		SE	B		SE	B		SE
Control variables												
Income inequality	-0.4036		1.3012	0.8756		0.7614	0.3300		1.2061	1.4751	(*)	0.7835
Affordability of homeownership access												
RMD (ln)	0.0722		0.1048	-0.0533		0.1251	0.0709		0.0689	0.0103		0.0875
Housing value changes												
House price acceleration	-0.0001		0.0087	0.0010		0.0069	0.0063		0.0065	0.0045		0.0055
Multi-property ownership & landlordship												
Multi-property ownership	-0.0102	(*)	0.0052	0.0070		0.0058	-0.0116	**	0.0044	0.0023		0.0033
Rental-property ownership	0.0585	*	0.0227	0.0019		0.0175	0.0649	**	0.0229	0.0146		0.0172
Intergenerational transfers												
Intergenerational transfer rate							0.0047		0.0049	0.0085	(*)	0.0046
Intergenerational transfer size (ln)							-0.0666		0.0922	-0.0674		0.0776
Tenure restructuring												
Low-income homeownership rate				-0.0201	**	0.0074				-0.0101	(*)	0.0052
Young-adult homeownership rate				-0.0062		0.0045				-0.0110	*	0.0046
Constant	0.8961		0.7248	2.3399	**	0.8258	0.7544		0.6538	1.6500	(*)	0.8773
Sigma_u	0.308			0.199			0.231			0.140		
Sigma_e	0.299			0.245			0.295			0.238		
Intraclass correlation	0.515			0.396			0.379			0.258		
F-test (Prob > F)	11.36	*		124.88	***		48.71	***		420.16	***	

Note: (*): p<0.10; (*): p<0.05; (**): p<0.01;

***:p<0.001.

Robust standard errors. A Hausman-test based on Model 4 revealed a non-statistically significant difference between fixed- and random-effects estimates (p>0.13).





Drivers of housing wealth polarization between richer and poorer homeowners

Tables 3.15-18 show the results of panel regression (random-effects) models for the four dependent variables calculated across all (young) homeowners. These models are aimed at explaining polarization of (gross) housing wealth between richer and poorer homeowners (hence, abstract from 'different/changing tenure structures', see Figure 3.13).

Growing **income inequality** is quite clearly associated with higher inequality of (gross) housing wealth (all homeowners and young homeowners), though there is again no significant association with changes in the wealth share ratio of (young) homeowners between high and low income-households. Similar to results for the total population of households, higher **availability of mortgage credit** has a clearly negative impact on housing wealth inequality amongst young homeowners (indicating improved access of lower-wealth households to higher-value housing). **House price acceleration** appears a less consistent predictor of higher housing wealth inequality and concentration amongst homeowners, with some borderline significant effects across two of the four dependent variables. We could therefore conclude that house price booms mainly work to increase polarization of housing wealth between owners and renters, via their impact tenure restructuring (i.e. access to homeownership of low-income and young-adult households). Upward trends in **multi-property ownership** on the other hand, now have a clear positive and significant effect on both wealth inequality and the wealth share ratio between the top and bottom of the income distribution (all dependent variables). Impacts of trends in **landlordship** are now more limited and mixed (with some counter-intuitive though only marginally significant negative effects on wealth inequality amongst young homeowners). All in all, whilst housing wealth polarization amongst all households seems to be more driven by rental property ownership, housing wealth polarization amongst richer and poor homeowning households seems to be more driven by multi-property ownership.

Within the homeowner-segment, a higher **receipt of intergenerational transfers** again seems to contribute to enhanced housing wealth inequality and especially concentration. A higher **intergenerational transfer size**, on the other hand, seems to





result in some de-concentration of housing wealth, more so for homeowners in general than for young homeowners. Effect of the same variable on wealth inequality, on the other hand, seem to be positive rather than negative. The variables indicating ‘changing tenure structures’ are (logically) of less relevance here, though we still note some statistically significant negative effects (higher low-income and young-adult homeownership is associated with less wealth inequality and concentration of housing wealth amongst homeowners).





Table 3.15. Panel regression of trends in gross housing wealth inequality (wealth-based Gini), homeowners

	Model 1 (N=78)			Model 2 (N=78)			Model 3 (N=70)			Model 4 (N=70)		
	B		SE	B		SE	B		SE	B		SE
Control variables												
Income inequality	0.3205	**	0.0970	0.3144	**	0.1051	0.2664	**	0.0931	0.2753	**	0.0991
Affordability of homeownership access												
RMD (ln)	-0.0162	(*)	0.0085	-0.0110		0.0070	-0.0118		0.0091	-0.0087		0.0088
Housing value changes												
House price acceleration	0.0009		0.0007	0.0007		0.0007	0.0007		0.0007	0.0006		0.0007
Multi-property ownership & landlordship												
Multi-property ownership	0.0018	**	0.0007	0.0017	**	0.0006	0.0018	**	0.0006	0.0018	**	0.0006
Rental-property ownership	-0.0009		0.0016	0.0000		0.0022	-0.0014		0.0021	-0.0010		0.0028
Intergenerational transfers												
Intergenerational transfer rate							0.0000		0.0004	0.0002		0.0004
Intergenerational transfer size (ln)							0.0129	*	0.0064	0.0105		0.0065
Tenure restructuring												
Low-income homeownership rate				0.0009	(*)	0.0005				0.0006		0.0006
Young-adult homeownership rate				-0.0007		0.0005				-0.0006		0.0005
Constant	0.3116	***	0.0455	0.2789	***	0.0506	0.2656	***	0.0459	0.2523	***	0.0523
Sigma_u	0.026			0.026			0.029			0.028		
Sigma_e	0.016			0.016			0.016			0.016		
Intraclass correlation	0.727			0.724			0.769			0.758		
F-test (Prob > F)	70.50	***		89.21	***		71.41	***		103.06	***	

Note: (*): p<0.10; *: p<0.05; **p<0.01; ***:p<0.001.
Robust standard errors. A Hausman-test based on Model 4 revealed a non-statistically significant difference between fixed- and random-effects estimates (p>0.05).

Table 3.16. Panel regression of trends in gross housing wealth inequality (wealth-based Gini), young homeowners

	Model 1 (N=78)			Model 2 (N=78)			Model 3 (N=70)			Model 4 (N=70)		
	B		SE	B		SE	B		SE	B		SE
Control variables												
Income inequality	0.3408	*	0.1327	0.3684	**	0.1239	0.3400	**	0.1064	0.3650	**	0.1175
Affordability of homeownership access												
RMD (ln)	-0.0531	***	0.0137	-0.0498	**	0.0151	-0.0434	**	0.0146	-0.0377	*	0.0146
Housing value changes												
House price acceleration	0.0018	(*)	0.0010	0.0016		0.0010	0.0017	(*)	0.0009	0.0013		0.0010
Multi-property ownership & landlordship												
Multi-property ownership	0.0025	**	0.0007	0.0029	**	0.0009	0.0024	**	0.0009	0.0029	**	0.0011
Rental-property ownership	-0.0033		0.0020	-0.0043	(*)	0.0022	-0.0050	*	0.0032	-0.0063	(*)	0.0033
Intergenerational transfers												
Intergenerational transfer rate							0.0012		0.0012	0.0015	*	0.0013
Intergenerational transfer size (ln)							0.0212	(*)	0.0120	0.0199		0.0157
Tenure restructuring												
Low-income homeownership rate				0.0003		0.0006				0.0004		0.0006
Young-adult homeownership rate				-0.0009	***	0.0003				-0.0012	*	0.0006
Constant	0.3850	***	0.0783	0.3968	***	0.0964	0.2399	**	0.0819	0.2499	*	0.1008
Sigma_u	0.040			0.042			0.044			0.048		
Sigma_e	0.029			0.029			0.028			0.027		
Intraclass correlation	0.643			0.675			0.716			0.761		
F-test (Prob > F)	72.03	***		116.09	***		52.04	***		116.54	***	

Note: (*): p<0.10; *: p<0.05; **p<0.01; ***:p<0.001.
Robust standard errors. A Hausman-test based on Model 4 revealed a non-statistically significant difference between fixed- and random-effects estimates (p>0.36).





Table 3.17. Panel regression of trends in gross housing wealth concentration (wealth share ratio, log-transformed), homeowners

	Model 1 (N=78)			Model 2 (N=78)			Model 3 (N=70)			Model 4 (N=70)		
	B		SE	B		SE	B		SE	B		SE
Control variables												
Income inequality	-0.5360		0.6329	-0.4464		0.5312	-0.4103		0.5154	-0.2898		0.4017
Affordability of homeownership access												
RMD (ln)	0.0581		0.0405	0.0826		0.0502	0.0488		0.0399	0.0862		0.0529
Housing value changes												
House price acceleration	0.0057	(*)	0.0030	0.0041		0.0033	0.0052		0.0033	0.0030		0.0036
Multi-property ownership & landlordship												
Multi-property ownership	0.0109	**	0.0030	0.0124	**	0.0038	0.0105	***	0.0026	0.0122	***	0.0033
Rental-property ownership	0.0198	*	0.0084	0.0195		0.0125	0.0128		0.0082	0.0101		0.0121
Intergenerational transfers												
Intergenerational transfer rate							0.0045	*	0.0022	0.0061	*	0.0026
Intergenerational transfer size (ln)							-0.0935	*	0.0435	-0.1133	**	0.0396
Tenure restructuring												
Low-income homeownership rate				0.0036		0.0047				0.0050		0.0049
Young-adult homeownership rate				-0.0059	(*)	0.0035				-0.0081	*	0.0032
Constant	0.2346		0.2158	0.2008		0.2768	0.5842		0.2649	0.5915	*	0.2957
Sigma_u	0.210			0.201			0.182			0.181		
Sigma_e	0.102			0.097			0.105			0.097		
Intraclass correlation	0.810			0.812			0.750			0.774		
F-test (Prob > F)	39.38	***		78.21	***		49.69	***		113.94	***	

Note: (*): p<0.10; *: p<0.05; **p<0.01; ***p<0.001.

Robust standard errors. A Hausman-test based on Model 4 revealed a non-statistically significant difference between fixed- and random-effects estimates (p>0.40).





Table 3.18. Panel regression of trends in gross housing wealth concentration (wealth share ratio, log-transformed), young homeowners

	Model 1 (N=78)		Model 2 (N=78)		Model 3 (N=70)		Model 4 (N=70)					
	B	SE	B	SE	B	SE	B	SE				
Control variables												
Income inequality	-0.0851	0.6988	0.1767	0.5956	0.0185	0.6186	0.2289	0.5718				
Affordability of homeownership access												
RMD (ln)	-0.0539	0.0602	-0.1083	(*)	0.0640	-0.0631	0.0513	-0.0788	0.0577			
Housing value changes												
House price acceleration	0.0047	0.0043	0.0055	0.0040	0.0059	0.0042	0.0058	0.0041				
Multi-property ownership & landlordship												
Multi-property ownership	0.0077	**	0.0027	0.0111	***	0.0027	0.0089	***	0.0020	0.0117	***	0.0024
Rental-property ownership	0.0043	0.0065	-0.0071	0.0066	0.0027	0.0074	-0.0088	0.0091				
Intergenerational transfers												
Intergenerational transfer rate					0.0056	**	0.0021	0.0066	*	0.0032		
Intergenerational transfer size (ln)					-0.0981	(*)	0.0574	-0.0845	0.0642			
Tenure restructuring												
Low-income homeownership rate			-0.0070	**	0.0022			-0.0027	0.0027			
Young-adult homeownership rate			0.0021	0.0014				-0.0015	0.0028			
Constant	0.5182	0.3534	0.8974	*	0.4140	0.7844	(*)	0.4552	0.9292	(*)	0.5400	
Sigma_u	0.101		0.094			0.062		0.066				
Sigma_e	0.187		0.185			0.181		0.175				
Intraclass correlation	0.227		0.205			0.105		0.124				
F-test (Prob > F)	24.57	***	84.83	***		66.33	***	120.59	***			

Note: (*): p<0.10; *, p<0.05; **, p<0.01; ***, p<0.001. Robust standard errors. A Hausman-test based on Model 4 revealed a non-statistically significant difference between fixed- and random-effects estimates (p>0.08).

Conclusion

The first aim of this chapter was to explore, across 22 European countries for the period 2010-2021 (HFCS, waves 1-4), the nature and direction of trends in the inequality and concentration of gross housing wealth. Given the (very) short time period under consideration, characterized furthermore by strong economic turbulence and house price volatility influencing values of gross housing wealth, along with smaller sample sizes for several countries included in the survey, we assessed developments over time using different approaches, measures and sample selections.

Regarding measures, analyses in this chapter pertained to relative inequality of the housing wealth distribution (captured by the wealth-based Gini-coefficient), and also describe levels of (gross) housing wealth across income quantiles, capturing the extent to which gross housing wealth is concentrated in the hands of the richest vs. the poorest household income groups. Both summary-measures capture different aspects





of the relative inequality distribution. Regarding different sample selections, we assessed trends across all households and young-adult households, and for the subsamples of all homeowners and all young-adult homeowners. The distinction between all households and homeowners is aimed at investigating whether, respectively, there was a polarization of housing wealth between so-called housing market *insiders* (i.e. owners) and *outsiders* (i.e. renters) vs. a potential polarization of housing wealth within the homeownership segment during this period, between high wealth/income and low wealth/income homeowners. The distinction between all households (homeowners) and young households (homeowners) is determined by the fact that processes of tenure restructuring, in particular declining as well as more socially-stratified access to homeownership of younger cohorts, likely contributed significantly to trends in housing





wealth inequality and concentration. Put differently, and in light of the fact that homeownership rates are the main driver of comparative differences in housing and total wealth inequality and concentration, we attempted to abstract from changing tenure structure by decomposing time trends across above-mentioned subsamples.

Descriptive results indicate that trends in the development of (gross) housing wealth inequality and concentration across all households are strongly diversified by the housing-welfare regime. An overall statistically significant time trend towards increased inequality and concentration of housing wealth is mainly driven by developments across Western-European countries. Such a trend is most consistent in several Northern-European countries with a unitary rental market and across Southern-Europe, and is likely driven in part by increased income-based stratification of young-adult homeownership. Hence, ***to the extent that access to homeownership is blocked for young adult-households, in particular for those with a lower income, we also see an emerging trend towards increased inequality and concentration of (gross) housing wealth. Given the strong association between housing wealth and total wealth, furthermore, a societal trend of tenure restructuring is also an important driver of wealth inequality in general.***

Time trends are far more benign across Eastern-European countries, where similar increases are limited to specific countries (Hungary, Slovenia and Slovakia). The Baltics seem mostly characterized by improved access to homeownership along with declining housing wealth inequality and concentration.

Polarization within the homeowner-segment could arise from several different other mechanisms, such as increased cumulative advantage/disadvantage in terms of capital gains returns in relation to initial housing investments (which have also become more socially-stratified in



themselves), the amplifying impact of family support for housing intersecting with socio-economic position (as family support tends to be higher for better-placed young adults compared with less advantaged young adults, allowing the former to purchase more expensive properties earlier in the life-course and in more 'productive' locations), or the suspected growth of multi-property ownership at the high end of the income and wealth distributions. Again, though this time abstracting from trends in the tenure structure, we noted a reasonably consistent but somewhat different pattern of results across housing-welfare regimes. ***Increases in wealth inequality and concentration within the homeownership segment are most outspoken in Southern-Europe, several unitary rental market countries (bar Germany), and also CEE-countries Slovenia and Slovakia. Trends towards increasing inequality and concentration furthermore seem more outspoken for young-adult homeowners, particularly across Southern-Europe.***

Again, there is a clear trend towards declining inequality and concentration of gross housing wealth in the Baltic states, though more so for the total sample of homeowners than for young-adult homeowners. All in all, we find that also within the segment of homeowners, inequality and concentration of (gross) housing wealth seem to be on the increase. Trends are more outspoken when considering the concentration of housing wealth across the income distribution, for younger households, and across Western-Europe. ***Whilst the overall polarization of (gross) housing wealth between owners and renters seems to be driven by changes in young-adult homeownership, a polarization of (gross) housing wealth between low wealth/income and high wealth/income homeowners seems to be more specific to young adult-homeowners.*** This might indicate that there is indeed an enhanced intersection between the socio-economic position of young adult homeowners, and the type of properties they are entering, particularly in Western-Europe (as also suggested by Dewilde & Flynn, 2021 for a smaller selection of countries and over a shorter time period).



Turning to specific countries, wealth inequality and concentration are most consistently increasing across measures and sample selections in: the Netherlands; Austria; Finland; France; Spain; Greece; Italy; Slovenia and Slovakia. Wealth inequality and concentration are most consistently decreasing across measures and sample selections in Latvia and Estonia. Finland stands out as the country with the strongest increase in housing wealth inequality and concentration amongst the traditional homeownership countries of Western-Europe.

A second main aim of this chapter was to model the impact of various drivers of housing wealth polarization identified from the literature (see Chapter 1 of Deliverable 3.1). We identified four groups of drivers, each indicated by several variables: trends/differences in affordability of homeownership access; housing value changes; trends/differences in intergenerational transfers; and changes/differences in multi-property ownership and landlordship. These drivers are hypothesized to have a direct or an indirect (via mediating patterns of tenure restructuring, i.e. declining and more stratified entry into homeownership) impact on the inequality and concentration of (gross) housing wealth. Impacts of these drivers were evaluated by means of panel regression random-effects models estimated on an unbalanced panel of 78 country-years, again for all (young) households and (young) homeowners only. Given strong economic volatility during the post-GFC period (2010-2021), we controlled for trends in economic affluence, trends in household income inequality, and trends in urbanization. Though we hypothesized a positive effect on housing wealth inequality and concentration for all three control variables, only differences and trends in income inequality seemed to matter: higher income inequality was associated with higher inequality of (gross) housing wealth for young households, all homeowners and young homeowners.

Regarding cross-country and over-time differences in housing wealth polarization between owners and renters, we indeed find that declining





(increasing) young adult-homeownership and low-income homeownership rates appear to be an important driver of increasing (decreasing) housing wealth inequality and concentration, and therefore also of total wealth inequality and concentration. These two indicators of tenure restructuring also act as partial mediators, channelling the impacts of various anterior drivers: changes/differences in available ***mortgage credit*** (we note a positive effect of this variable on the concentration of housing wealth across all households (indicating perhaps the leveraging of mortgage credit for SPO of older generations), in combination with a negative effect on wealth inequality for young-adult households (e.g. easier access to first-time homeownership); the extent of ***house price acceleration*** (booming house prices resulting in differential capital gains for different wealth levels); ***multi-property and particularly rental property ownership***, concentrating housing assets in the hands of higher income/wealth households, potentially blocking access to homeownership for younger housing market entrants. The ***intergenerational transfer rate*** has a strong direct positive effect on the concentration of housing wealth across the income distribution of all households, rather than of young households, possibly pointing at the importance of inheritance.

Regarding cross-country and over-time differences in housing wealth polarization between low income/wealth and high income/wealth homeowners, we find that inequality and concentration of (gross) housing wealth are driven by more or less the same drivers (bar the variables indicating tenure restructuring, which are less relevant for this subgroup). Higher availability of ***mortgage credit*** has a clearly negative impact on housing wealth inequality amongst young homeowners, indicating improved access of lower-wealth households to higher-value housing. House price acceleration appears a less consistent predictor of higher housing wealth inequality and concentration amongst homeowners, with some borderline significant effects across two of the four dependent variables. We could therefore conclude that house price booms



mainly work to increase polarization of housing wealth between owners and renters, via their impact tenure restructuring (i.e. access to homeownership of low-income and young-adult households). Upward trends in **multi-property ownership** on the other hand, now have a clear positive and significant effect on both wealth inequality and the wealth share ratio between the top and bottom of the income distribution (all dependent variables). Impacts of trends in landlordship are however more limited and mixed. Within the homeowner-segment, a higher receipt of **intergenerational transfers** again seems to contribute to enhanced housing wealth inequality and especially concentration.

Whilst we also operationalized and estimated the impact of variables capturing the size of income or wealth streams (e.g. intergenerational transfer size, rental income streams), results for these variables were either non-significant or inconsistent. **This indicates that ownership of housing wealth in itself, and associated value changes, are more important drivers of housing wealth inequality and concentration, compared with generated income/wealth streams.** On the other hand, it is also entirely possible that our measures of such income and wealth streams were too crude, or that the relationship between such streams and housing wealth inequality and concentrations is more complicated, takes more time to materialize, or is more relevant to the inequality and concentration of non-housing (financial) wealth.

Acknowledgement

This chapter has greatly benefited from comments and suggestions by Dr. Márton Czirfusz. Interpretations of results and/or remaining errors are the responsibility of the author.





Appendix

Table A3.1 Overview of sample sizes by wave and country (household level)

Country	Wave 1 (n=15)		Wave 2 (n=20)		Wave 3 (n=22)		Wave 4 (n=22)	
	Original	Implicates	Original	Implicates	Original	Implicates	Original	Implicates
AT	2380	11900	2997	14985	3072	15360	2293	11465
BE	2327	11635	2238	11190	2329	11645	2130	10650
CY	1237	6185	1289	6445	1303	6515	1332	6660
CZ							3122	15610
DE	3565	17825	4461	22305	4942	24710	4119	20595
EE			2220	11100	2679	13395	2247	11235
ES	6106	30530	6120	30600	6413	32065	6313	31565
FI	10989	54945	11030	55150	10210	51050	9474	47370
FR	15006	75030	12035	60175	13685	68425	10253	51265
GR	2971	14855	3003	15015	3007	15035	3386	16930
HR					1357	6785	1357	6785
HU			6207	31035	5968	29840	6032	30160
IE			5419	27095	4793	23965	6020	30100
IT	7951	39755	8156	40780	7420	37100	6239	31195
LT					1664	8320	1676	8380
LU	950	4750	1601	8005	1616	8080	2010	10050
LV			1202	6010	1249	6245	1219	6095
MT	843	4215	999	4995	1004	5020	1018	5090
NL	1301	6505	1284	6420	2556	12780	2690	13450
PL			3455	17275	5858	29290		
PT	4404	22020	6207	31035	5924	29620	6107	30535
SI	343	1715	2553	12765	2014	10070	1951	9755
SK	2057	10285	2135	10675	2179	10895	2174	10870
Households	62430	312150	84611	423055	91242	456210	83162	415810
Individuals	154239	771195	210345	1051725	221865	1109325	197006	985030

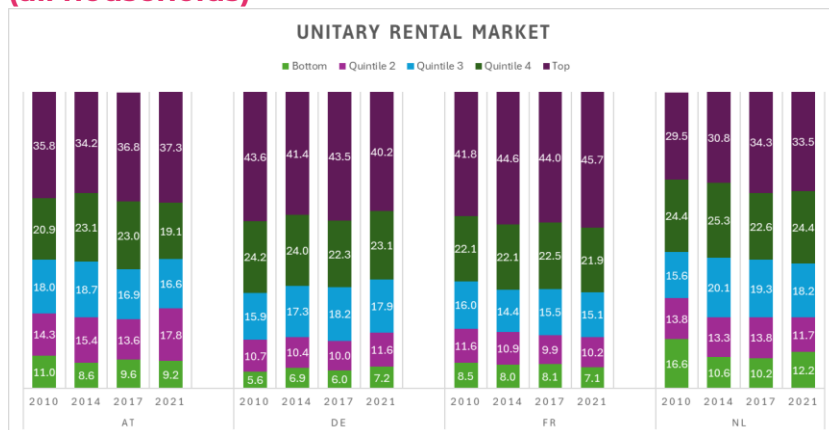




Table A3.2 Overview of original sample sizes by country for different sample selections wave 4, 2021, household level)

Country	All households	Young households	Homeowners	Young homeowners
AT	2293	362	983	98
BE	2130	407	1537	225
CY	1332	166	1015	90
CZ	3122	481	2463	326
DE	4119	656	2432	179
EE	2247	619	1844	429
ES	6313	691	5072	370
FI	9474	2352	7418	1234
FR	10253	2000	7415	968
GR	3386	873	1806	174
HR	1357	163	1146	90
HU	6032	1176	5082	773
IE	6020	1301	5025	848
IT	6239	472	5038	303
LT	1676	327	1565	266
LU	2010	530	1484	302
LV	1219	337	1035	261
MT	1018	254	833	218
NL	2690	543	1752	274
PL (2017)	5858	1253	4638	825
PT	6107	320	5383	249
SI	1951	306	1588	172
SK	2174	302	1920	239
Average	3870	691	2977	387

Figure A3.1 Trends in gross housing wealth concentration over time across the income distribution (HFCS, 2010-2021, household level, weighted results) (all households)



(Continued next page)



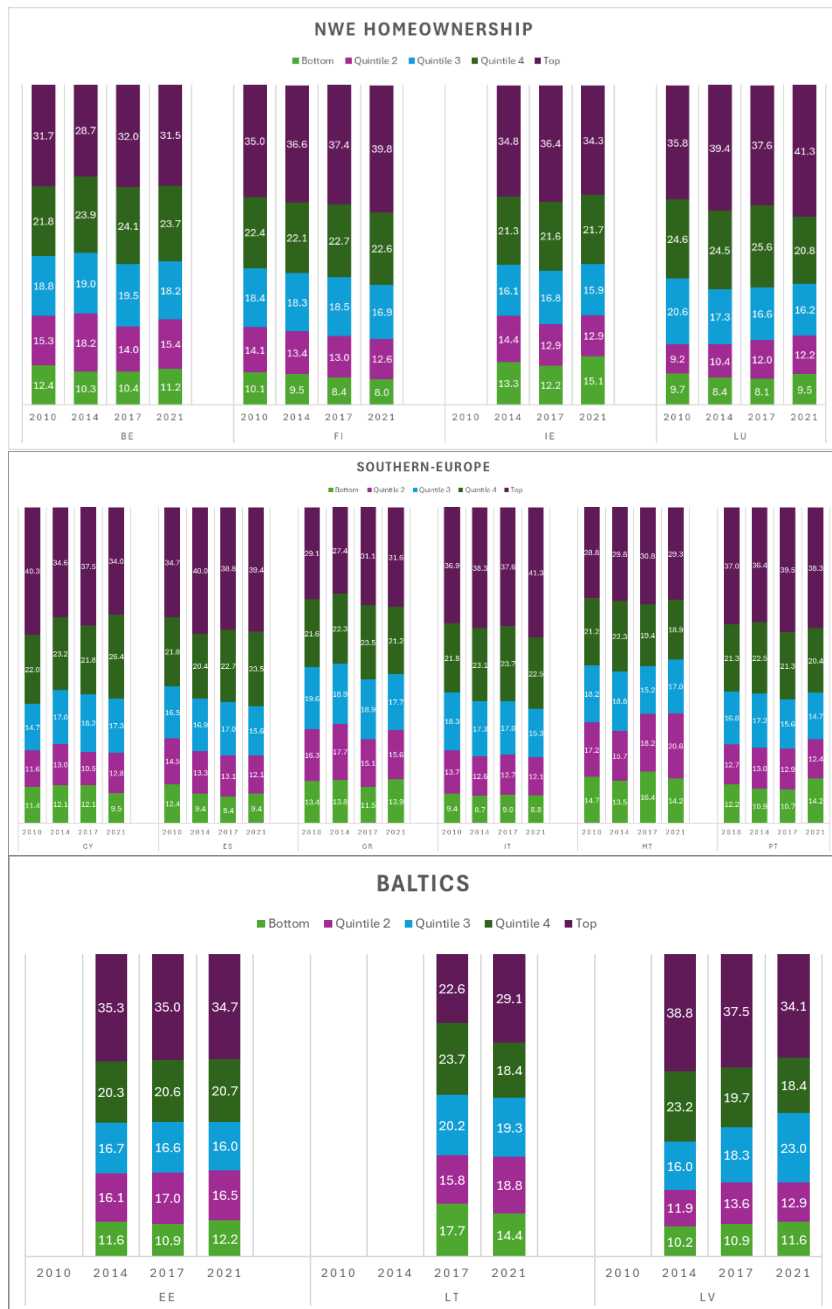




Figure A3.2 Trends in gross housing wealth concentration over time across the income distribution (HFCS, 2010-2021, household level, weighted results) (young households)



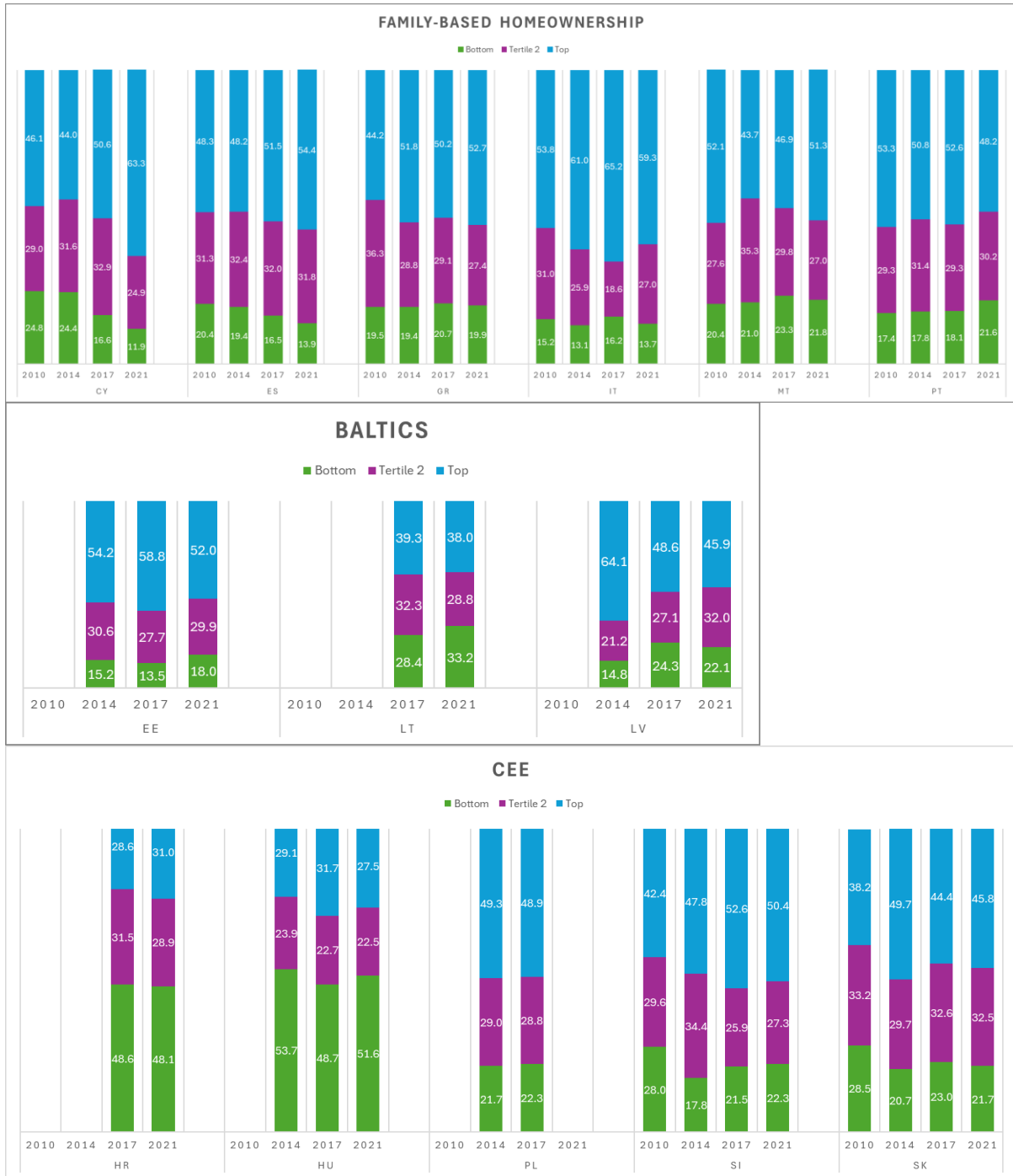
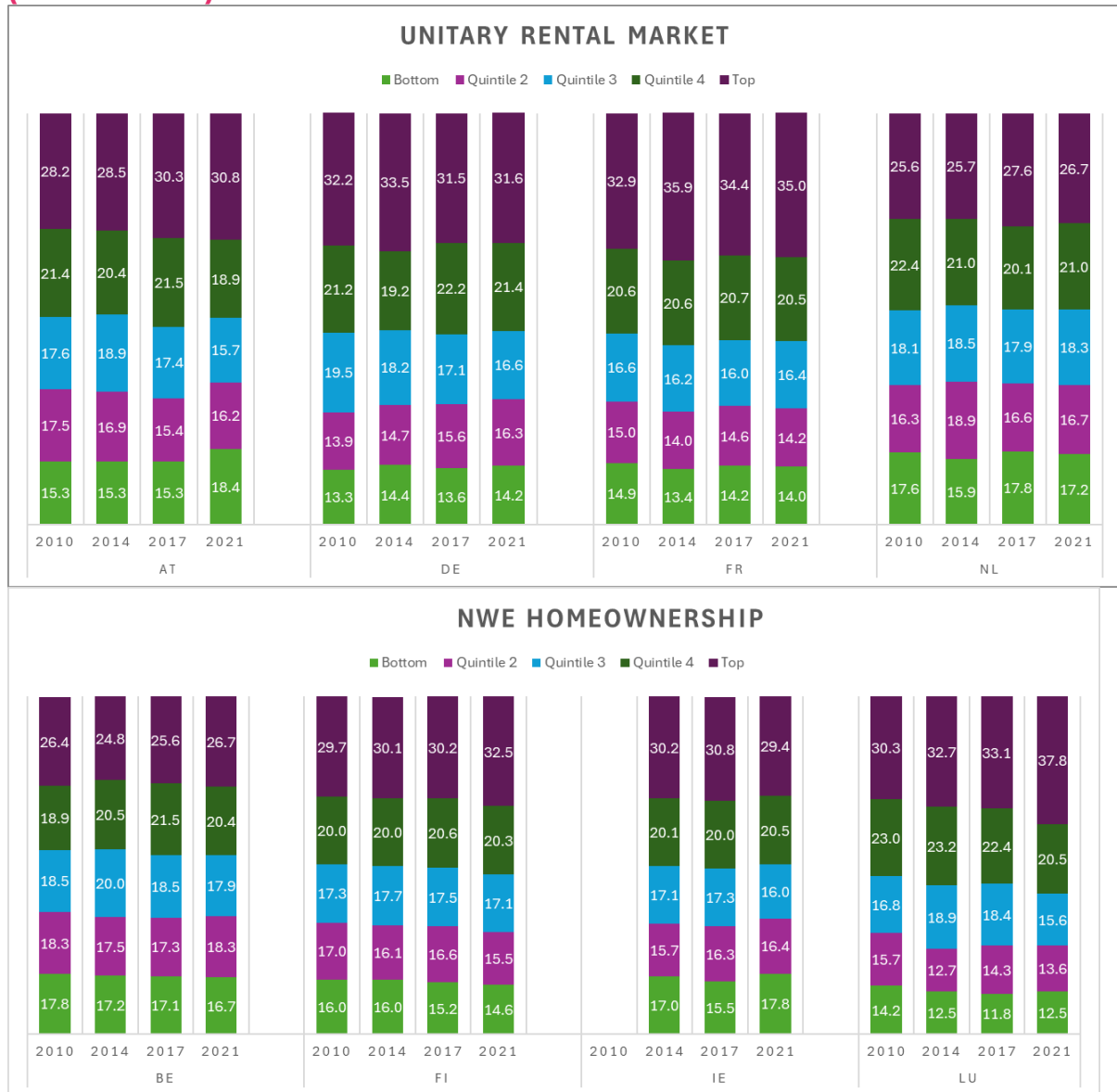




Figure A3.3 Trends in gross housing wealth concentration over time across the income distribution (HFCS, 2010-2021, household level, weighted results) (homeowners)



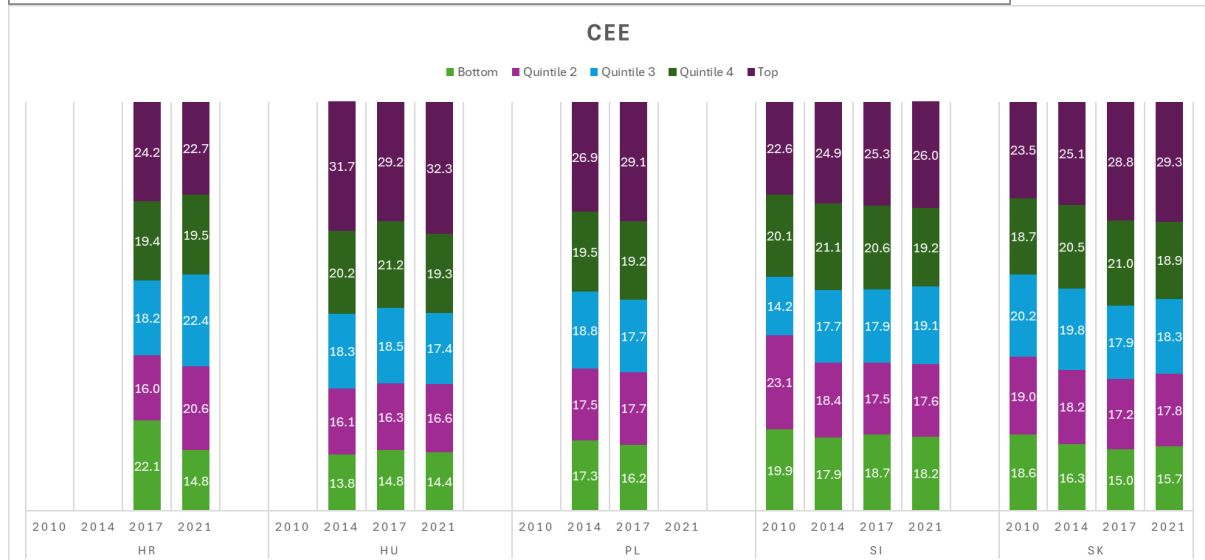
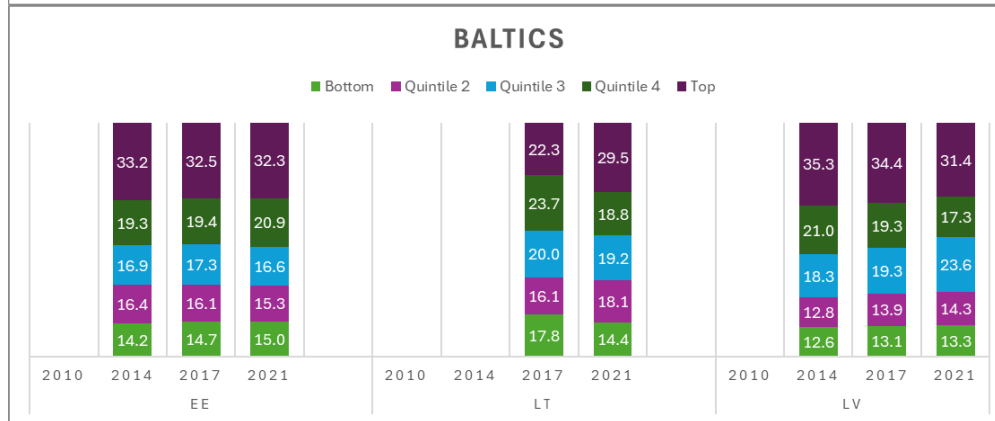
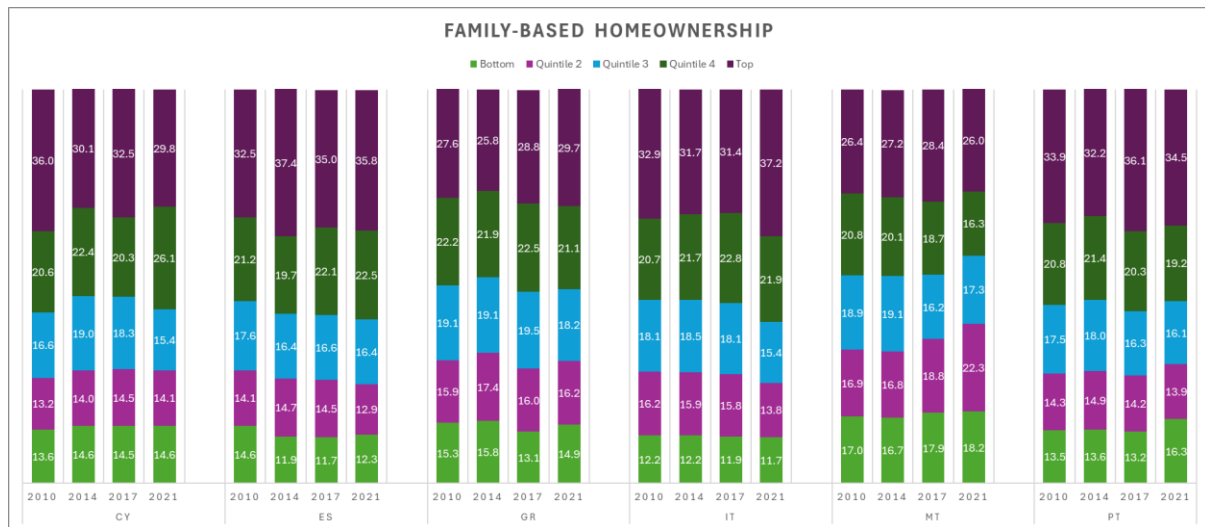




Figure A3.4 Trends in gross housing wealth concentration over time across the income distribution (HFCS, 2010-2021, household level, weighted results) (young homeowners)



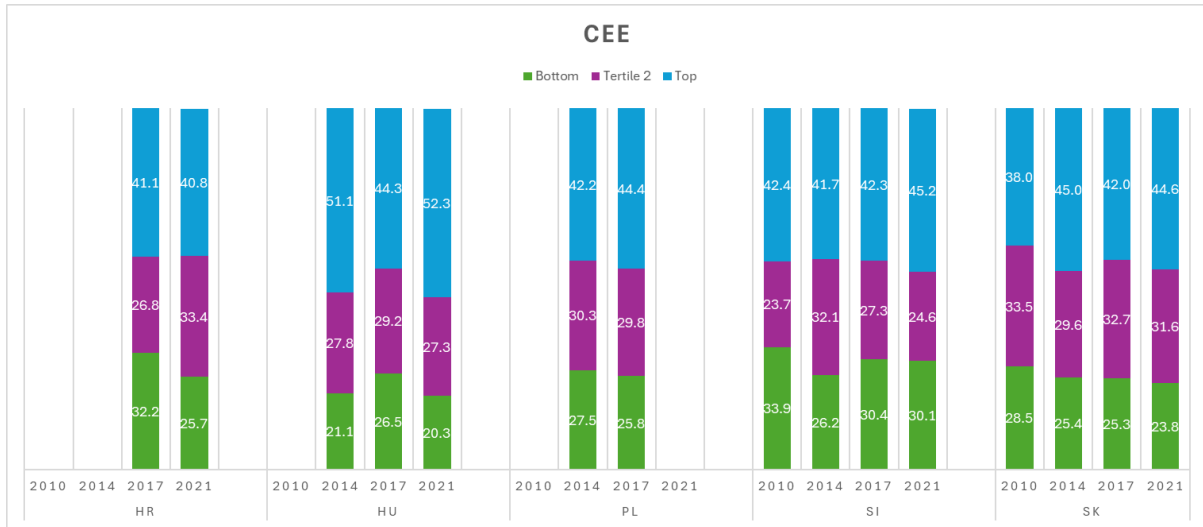


Figure A3.5A Trends in income-based stratification of young adult homeownership across Western-Europe (ratio between high-income and low-income homeownership rate, based on income tertiles) (HFCS, 2010-2021, household level, weighted results)

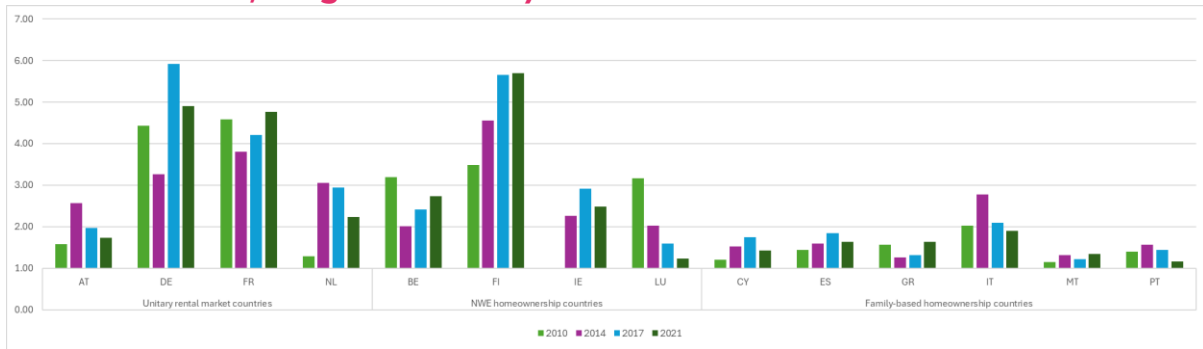
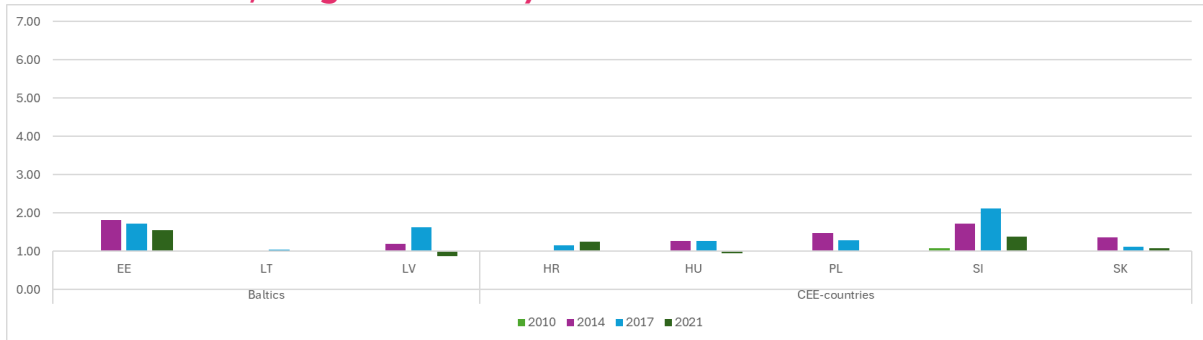


Figure A3.5B Trends in income-based stratification of young adult homeownership across Eastern-Europe (ratio between high-income and low-income homeownership rate, based on income tertiles) (HFCS, 2010-2021, household level, weighted results)







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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



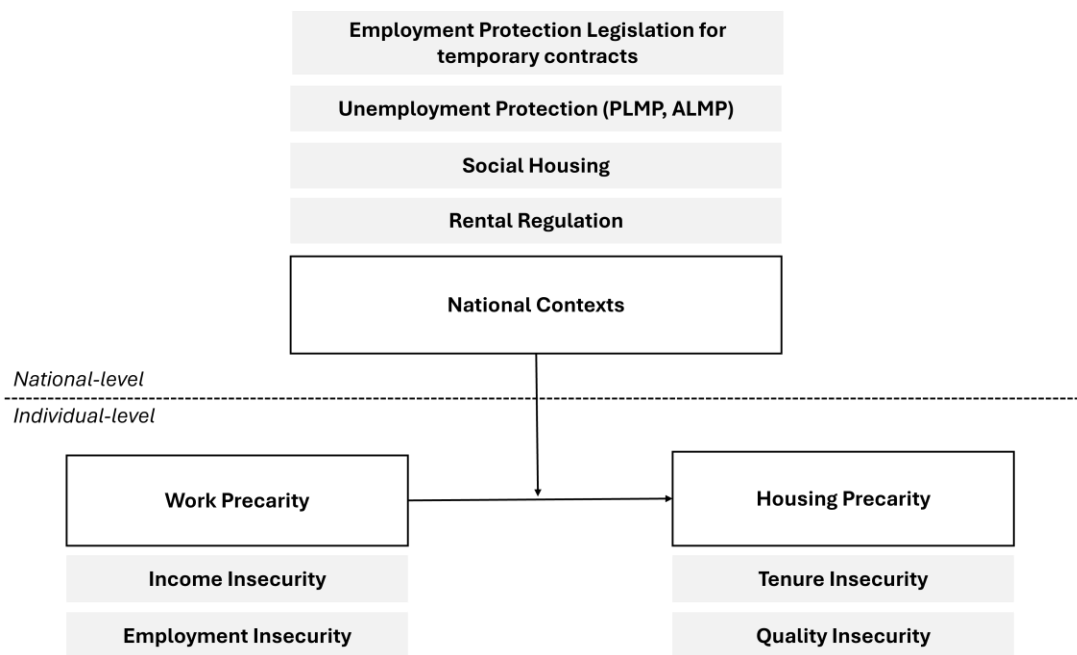


assumes a hierarchy in the data, which means that, in the case of our study, individuals are nested in countries. We assume that there is a significant variance across countries in terms of individuals' housing precarity as well as its relationship with work precarity, which can be explained by national-level 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





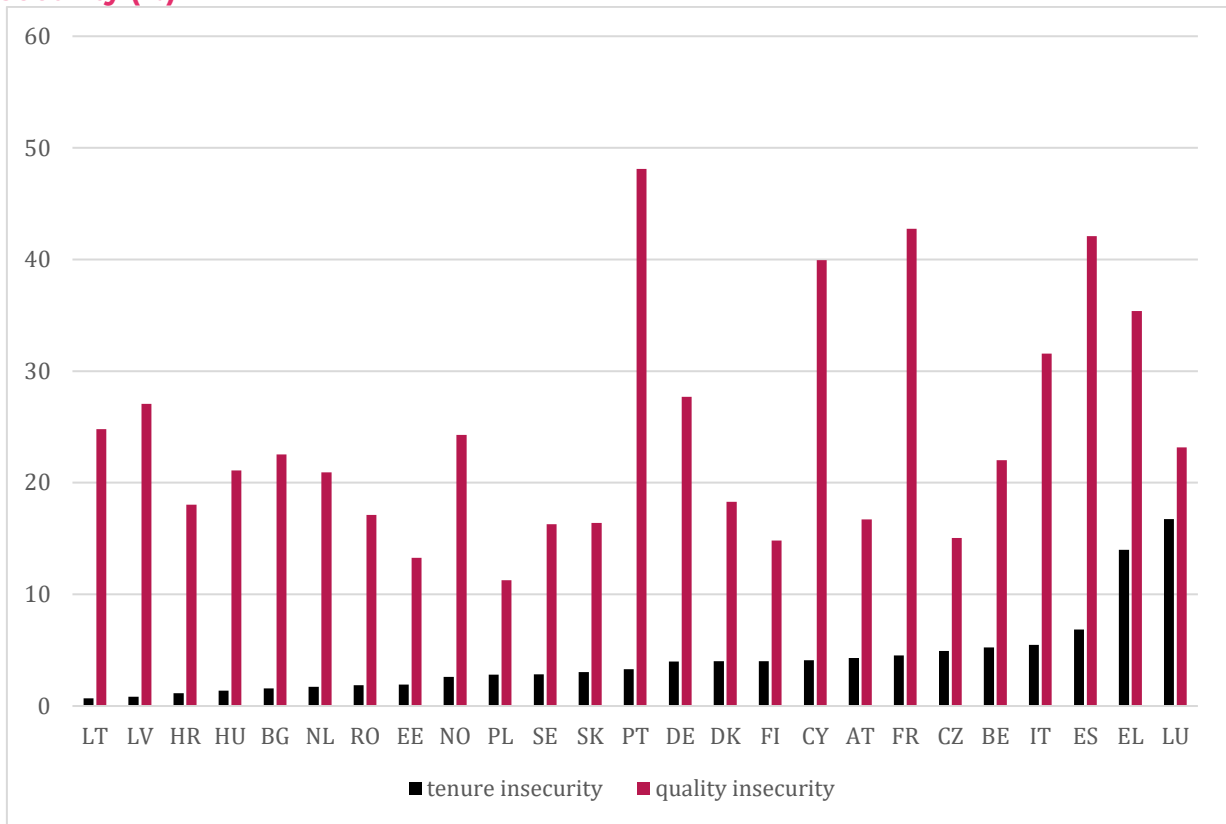
housing precarity measures, which indicates that, at the country-level, nuances in housing precarity are not explained through a trade-off relationship between affordability and quality. Quality insecurity is most prominently found in Portugal, France, Spain and Cyprus, in line with what has been widely 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	-17820.029	-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

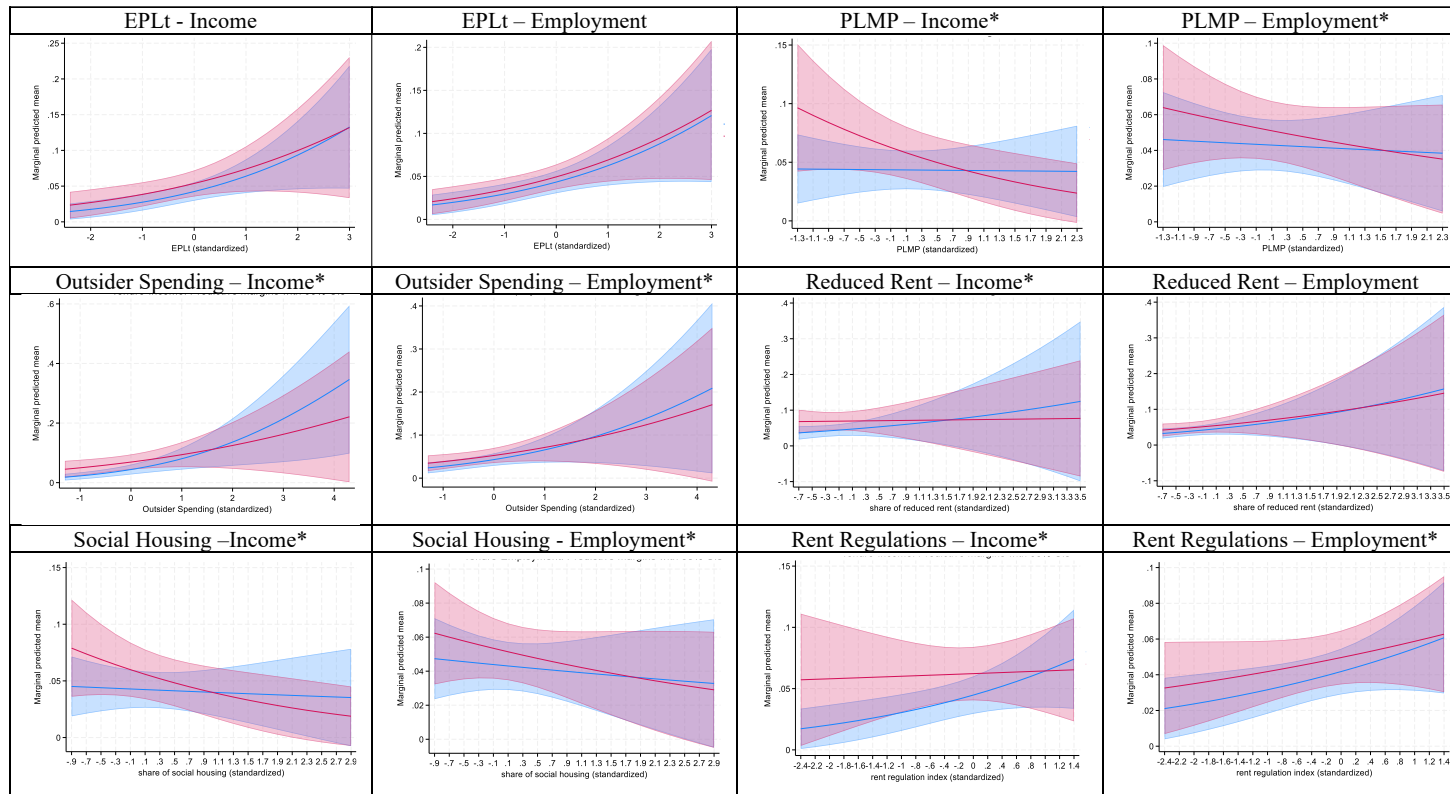
Housing-Welfare Regime Typology	Countries
Social-democratic unitary rental market-countries	Denmark, The Netherlands, Sweden
Conservative-corporatist unitary rental market-countries	Austria, Germany, France
NWE homeownership countries with a dual rental market	Belgium, Finland, Ireland, Luxembourg, Norway, 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



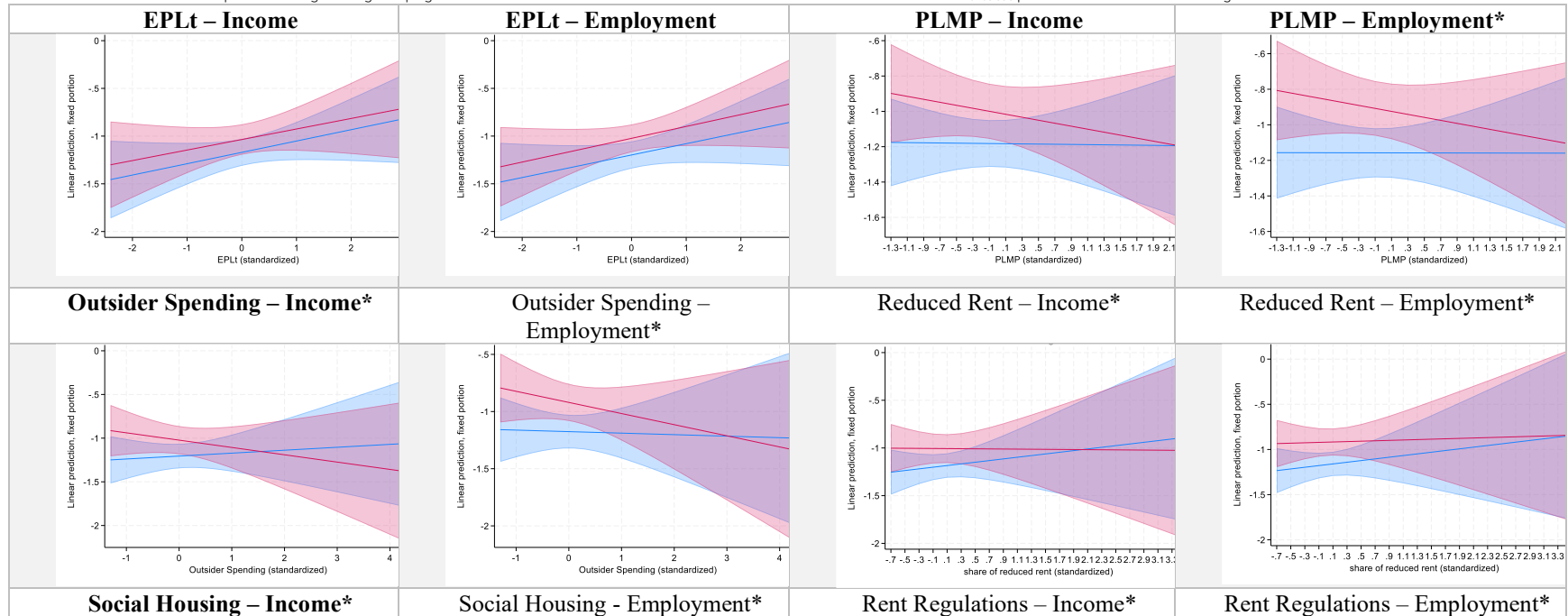
Note: Lines are drawn Based on the predicted margins using "melogit" and the areas show 95% confidence intervals. Blue indicates secure workers and red indicates precarious workers. Models with significant interaction effect are marked with *.

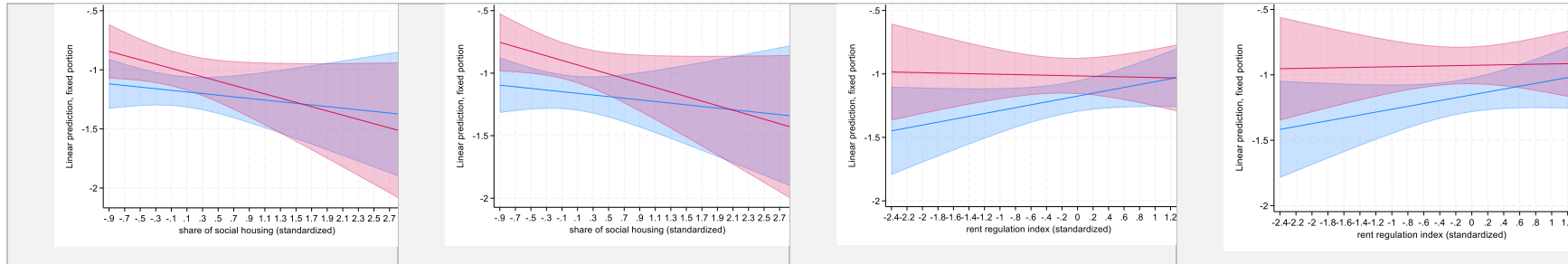




Appendix E: Predictive margins with quality insecurity as dependent variable, controlling for housing-welfare regime

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 *.







5 Appendix. What has changed in the last decade? Investigation of Housing Problems across Europe since 2010

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This chapter investigates how several individual housing problems³⁰ (i.e. the indicators on which the various types of housing precariousness identified in Chapter 4 of D3.1 are based) have evolved over time since the Great Financial Crisis, using European Union (EU) Statistics on Income and Living Conditions (EU-SILC) data collected in 2010, 2012, 2014, 2016, 2018, 2020 and 2023. Based on descriptive statistics, we examine changes in the percentage of the population experiencing various aspects of housing precariousness across Europe. The results in this chapter are presented by housing problem (i.e. affordability, quality, security and energy poverty) and categorised by housing and welfare regimes³¹ (see Table 1). We use this regime typology, given its wide use in the existing literature (Grander & Stephens, 2023; Kemeny, 2006; Lersch and Dewilde 2015; Stephens, 2016), as it is built based on institutions pertaining to welfare and housing. The list of countries in each regime can be found in Table 1 below. For each problem, we first examine the overall change in the percentage of individuals experiencing each problem over time. Then, we split this into two groups – low and high income (i.e. 1st and 3rd tertile (country-specific)) – and examine how the observed trends vary between the two income groups. Here, income refers to the annual equivalised disposable household income used by Eurostat. Finally, we investigate the changes in percentage by tenure type, by

³⁰ For a detailed operationalisation of each indicator, please check Chapter 3 of Deliverable 3.1.

³¹ For more information on housing and welfare regimes, please check Chapter 1 and 2 of Deliverable 3.1.



comparing the year 2010 and 2023 (if not available, with the earlier or latest available data between the two years). We examine all individuals of interviewed households in EU-SILC data, and the data is weighted using personal cross-sectional weight in EU-SILC (RB050).

Table 5.1. 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

5.1 Affordability

The (un)affordability of housing can be observed through two measures – namely, objective and subjective measures of housing cost overburdening. Objective burden – referred to as ‘overburden’ in this deliverable – is defined as spending total housing costs (according to the EU-SILC definition) exceeding a certain threshold with reference to household income. Subjective burden, on the other hand, refers to an individual’s perception of being overburdened by their housing costs. Subjective measures often complement the limitations of objective measures of housing cost overburdening that rely on thresholds based on theoretical assumptions (Bramley, 2012; Heylen, 2023). Subjective measures tend to fluctuate less than objective measures, as they are more reflective of the national contexts or norms (Sunega & Lux, 2016). Thus, considering both objective and subjective measures provides a more comprehensive view of housing (un)affordability.

In our deliverable, the threshold that defines objective housing cost overburdening varies by household income, in order to account for the underestimation of overburden experienced by low-income households (see Bramley, 2012; Dewilde, 2018; Dewilde & De Decker, 2016; Heylen, 2023). These



thresholds are set 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. Furthermore, note that in EU-SILC respondents can indicate to have no subjective burden, a slight burden, or a heavy burden. The data below only present those who experienced a heavy burden, to highlight more severe cases.

5.1.1 Overburden (objective)

This section examines trends in the percentage of individuals across Europe that experience housing cost overburden (i.e. overburden rate) between 2010 and 2023, by welfare regime. The overburden rate is somewhat consistent over time in the unitary rental market-countries (Figure 1), with the exception of the Netherlands where the overburden rate decreased in the last decade after increasing to 26.9% in 2014. The overburden rate in Denmark also decreased over time since its highest point in 2010 (29.3%), albeit showing the highest overburden rate amongst the unitary rental market-countries in 2023 (23.5%). On the contrary, the objective overburden rate increased in Sweden since 2010, although slightly (by 3.6%p (percentage points) between 2010 and 2023). The countries with a conservative-corporatist unitary rental market show a more consistent overburden rate over time compared to the social-democratic countries. The only notable changes are a rather rapid decrease between 2018 and 2020 (by 6.8%p) in Germany, increasing again between 2020 and 2023 (5.1%p).

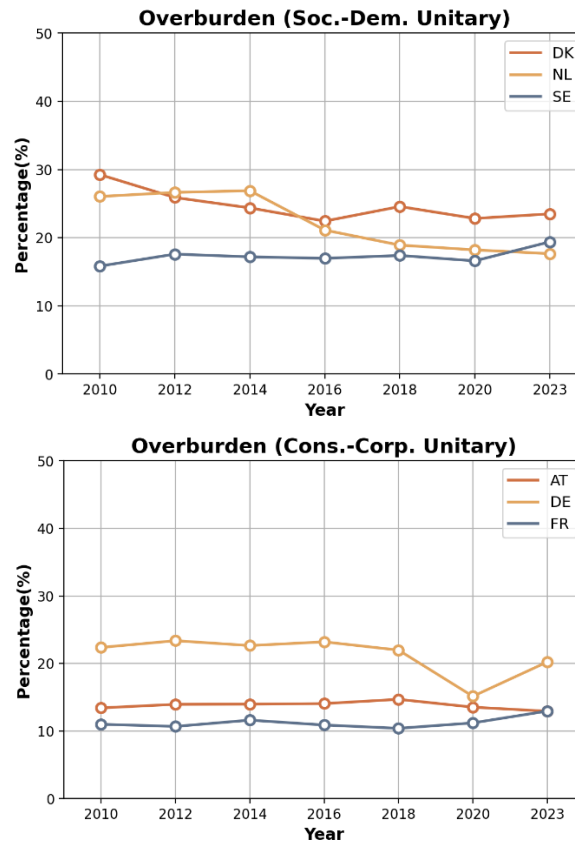


Figure 5.1 Trends in overburdened rate across unitary rental market countries 2010-2023 (%)

Note: disconnected line indicates no data available for that year. Soc.-dem. unitary refers to social-democratic unitary rental market countries and cons.-corp. unitary refers to conservative-corporatist unitary rental market countries.

The same patterns are found when examining these trends by income level (Figure 2). However, what needs to be noted is that these patterns are driven by low-income respondents (1st tertile), as respondents in high-income households (3rd tertile) all show less than 3% overburden rate in all years. In Denmark, the housing cost overburden rate is generally high (above 60% for all years observed) for low-income respondents, followed by the Netherlands and Germany. The lowest overburden rate among low-income respondents is found in France, despite an increase in the last 5 years. In Sweden, high-income respondents almost never experience housing overburdening, except for 2023 (0.2%).



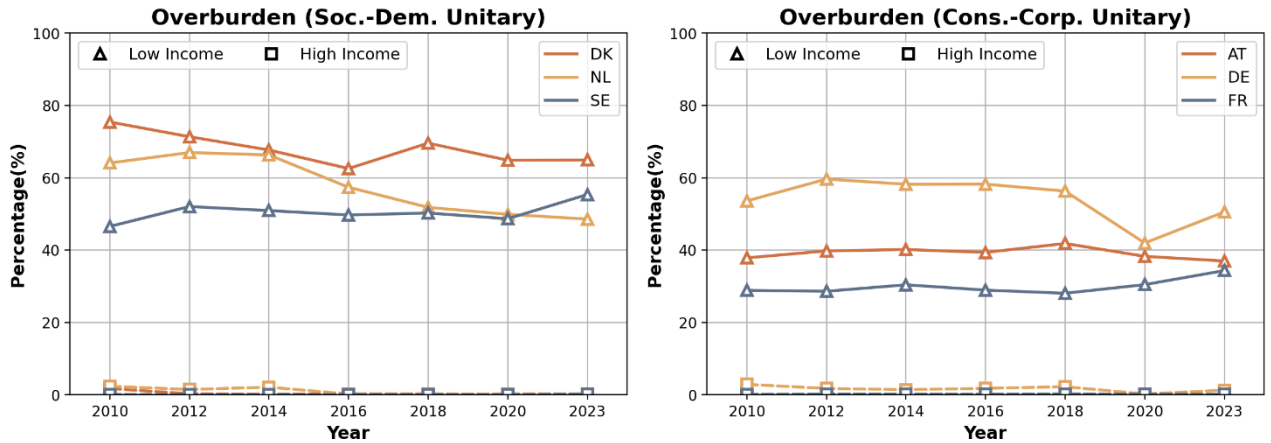


Figure 5.2 Trends in overburdened rate across unitary rental market countries by income 2010-2023 (%)

Note: low income refers to the first tertile and high income refers to the third tertile. Soc.-dem. unitary refers to social-democratic unitary rental market countries and cons.-corp. unitary refers to conservative-corporatist unitary rental market countries.

When observing the changes between 2010 and 2023 by tenure status (Figure 3), we can examine which tenure status has experienced the most change in housing cost overburdening. Denmark shows an overall decrease in the overburden rate across tenure statuses, while the largest decrease is found amongst outright homeowners (13.8%p) and the smallest decrease among the reduced rent-tenants (1.3%p). In the Netherlands, the overburden rate decreased for homeowners, while it increased for tenants, especially for the reduced-rate renters (4.2%p). In Sweden, it increased by 5.0%p for outright homeowners, 3.2%p for reduced-rate renters, and decreased by 0.01%p for mortgage homeowners. In Austria, there was a slight decrease in overburden rate between the two years for all tenure types. Germany also shows an overall decrease in overburden rate for all tenure statuses. France shows a mixed picture, as it shows increase in overburden rate amongst the outright homeowners and reduced-rate renters, but a decrease among the mortgaged homeowners and market-rate renters, although the change is minimal except for the reduced rate-renters (7.1%p).



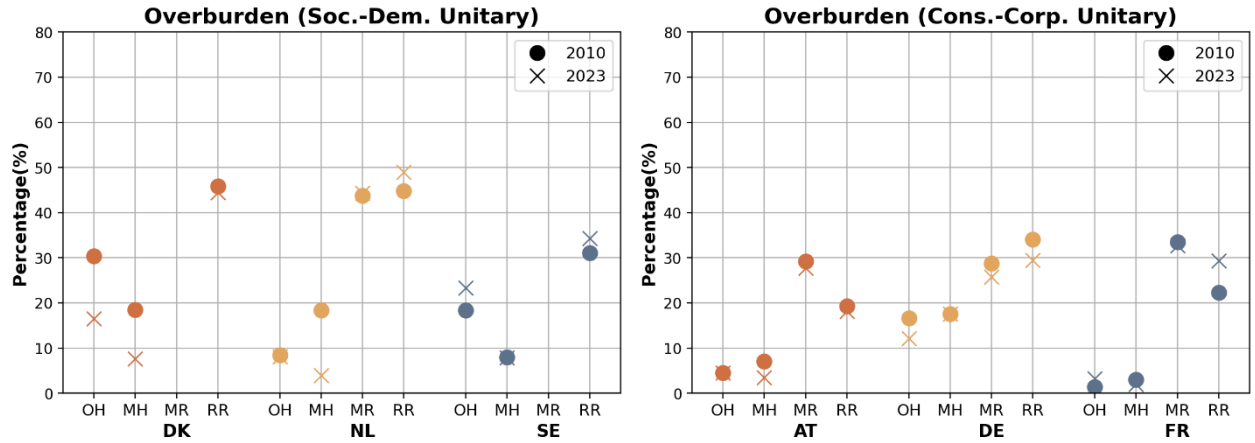


Figure 5.3 Changes in overburdened rate across unitary rental market countries by tenure between 2010 and 2023 (%)

Note: Soc.-dem. unitary refers to social-democratic unitary rental market countries and cons.-corp. unitary refers to conservative-corporatist unitary rental market countries. OH=Outright Homeowners, MH=Mortgage Homeowners, MR=Market Rent, RR=Reduced Rent. Given no clear distinction between market rent and reduced rent in the Soc.-dem. unitary rental market countries, where rents are strictly regulated, all tenants are coded as renting at 'reduced rent'. This applies to DK and SE. In the NL, we distinguish the two rental tenures using the 'liberalisatiegrens'. This is a fixed amount that limits the starting rent of social rental housing, as opposed to a prevailing market rent.

The overburden rate in the North-Western)European homeownership countries with a dual rental market shows more fluctuations compared to the unitary rental market-countries, albeit with intra-regime variations (see Figure 4). In Belgium, housing cost overburdening decreased since 2012 after reaching its highest point of 19.5%, and remains the only country in this regime that has not experienced an increase in overburden rate. However, it needs to be noted that Belgium had the second highest overburden rate compared to other countries in this regime. The overburden rate remained consistent in Finland, with a slight overall increase (by 2.4%p between 2010 and 2023), while in Norway it showed a consistent increase especially since 2014 with an overall increase of 6.0%p between 2010 and 2023. In Ireland, housing cost overburdening decreased since reaching its highest point in 2012 (11.8%), but again increased since reaching its lowest point in 2018 (7.1%). Luxembourg shows the highest increase especially with a large leap between 2020 and 2023 (13.2%p), with an overall increase of 17.7%p between 2010 and 2023. The United Kingdom (UK) demonstrates the most



fluctuating overburden rate with a sharp decrease between 2010 and 2012 (13.0%p), followed by overall increase since 2012.

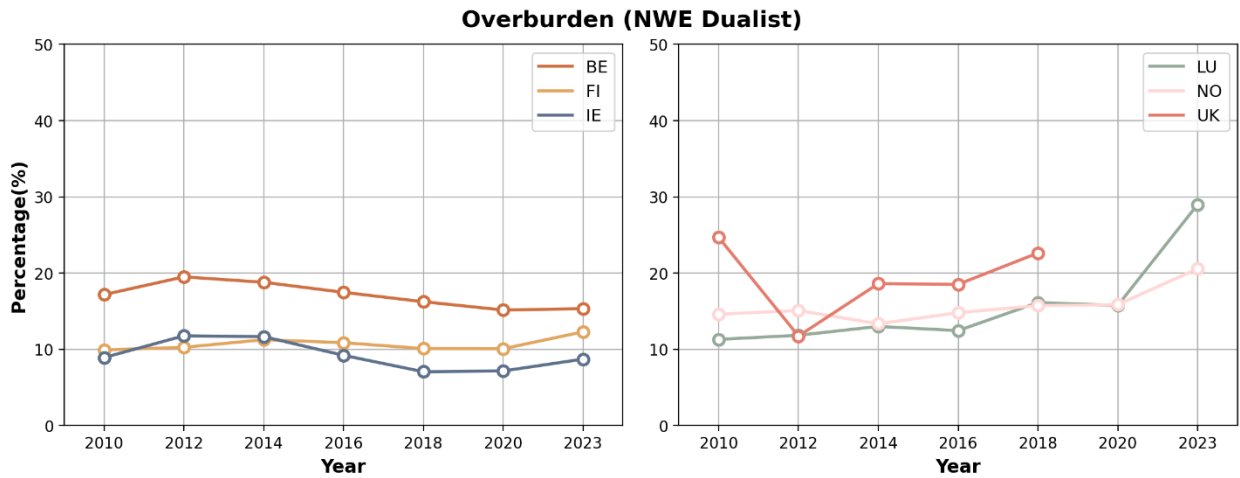


Figure 5.4 Trends in overburdened rate across NWE homeownership dual rental market countries 2010-2023 (%)

Note: disconnected line indicates no data available for that year. NWE refers to North-Western Europe

Figure 5 demonstrates that the patterns are again consistent for low-income respondents when we compare low-income respondents with high-income respondents, however more pronounced. The overburden rate amongst high-income respondents (3rd tertile) is generally low (below 2%), with the exception of Norway in 2023 which reaches 4.2%, increasing by 3.8%p since 2020. However, the increase was more stark for low-income respondents with 6.2%p increase between 2020 and 2023, reaching 50.2% for the overburden rate in 2023. Belgium shows a consistently high overburden rate among low-income respondents despite the decrease, ranging between 40-60% in all observed years. Ireland shows the lowest overburden rate among low-income respondents since reaching its highest point of 32.0% in 2012, despite the increase between 2020 and 2023.



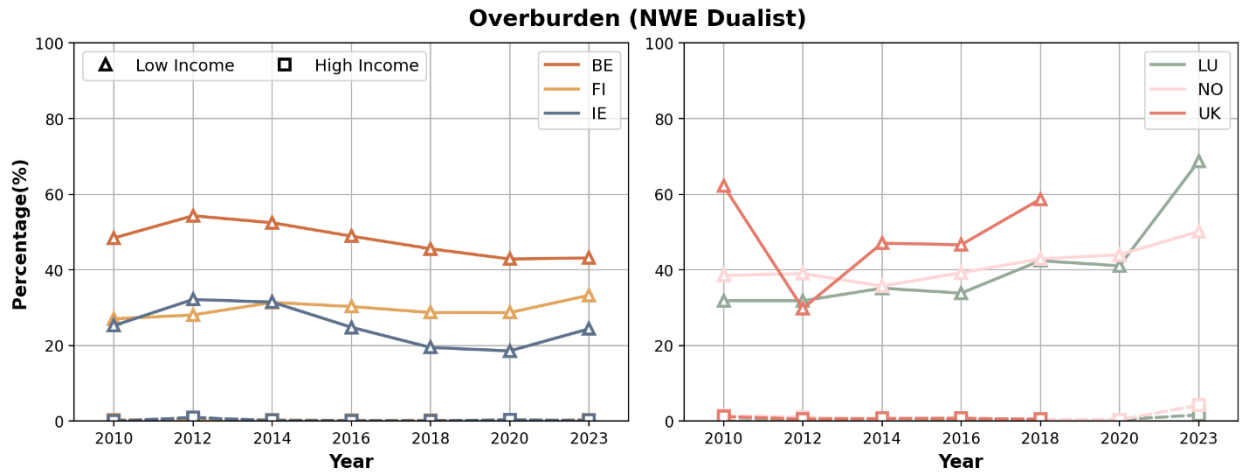


Figure 5.5 Trends in overburdened rate across NWE homeownership dual rental market countries by income 2010-2023 (%)

Note: disconnected line indicates no data available for that year. NWE refers to North-Western Europe.

Figure 6 demonstrates the changes in the housing cost overburden rate between 2010 and 2023 by tenure status in the North-Western European countries with a dualist rental market. It shows that the decrease in overburden rate in Belgium may be driven mostly by the decrease amongst mortgage homeowners. In Finland, the increase is most likely driven by the market renters (by 7.7 %p), while in Norway it is the mortgaged homeowners (by 6.7%p), although it decreased by 20.6 %p among reduced-rate renters. In Ireland, the overburden rate has increased for the renters (0.4%p for the market-rate renters and 4.6%p for the reduced-rate renters) but decreased for homeowners (0.6%p for outright owners and 4.2%p for mortgaged owners). In the UK, all tenure types experienced a decrease in overburden rate, except for the increase amongst the reduced rate renters (2.8%p). The rapid increase in overburden rate in Luxembourg is led by all tenures, and more prominently for mortgaged homeowners (32.9%p) and reduced-rate renters (28.8%p).



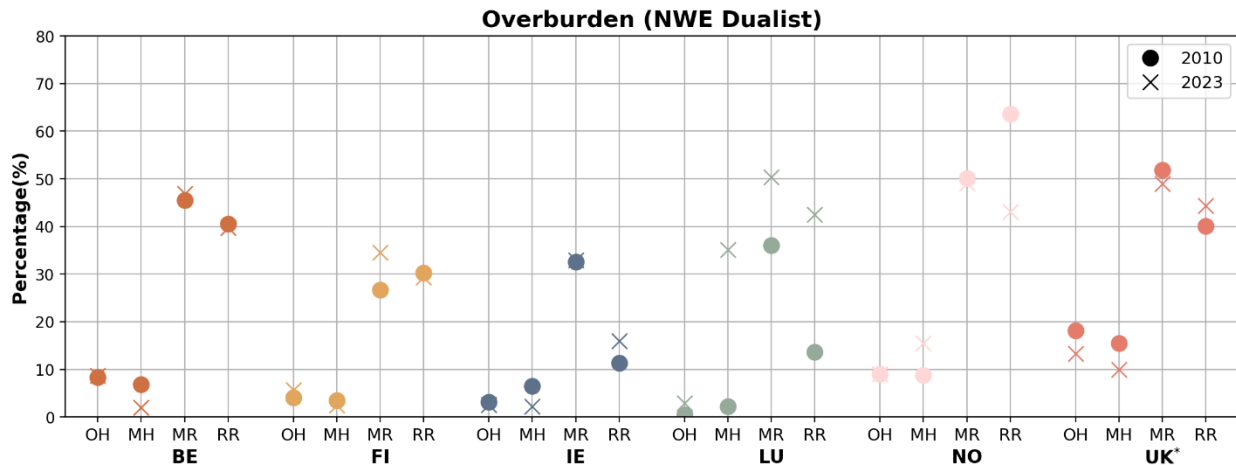


Figure 5.6 Changes in overburdened rate across NWE homeownership dual rental market countries by tenure between 2010 and 2023 (%)

Note: in the UK the latest data is from 2018, not 2023. OH=Outright Homeowners, MH=Mortgage Homeowners, MR=Market Rent, RR=Reduced Rent. In the UK, as of 2017, housing associations are labelled as private rather than social housing providers, leading to a break in the data lines.

In Southern-European countries with family-based homeownership (Figure 7), we can observe one big outlier: Greece. The overburden rate in Greece was the highest in 2010 (30.2%) and it increased sharply until 2014 (reaching 47.8%). Although it decreased over time, it remains the highest even when compared to all the other countries we observe in our analysis. Cyprus and Spain show a consistent overburden rate over time, although in Spain the average across years is 14.9% and in Cyprus it is roughly 6%. Italy is also somewhat consistent over time, with a slight peak in 2016 (15.3%) and a gradual decrease since then. In Portugal, the housing cost overburden rate increased until 2014 (15.4%) then decreased to a point similar to where it started in 2010. Malta shows a generally low overburden rate, although it has increased gradually since 2016. While Malta showed the lowest overburden rate until 2020, it has become the second lowest after Cyprus in 2023.



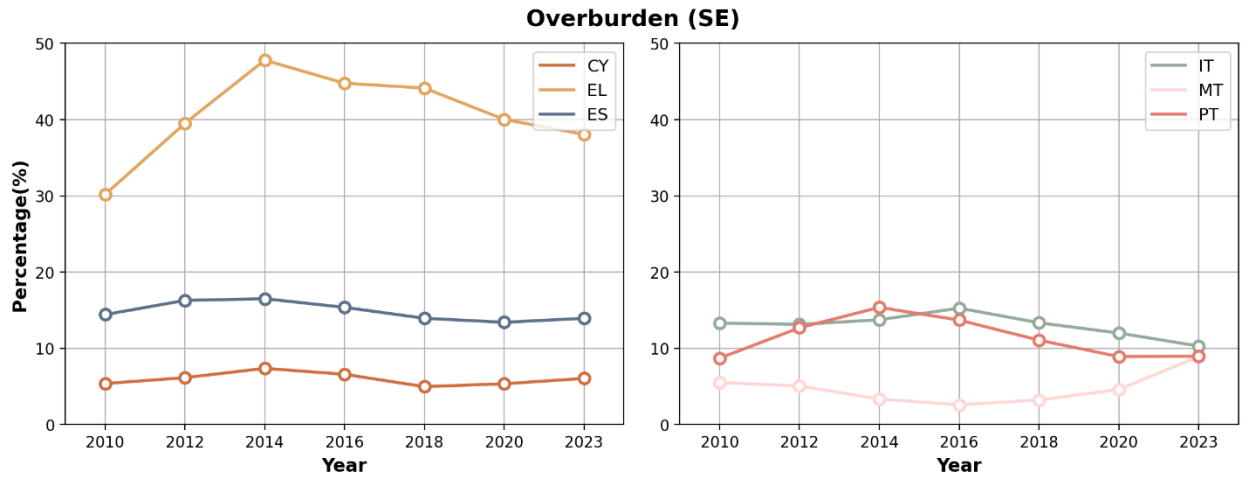


Figure 5.7 Trends in overburdened rate across SE family-based homeownership countries 2010-2023 (%)

Note: SE refers to Southern Europe.

Similar patterns are found when we examine the overburden rate of low-income respondents (Figure 8). Greece shows the highest overburden rate especially since the sharp increase by 13.4%p between 2012 and 2014. It needs to be noted that the overburden rate does not fall below 80% amongst low-income respondents in Greece in all years observed. However, this does not fully capture the sharp increase that continues between 2012 and 2014 in Figure 7. This can instead be explained by the relatively steep increase in the housing cost overburden rate amongst high-income respondents between 2012 and 2014 (5.8%p) and steadily rapid increase between 2010 and 2014 amongst middle-income respondents (see supplementary document). Greece is also the only country that shows a more than 1% overburden rate amongst high-income respondents, when compared to other countries in this regime.



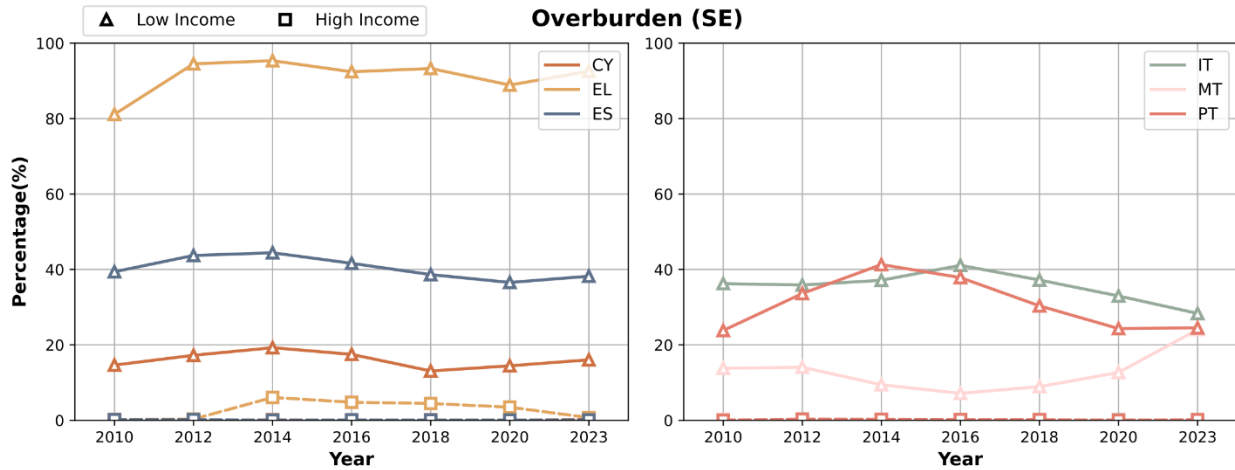


Figure 5.8 Trends in overburdened rate across SE family-based homeownership countries by income 2010-2023 (%)

Note: SE refers to Southern-Europe.

The stark increase observed in Greece is driven by an increase in all tenure statuses, except for the market renters. The increase amongst the reduced-rate renters is especially prominent (33.9%p), followed by mortgaged homeowners (12.4%p) and outright homeowners (6.6%p). Despite the consistent overburden rate in Cyprus and Spain, Figure 9 shows that there have been changes in the overburden rate among different tenure statuses. In Cyprus, the overburden rate decreased for the homeowners (by 0.9%p for outright owners and 1.4%p for mortgaged owners) and increased for renters (by 3.0%p for market-rate renters and 22.8%p for reduced-rate renters). In Spain, it increased for the outright homeowners (by 0.9%p) and reduced-rate renters (by 12.9%p), but decreased for mortgaged homeowners (4.9%p) and market-rate renters (by 11.0%p). The overall decrease of the overburden rate in Italy is mainly driven by mortgaged homeowners (6.3%p) and market renters (14.6%p). Malta also shows a decrease in the overburden rate amongst the mortgaged homeowners and market-rate renters, but an increase amongst the reduced-rate renters (6.5%p). On the contrary, Portugal show a decrease amongst the homeowners (0.1%p for outright homeowners and 4.6%p for mortgaged homeowners) and an increase among



the renters (13.0%p for market-rate renters and 1.4%p for the reduced-rate renters).

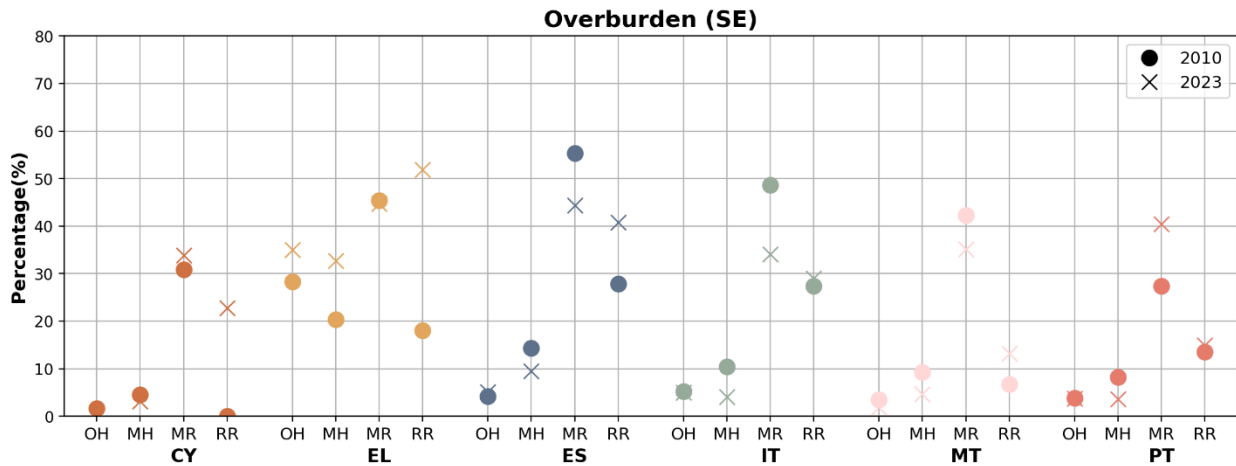


Figure 5.9 Changes in overburdened rate across SE family-based homeownership countries by tenure between 2010 and 2023 (%)

Note: SE refers to Southern Europe. OH=Outright Homeowners, MH=Mortgage Homeowners, MR=Market Rent, RR=Reduced Rent.

Figure 10 presents the trends in the housing cost overburden rate in Eastern-European-countries. In the Baltics (i.e. Estonia, Lithuania and Latvia), there is a generally decreasing trend especially after 2014, and again an increase between 2020 and 2023. They generally remain between 10-20%. The highest point is in Latvia in 2012 with 17.6%. More fluctuation in the trend is found in the Central- and Eastern-European countries. A generally decreasing tendency is observed in the Czech Republic, Croatia, Hungary, Poland, Romania, Slovenia and Slovakia, although, except for Croatia and Slovenia, they all show increase in the overburden rate between 2020 and 2023. Among them, Hungary shows the most sharp increase between 2020 and 2023 (almost double), after a rather sharp decrease between 2018 and 2020 (almost half). While Romania started as the country with the highest housing cost overburden rate (23.7%) in 2010, it is located around the middle in 2023 (14.4%). The opposite is the case for Bulgaria, which started as a country with one of the lowest housing cost overburden rates in 2010 (13.6%), yet shows the highest rate in 2023 (20.9%). In Bulgaria, the



overburden rate increased until 2016, relatively sharply between 2010 and 2012 and between 2014 and 2016, and began to slowly decrease since 2016.

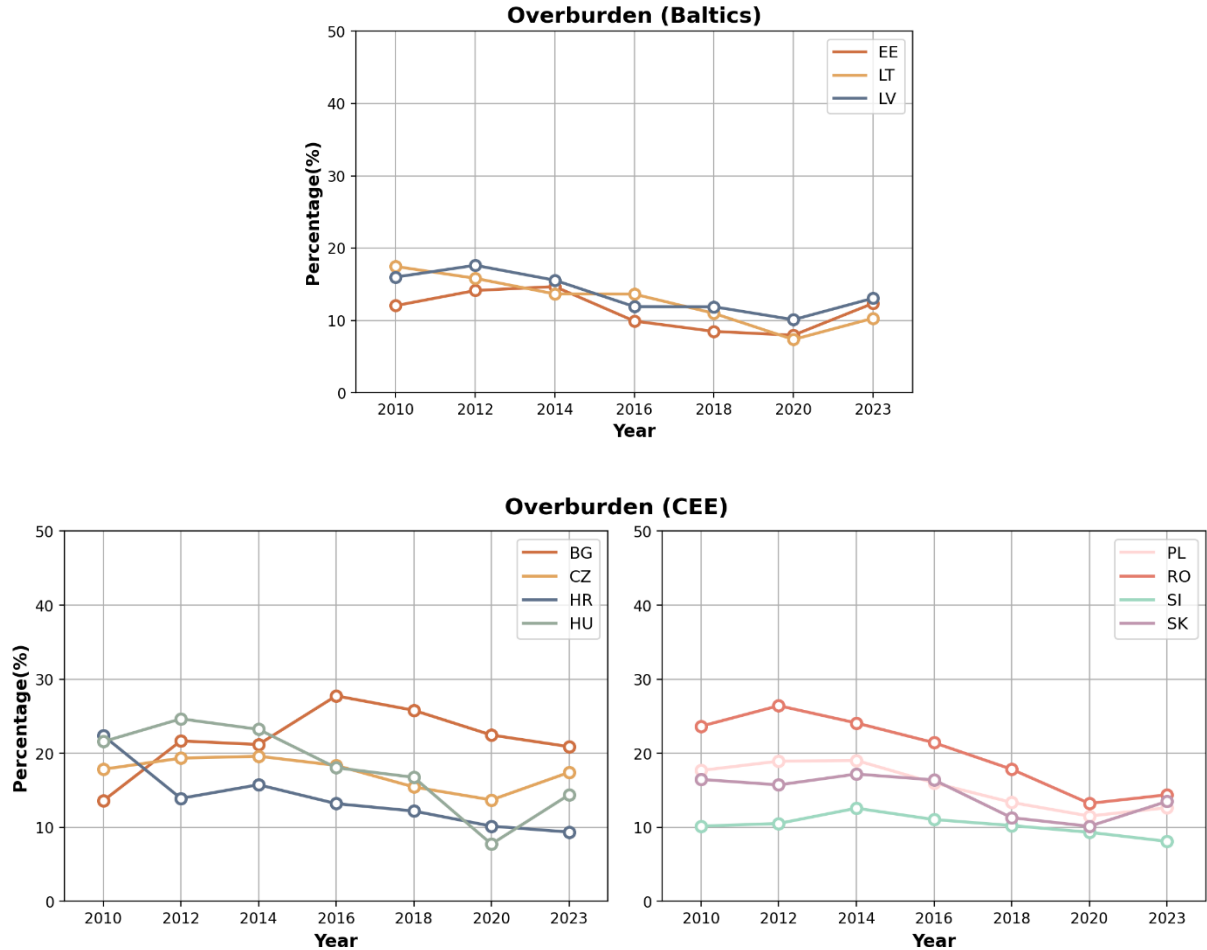


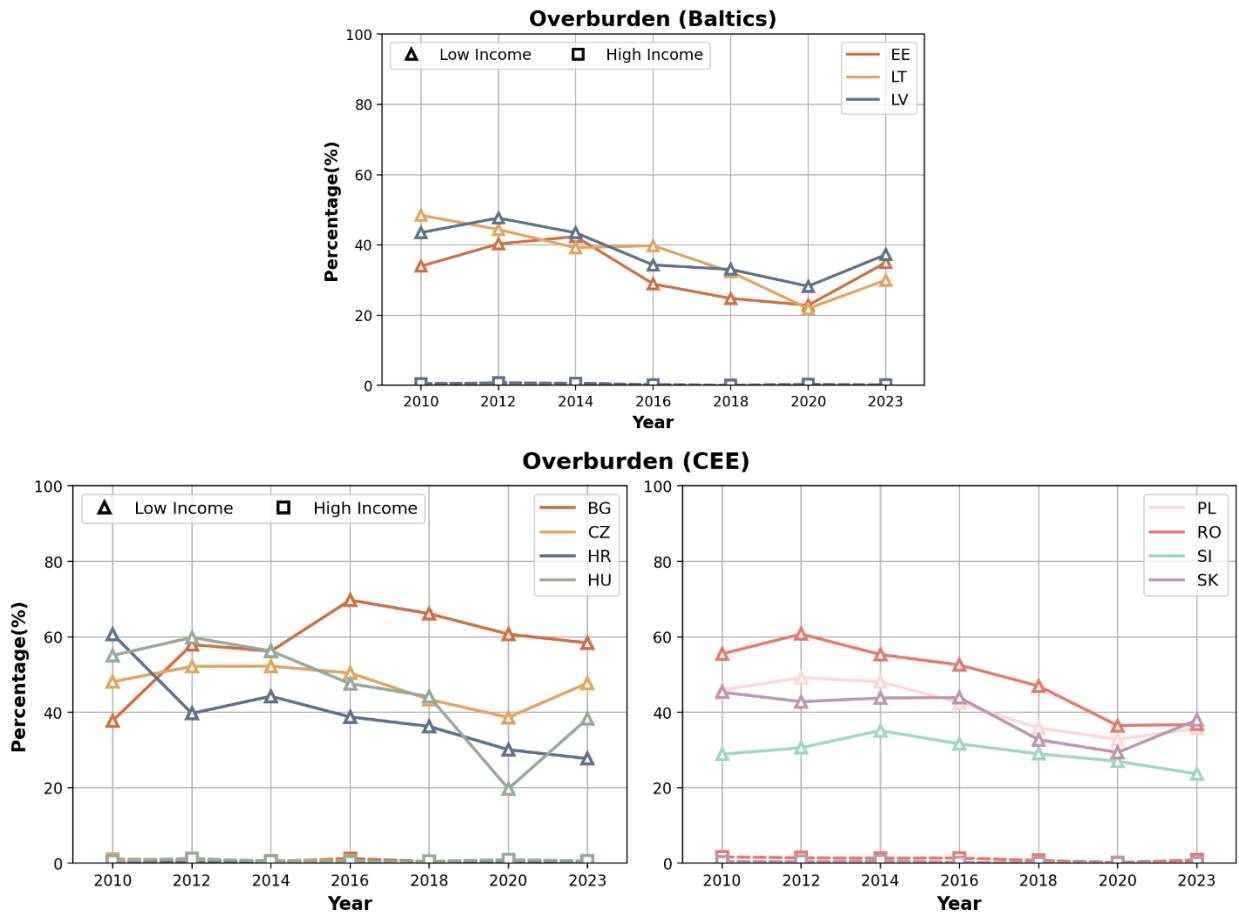
Figure 5.10 Trends in overburdened rate across Eastern European countries 2010-2023 (%)

Note: CEE refers to Central Eastern Europe. Note that reliability of household income data from Hungary between 2018-2021 are currently being debated (For more information, see Tátrai et al., 2025; Tátrai & Gábos, 2025).

The patterns found in Figure 10 are similar to those presented in Figure 11 for low-income respondents. This, along with the other countries examined above, allows us to infer that housing cost overburdening is mostly experienced by low-income respondents. The overburden rate among high-income respondents in all



observed countries in Eastern-Europe is below 2%, with Romania showing a



relatively high rate of about 1.1% across the observed years.

Figure 5.11 Trends in overburdened rate across Eastern European countries by income 2010-2023 (%)

Note: CEE refers to Central Eastern Europe. Note that reliability of household income data from Hungary between 2018-2021 are currently being debated.

Figure 12 shows changes in the overburden rate between 2010 and 2023 across Eastern-European countries by tenure status. Although to different extents, Lithuania, Latvia, Hungary, Croatia and Poland show a decrease in the overburden rate in all tenure statuses. In Lithuania, the biggest decrease is for market-rate renters by 23.6%p, while in Latvia, the biggest decrease is found among mortgaged homeowners (11.6%p). In Croatia, the biggest decrease is found amongst homeowners (12.8%p for outright owners and 12.3%p for



mortgaged owners). Mortgaged homeowners experienced the biggest decrease in overburden rate in Hungary as well (by 12.4%p). In Poland, the biggest decrease is found amongst renters (13.5%p for market-rate renters and 21.0 %p for reduced-rate renters). On the contrary, in Bulgaria, all tenure statuses experienced increases in the housing cost overburden rate, reduced-rate renters in particular (24.6%p). In other countries, it decreased for homeowners, while it increased for market renters in Estonia, Czech Republic and Slovakia, reduced-rate renters in Slovenia.

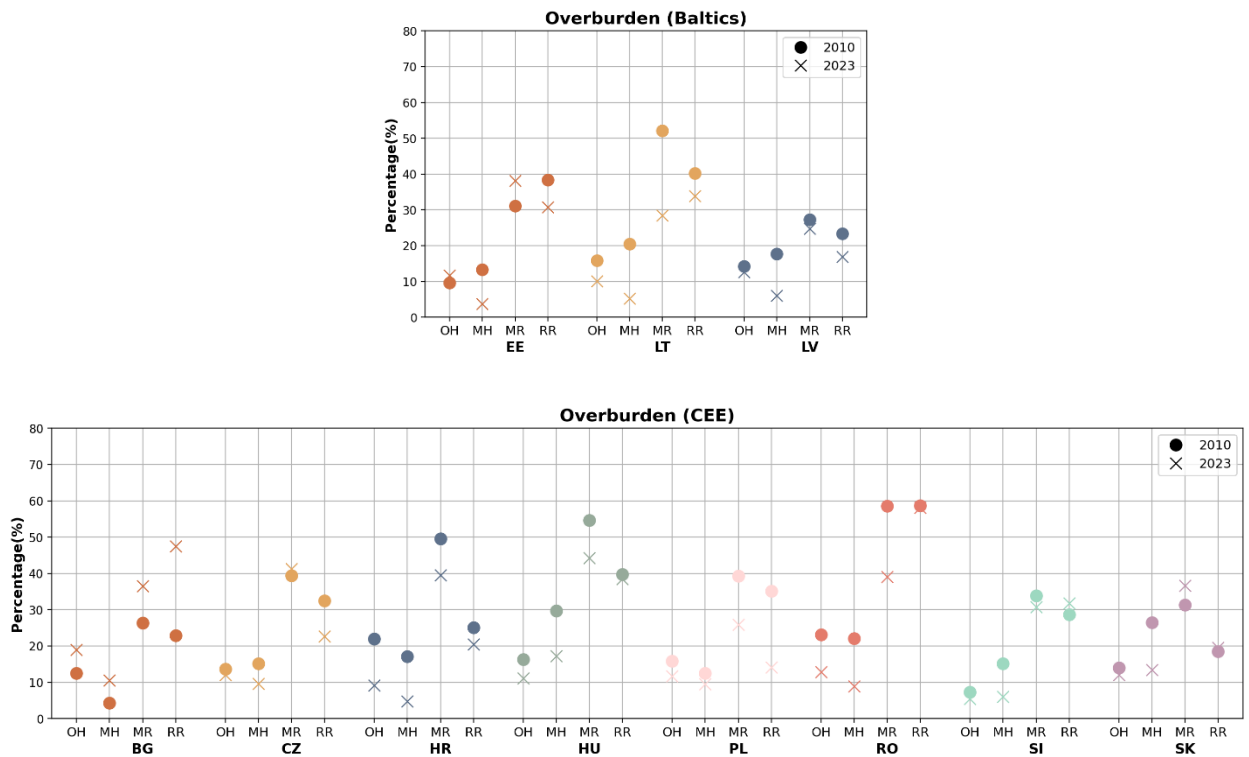


Figure 5.12 Changes in overburdened rate across Eastern European countries by tenure between 2010 and 2023 (%)

Note: CEE refers to Central-and-Eastern Europe. OH=Outright Homeowners, MH=Mortgage Homeowners, MR=Market Rent, RR=Reduced Rent. Note that reliability of household income data from Hungary between 2018-2021 are currently being debated.



5.1.2 Subjective burden

This section examines trends in the prevalence of individuals across Europe that experience subjective housing cost overburdening (i.e. subjective burden rate) between 2010 and 2023. As shown in Figure 13, changes in countries with social-democratic unitary rental markets with regard to this indicator are minimal. The only notable difference in these countries is the generally stable subjective burden rate in Sweden despite a slight increase between 2020 and 2023, gradual decrease in Denmark and the Netherlands since 2014, although in Denmark there is an increase again after 2020. While the trends are also generally stable in countries with a conservative-corporatist unitary rental market, the subjective housing cost burden is relatively higher in these countries compared to the social-democratic countries, and there is a relatively sharp increase in Germany and Austria. It needs to be noted, however, that notwithstanding these increases France shows the highest subjective burden rate amongst the three countries.



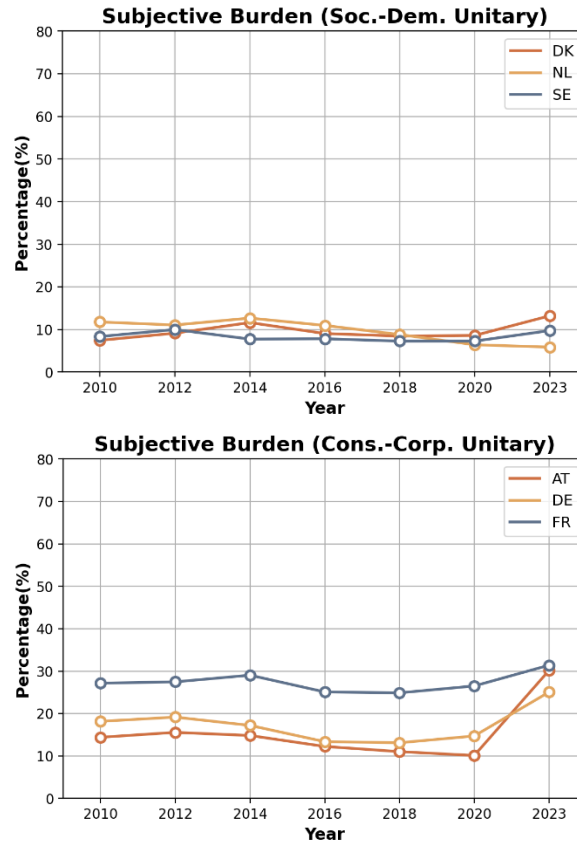


Figure 5.13 Trends in subjective burden rate across unitary rental market countries 2010-2023 (%)

Note: disconnected line indicates no data available for that year. Soc.-dem. unitary refers to social-democratic unitary rental market countries and cons.-corp. unitary refers to conservative-corporatist unitary rental market countries.

The patterns found in Figure 13 are generally consistent with the subjective burden rate trends over time for low-income respondents in Figure 14, although the gaps between countries are more pronounced. Comparing the two figures, we can observe that the prevalence of subjective housing cost burden overburdening is relatively lower for Denmark than for the Netherlands and Sweden when it comes to low-income respondents, although this is reversed in 2023, when low-income respondents in Denmark show the highest subjective housing cost overburdening rate compared to low-income respondents in the other two countries. As can be seen from Figure 13, France shows the highest subjective burden rate among low-income respondents around 40%. This indicator also increased sharply in Austria between 2020 and 2023. What is



notable compared to the objective overburden rate is that we also see subjective housing cost burdens experienced by high-income respondents. The gap between high- and low-income respondents is the lowest in Denmark of all unitary rental market countries (on average 9.9%p). That is because while the subjective burden rate is relatively lower for low-income respondents, it is relatively higher for high-income respondents in Denmark. The gap between low- and high-income respondents is higher in conservative-corporatist countries, with France displaying the largest gap (on average 26.2%p) despite having the highest subjective overburdening rate for both low- and high-income respondents.

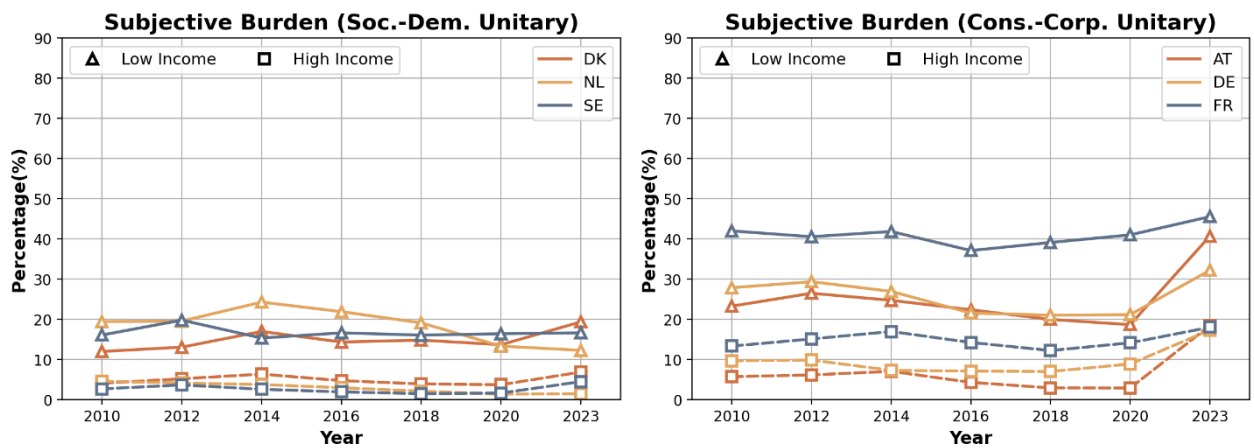


Figure 5.14 Trends in subjective burden rate across unitary rental market countries by income 2010-2023 (%)

Note: low income refers to the first tertile and high income refers to the third tertile. Soc.-dem. unitary refers to social-democratic unitary rental market countries and cons.-corp. unitary refers to conservative-corporatist unitary rental market countries.

Subjective burden rate has generally increased across tenure status between 2010 and 2023 in the unitary rental market countries except for the Netherlands and Sweden (Figure 15). In Denmark, the most notable increase is found among reduced-rent renters (8.8%p), and in Austria it is for reduced-rate renters (23.1%p) and mortgage owners (21.8%p). In Germany, subjective burden rate increased by similar extent across tenure status. While it also increased for all tenure statuses





in France, the highest increase is found among the reduced-rate renters (6.5%p). In the Netherlands, subjective burden rate decreased for all tenure statuses. Most notable difference, RR is the decrease in the rate among the market-rate renters (16.0%p). In Sweden, the change is very minor but it only increased for homeowners.

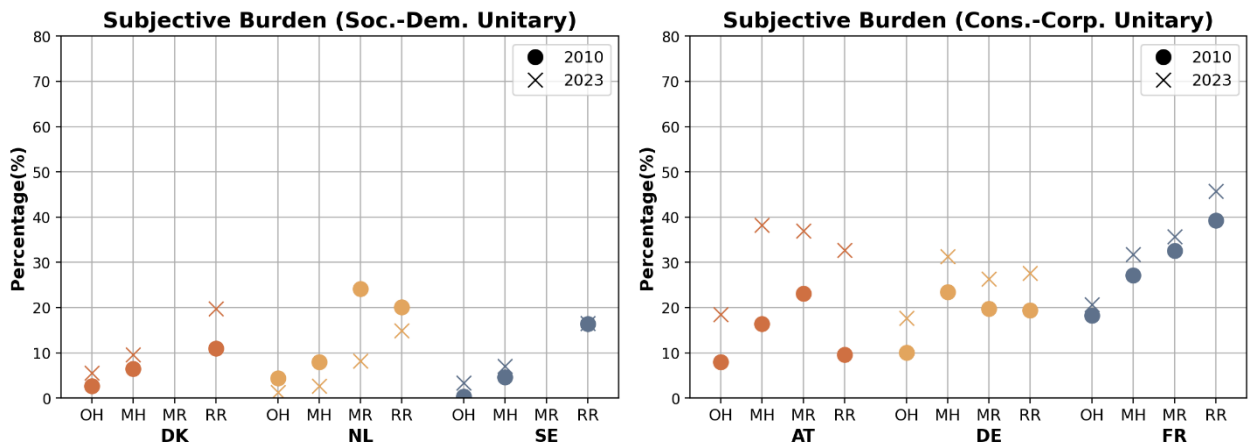


Figure 5.15 Changes in subjective burden rate across unitary rental market countries by tenure between 2010 and 2023 (%)

Note: Some data are missing including the reduced rent in Denmark in 2010 and reduced-rent in Sweden in 2023. Soc.-dem. unitary refers to social-democratic unitary rental market countries and cons.-corp. unitary refers to conservative-corporatist unitary rental market countries. OH=Outright Homeowners, MH=Mortgage Homeowners, MR=Market Rent, RR=Reduced Rent. Given no clear distinction between market rent and reduced rent in the Soc.-dem. unitary rental market countries, where rents are strictly regulated, all tenants are coded as renting at 'reduced rent'. This applies to DK and SE. In the NL, we distinguish the two rental tenures using the 'liberalisatiegrens'. This is a fixed amount that limits the starting rent of social rental housing, as opposed to a prevailing market rent.

Figure 16 presents the trends in subjective burden rate across North-Western European homeownership countries with dual rental market between 2010 and 2023. As discussed above, subjective burden is less volatile compared to the objective overburden rate observed in the previous section. Generally, we see a stable trend across countries, except for the UK and Ireland that show a decreasing tendency since 2014. Moreover, while generally consistent, Luxembourg shows a decrease in subjective burden rate in 2014 (35.0%) which recovers in 2016 (39.2%) and gradually decreases since then. Except for that point in 2014, Luxembourg shows the highest subjective burden rate over time, and



Norway the lowest. Norway, despite the increase between 2020 and 2023, shows subjective burden rate below 10% in all observed years.

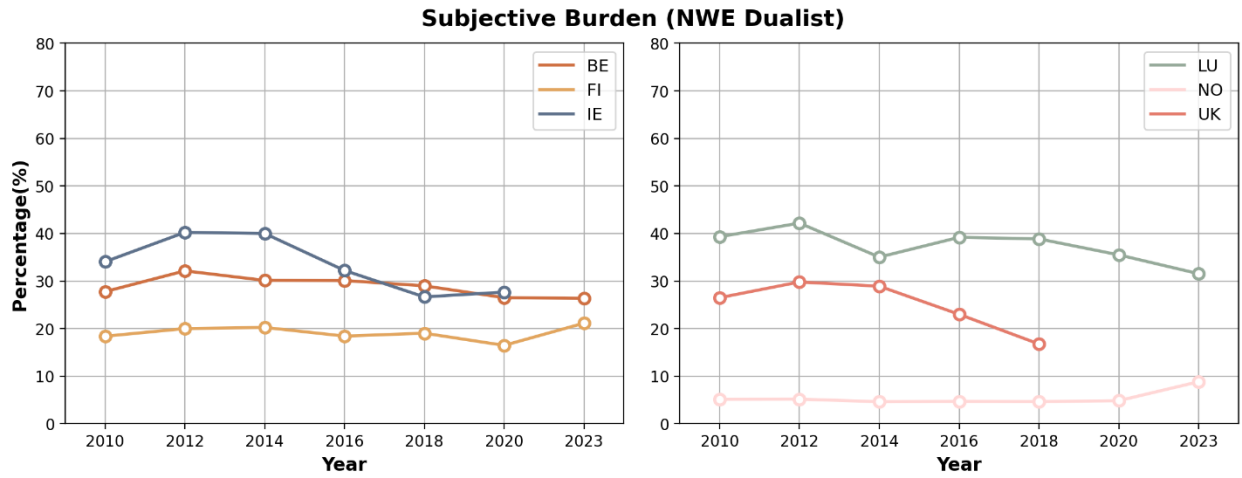


Figure 5.16 Trends in subjective burden rate across NWE homeownership countries with dual rental market 2010-2023 (%)

Note: disconnected line indicates no data available for that year. NWE refers to North-Western Europe

Figure 17 demonstrates the trends in subjective burden rate across NWE homeownership countries with dual rental market by income level. Similar to what was observed so far, the patterns found in Figure 16 is somewhat similar to the patterns found among low-income respondents in Figure 17. Luxembourg shows the highest burden rate among low-income respondents around 60% over time, although it has decreased sharply between 2020 and 2023 by 16.8%p. A key divergence between the low- and high-income in Luxembourg occurs since 2016, where the two takes opposite tendencies (i.e. when it decreases for low-income respondents, it increases for high-income respondents). The average gap between the low- and high-income is also the largest in Luxembourg (on average 36.5%p) among the countries in Figure 17. Unlike the overall rate, subjective burden continues to decrease after reaching its peak in 2014 in Ireland for low-income respondents, while that slight increase is found among high-income respondents. Norway, in particular shows lowest overall subjective burden rate for



both low- and high-income respondents, as well as the lowest gap between the two (on average 9.1%p).

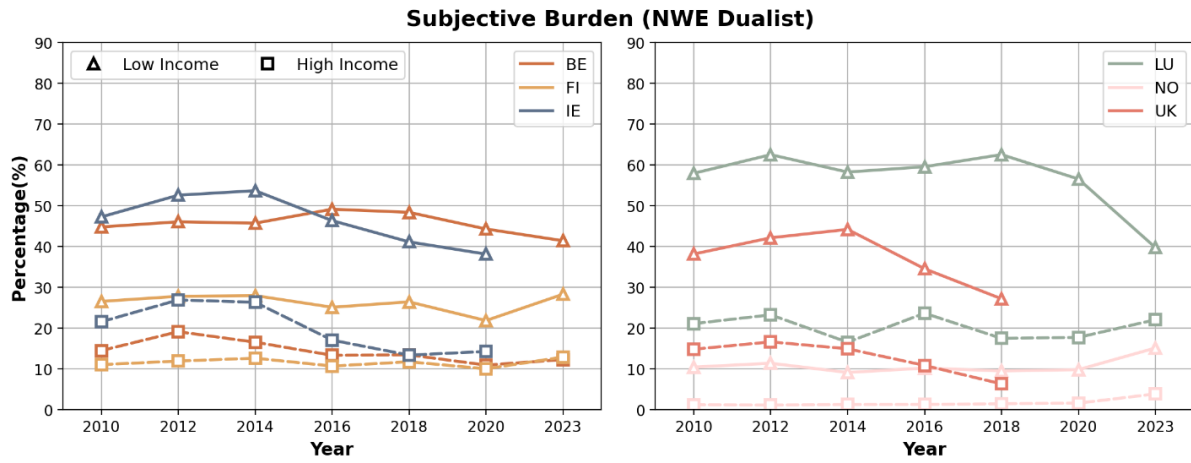


Figure 5.17 Trends in subjective burden rate across NWE homeownership countries with dual rental market by income 2010-2023 (%)

Note: disconnected line indicates no data available for that year. NWE refers to North-Western Europe

Figure 18 presents how the changes in subjective burden rate between 2010 and 2023 occurred for each tenure status. In Luxembourg and the UK, subjective burden rate decreased in all tenure statuses, most notably among outright homeowners in Luxembourg (by 12.9%p) and mortgage homeowners in the UK (by 14.1%p). In Finland and Norway, it increased for both homeowner tenures and market-rate renters, but decreased for reduced-rate renters (by 1.9%p in Finland and 1.4%p in Norway). In Belgium, homeowners and renters fared differently, as the subjective burden rate decreased for the homeowners while it increased for all types of renters.



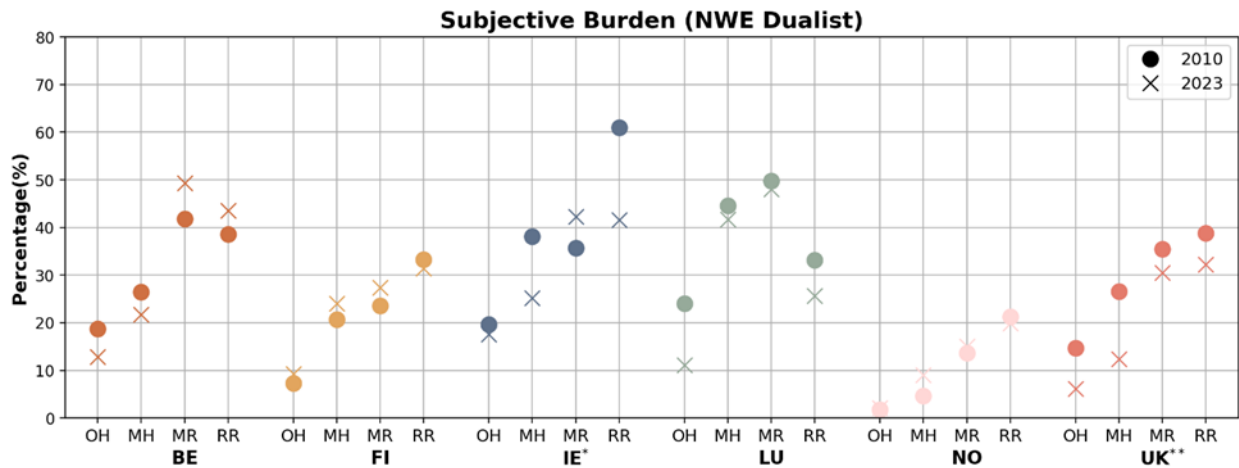


Figure 5.18 Changes in subjective burden rate across NWE homeownership countries with dual rental market by tenure between 2010 and 2023 (%)

Note: in the UK the latest data is from 2018 and in Ireland it is from 2020, instead of 2023. OH=Outright Homeowners, MH=Mortgage Homeowners, MR=Market Rent, RR=Reduced Rent. In the UK, as of 2017, housing associations are labelled as private rather than social housing providers, leading to a break in the data lines.

Figure 19 shows a very different pattern from the overburden rate in Figure 7. In contrast to Figure 7, where most countries, with the exception of Greece, show a low and stable overburden rate over time, Figure 19 shows that perceived burden was still prevalent in the other countries, such as Malta, Spain, Cyprus and Italy, especially in the aftermath of the Global Financial Crisis (GFC). Malta especially recovers quickly, evidenced by the sharp decrease in subjective burden between 2014 and 2016 that almost halved in the two years. What is notable is that Greece, on the contrary, shows relatively low subjective burden rate, although it relatively rapidly increases over time until 2020. Further research is required to understand such discrepancies between the objective and subjective measures. Portugal shows the overall low subjective burden rate compared to other Southern European countries, especially as it decreased since reaching its highest point in 2014 (39.6%), although increased again between 2020 and 2023. However, it needs to be noted that Portugal has a higher subjective burden rate when compared to other countries observed above.

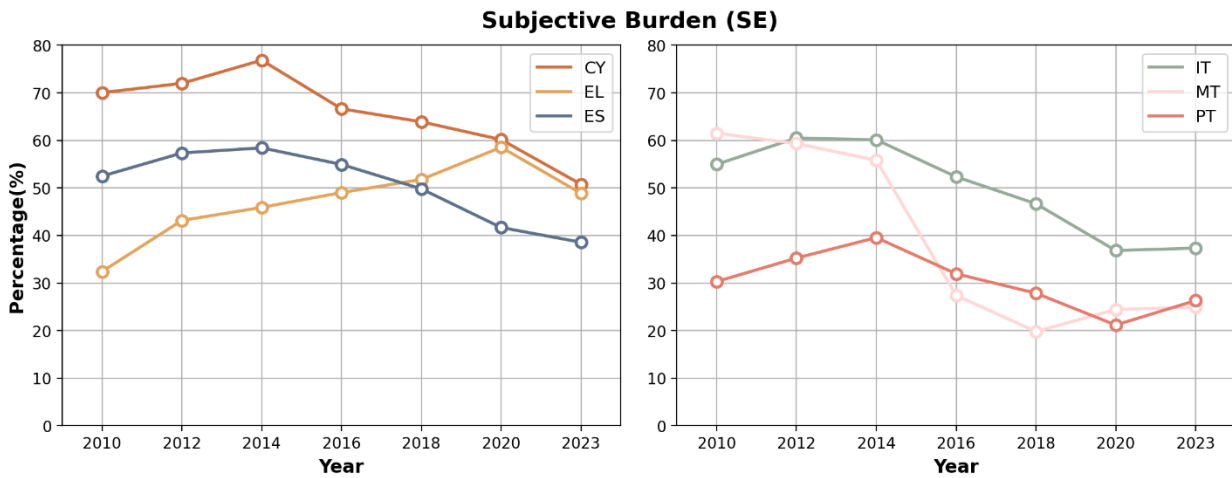


Figure 5.19 Trends in subjective burden rate across SE family-based homeownership countries 2010-2023 (%)

Note: SE refers to Southern Europe.

Figure 20 shows that the subjective burden rate changed differently for low- and high-income respondents across countries. In Cyprus, although the rate is high for both low- and high-income respondents in 2010 (with the gap of 20.9%p; smallest among SE countries), the gap continued to increase over time between low- and high-income respondents as it decreased more rapidly for high-income respondents. This trend stopped in 2023 as the subjective burden rate decreases relatively sharply for low-income respondents compared to high-income respondents. In Greece, the gap increased as the subjective burden rate increases more rapidly for low-income respondents compared to high-income respondents. Sharp decrease between 2020 and 2023 among low-income respondents decreased this gap in 2023. However, it shows the biggest gap in 2023 among the SE countries (31.8%p). Spain shows the biggest difference between the low- and high-income in 2010 (with the gap of 30.9%p). This gap fluctuated over time, but decreases in 2023 with the increase among high-income respondents and decrease among low-income respondents. In Italy, the gap between the low- and high-income also fluctuates over time, as they both



decrease over time. However, with the increase of subjective burden rate among high-income respondents between 2020 and 2023, the gap decreases in 2023. Malta shows the smallest gap between the low- and high-income in 2023. It is driven by rapid decrease of burden among low-income respondents until 2018 and the increase in burden among the high income between 2018 and 2023. In Portugal, trends are somewhat similar for the low- and high-income, maintaining certain gap between the two, but the gap starts to close over time with the more rapid decrease in burden among low-income respondents compared to high-income respondents.

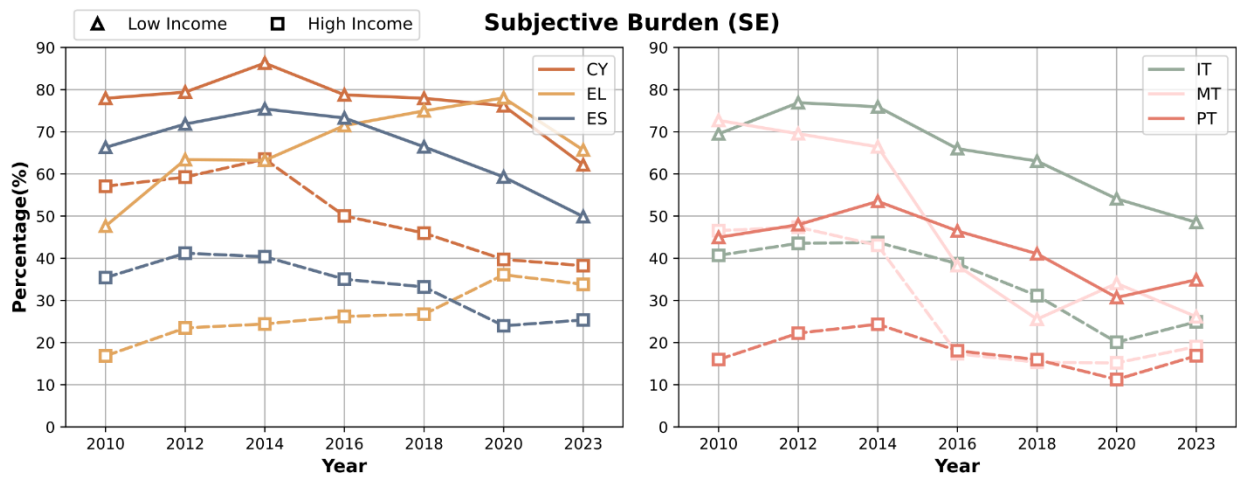


Figure 5.20 Trends in subjective burden rate across SE family-based homeownership countries by income 2010-2023 (%)

Note: SE refers to Southern Europe.

In most countries in Southern Europe, subjective burden rate decreased in all tenure statuses. The biggest decrease in Cyprus and Spain is among reduced-rate renters with the decrease by 33.7%p and 20.7%p respectively. In Italy, it is the mortgage owners and market-rate renters with the biggest change, decreasing by 21.5%p and 22.0%p respectively. The changes are large for all tenure statuses in Malta, evidenced by the decrease by 41.3%p among the market-rate renters and by 38.3%p among the outright owners. In Portugal, most tenure statuses experienced decrease in subjective burden, although to a different extent, except



for reduced-rate rent which increased by 9.4%p. Greece, however, shows increase in subjective burden for all tenure statuses. The biggest increase is found among the homeowners, with 16.6%p for outright owners and 18.0%p for mortgage owners.

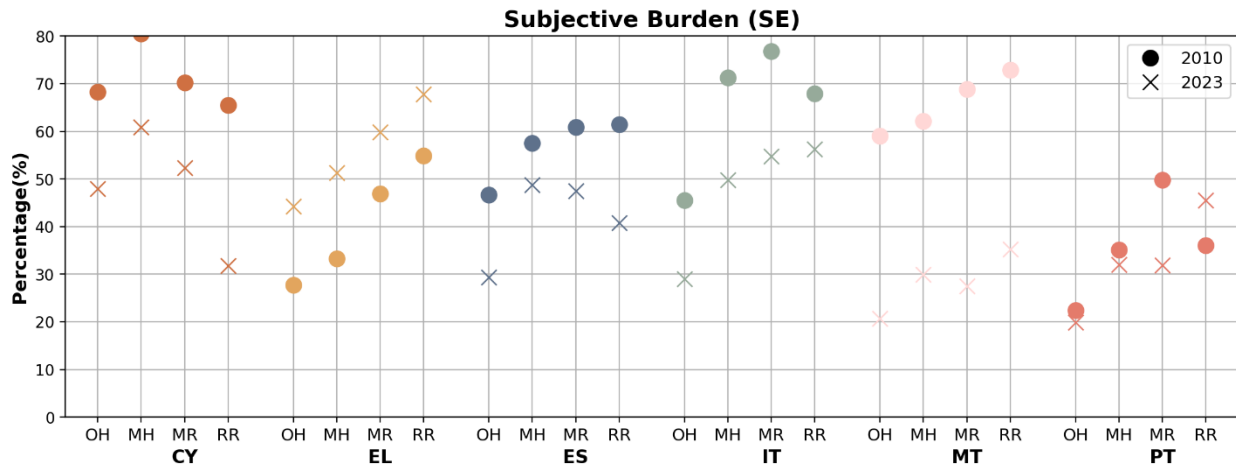


Figure 5.21 Changes in subjective burden rate across SE family-based homeownership countries by tenure between 2010 and 2023 (%)

Note: SE refers to Southern Europe. OH=Outright Homeowners, MH=Mortgage Homeowners, MR=Market Rent, RR=Reduced Rent.

Figure 22 shows the trends in subjective burden rate across Eastern European countries between 2010 and 2023. In Baltics, there is a clear downward trend in the perceived burden, with the exception of Estonia between 2020-2023. Poland shows the highest overall subjective burden rate over, while showing decreasing trend since reaching its peak in 2014 (63.7%). In Croatia, subjective burden increased until 2014 and decreased at a faster rate than other Eastern European countries since then. Despite the decrease, it still shows one of the highest subjective burden rate in Eastern Europe in 2023 (33.7%). Bulgaria, Czech Republic and Hungary also show a decreasing tendency over time, both with a relatively rapid decline between 2018 and 2020, especially in Hungary, but it increases again between 2020 and 2023. Romania also shows similar pattern, but in contrast to Hungary, it shows a relatively slow decrease overtime but a rapid increase between 2020 and 2023. In Slovenia, it remains relatively stable over time



and slowly decreases, with the exception of 2018 when it goes up but down again in 2020. In Slovakia, it decreases after 2014 but starts to increase again after 2018.

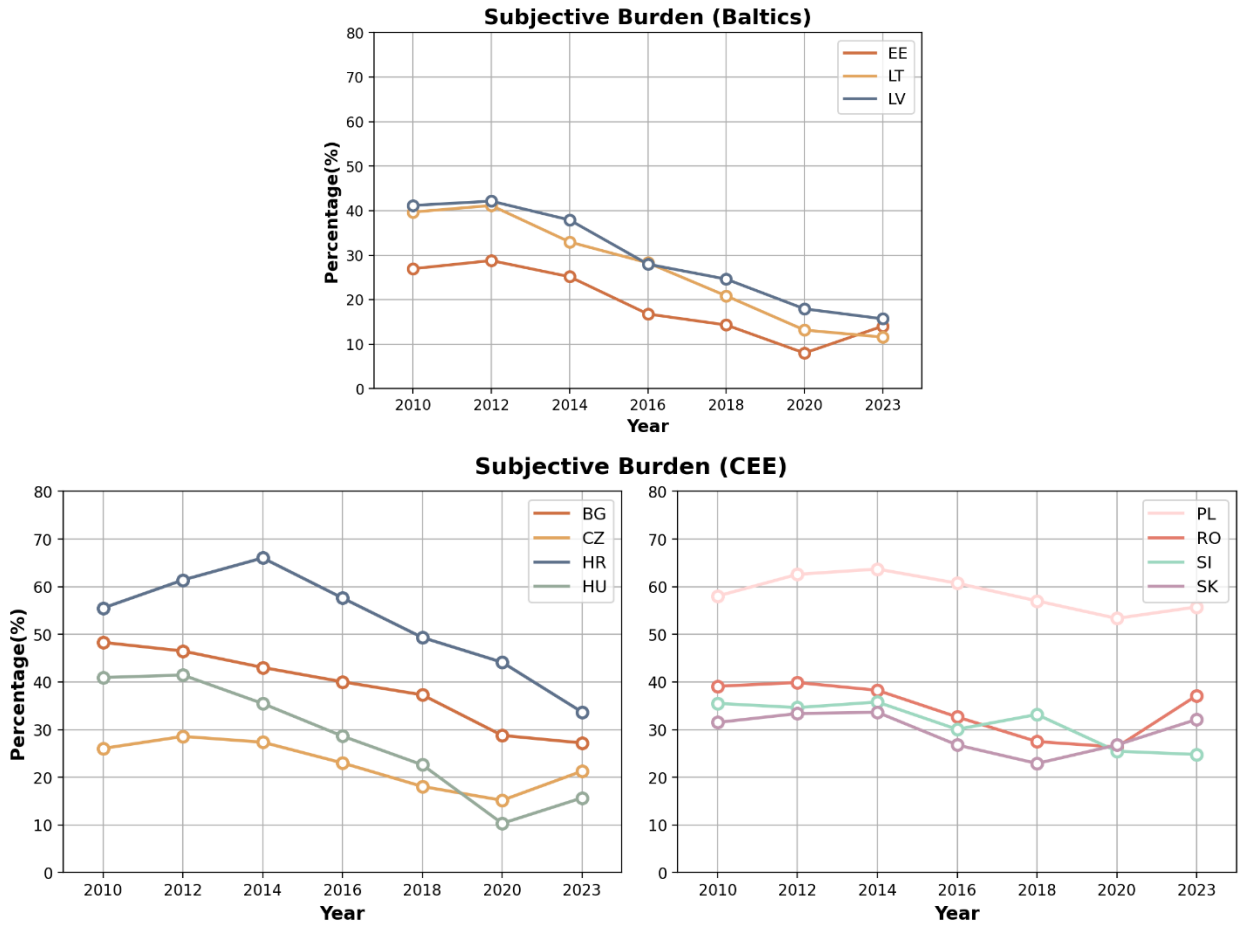


Figure 5.22 Trends in subjective burden rate across Eastern European countries 2010-2023 (%)

Note: CEE refers to Central Eastern Europe.

Figure 23 shows the difference or gap in subjective burden rate between the low- and high-income in Eastern European countries. Similar to the SE countries, subjective burden rate among high-income respondents is relatively large in Eastern Europe, although over time it decreases (even to 0% in 2020 in Hungary). In Latvia, with the more rapid decrease in the burden among low-income respondents, we can observe decreasing gap between the low- and high-income



that increase in 2012 and 2014. Lithuania starts with the lowest gap between the two groups in 2010 (21.0%p) among the Baltic countries and the second lowest if we take into account the CEE countries. After reaching its peak in 2014 (28.5%p) due to rapid decrease in burden among high-income respondents that year, the gap between the two groups decreased and shows the second lowest gap in 2023 (15.3%p) after Estonia. With the exception of slight increase between 2012 and 2014, the gap between the low- and high-income continues to decreased after 2014. Although it goes up slightly in 2023, it still shows the lowest gap in all Eastern European countries. In the CEE, Hungary shows the highest gap between the two income groups. Although it increases in 2012 and 2014 due to relatively large increase between 2010 and 2012 among low-income respondents, the gap decreases over time. Croatia and Poland show high overall subjective burden rate, both for the low- and high-income. However, the gap between the two income groups decreases more in Poland than in Croatia, as the burden remains somewhat stable among high-income respondents group in Poland while it steadily decreases for low-income respondents. While Romania shows the lowest gap in the rate of subjective burden between the two income groups in 2010 in all Eastern Europe, it increases to almost double. In Slovakia, the gap remained somewhat stable except for a decrease between 2014 and 2018, and shows the highest gap between the two income groups in all Eastern Europe. In Bulgaria, the gap remained somewhat stable, but got smaller in 2023 with the rapid decrease in the rate among low-income respondents that is not matched by high-income respondents. In both Czech Republic and Slovenia, the gap fluctuates over time, but both low- and high-income groups experience relatively less subjective housing cost burden compared to other countries.

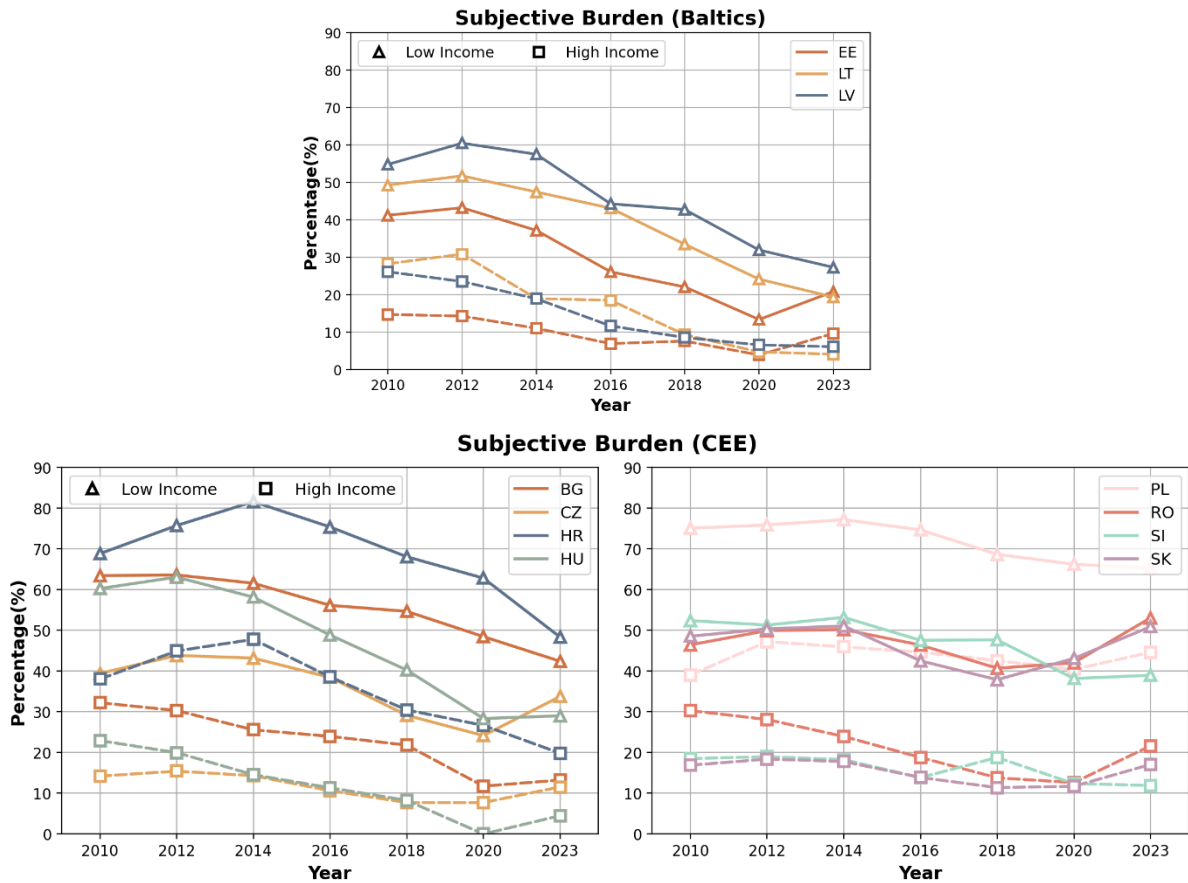


Figure 5.23 Trends in subjective burden rate across Eastern European countries by income 2010-2023 (%)

Note: CEE refers to Central Eastern Europe. Note that reliability of household income data from Hungary between 2018-2021 are currently being debated.

In most Eastern European countries, subjective burden rate decreased in all tenure statuses when comparing 2010 and 2023 (Figure 24). In Estonia and Lithuania, the largest difference is found among the reduced-rate renters, which decreased by 24.5%p and 44.2%p respectively. Mortgage homeownership shows the largest decrease in Latvia (by 38.4%p), Bulgaria (51.5%p), Czech Republic (10.5%p), Hungary (36.1%p) and Romania (48.0%p). In Slovenia, it is the market-rate renters that show the largest decrease (by 19.1%p). On the contrary, Poland and Slovakia shows somewhat a mixed picture. In Poland, subjective burden is increased by 19.8%p among the mortgage homeowners and by 4.2%p among the



market-rate renters. In Slovakia, it was increased by 3.4%p for market-rate renters and 34.7%p for reduced-rate renters.

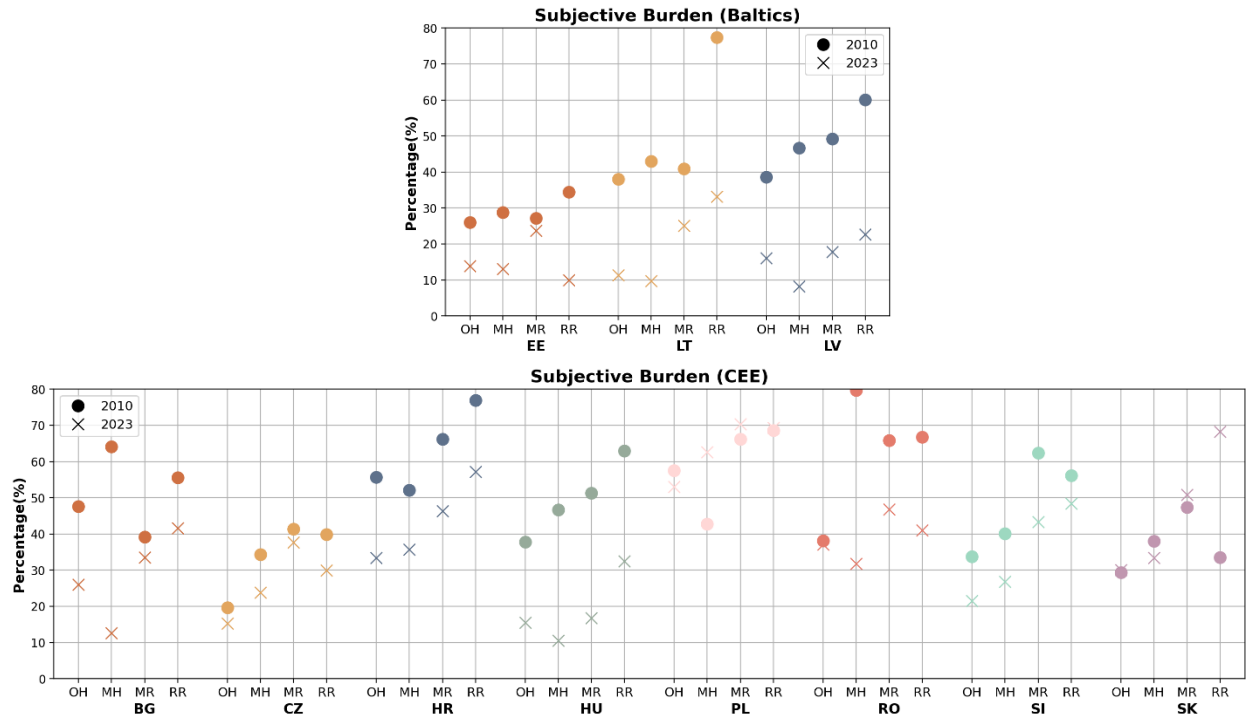


Figure 5.24 Changes in subjective burden rate across Eastern European countries by tenure between 2010 and 2023 (%)

Note: CEE refers to Central Eastern Europe. OH=Outright Homeowners, MH=Mortgage Homeowners, MR=Market Rent, RR=Reduced Rent.

5.1.3 Summary

Between 2010 and 2023, disparities in housing cost overburden across Europe increased, with the burden falling disproportionately on low-income households and renters. While some countries with unitary rental markets (e.g. Denmark and the Netherlands) saw an overall decline in overburden rates, Sweden and France (to a lesser extent) experienced an increase. The decreases in Denmark and the Netherlands are driven by the homeowners, particularly mortgage homeowners. The increases observed in Sweden and France are driven by the reduced-rate renters. The Netherlands also experienced an increase in the overburden rate



among reduced-rate renters, but this is not captured in the general trends due to a greater decrease among mortgage homeowners. In NWE homeownership countries with a dual rental market, trends were more volatile in some countries. For instance, in Luxembourg and Norway, sharp increases were observed in recent years, particularly among low-income groups. A closer look at changes in tenure status reveals that the sharp increase is driven by all tenure statuses except outright homeowners in Luxembourg and mortgage homeowners in Norway. Southern and Eastern Europe displayed more dramatic shifts. Greece consistently had the highest overburden rates, particularly among low-income and reduced-rate renters, while Bulgaria saw increases across all tenure statuses. In contrast, many Eastern European countries (e.g., Hungary, Lithuania and Poland) experienced a general decline in the overburden rate, particularly among homeowners. Across all regions, individuals in high-income households remained largely unaffected, with overburden rates typically below 3% (with the exception of Greece). This highlights the growing inequality in housing affordability. The data suggest that the burden of housing costs is intensifying for the most vulnerable populations, particularly low-income respondents and renters, even in countries where overall trends appear stable or improving.

Despite overall stability in some regions, subjective housing cost burden also reveals disparities by income level. Low-income respondents consistently reported higher perceived burdens, particularly in some countries (e.g. France, Luxembourg, Greece, Cyprus, Spain, Italy, Croatia, Bulgaria and Poland). In contrast, social democratic unitary rental market countries (e.g. Denmark, the Netherlands and Sweden), Norway and, more recently, Malta showed the lowest levels and smallest income gaps. Notably, except for the aforementioned countries, even high-income respondents reported relatively high rising burdens in most countries, thereby narrowing the income divide. Examining changes across tenure status reveals a consistent general tendency to increase or decrease across most countries. This indicates that the perceived burden relates to the general housing market or economic situation of a country, albeit with

differences in extent across tenure status. However, in some countries (e.g. Belgium, Finland, Ireland, Portugal, Poland and Slovakia), the burden fell disproportionately on certain tenure statuses. For instance, in Belgium, the burden fell disproportionately on both types of renters, while in Ireland it fell prominently on market renters, in Portugal and Slovakia on reduced-rent tenants, and in Poland on mortgage homeowners. Among countries experiencing an overall increase in subjective burden, reduced-rent tenants were most affected, especially in Austria, Denmark, and Greece. It should also be noted that in Southern and Eastern Europe, subjective burden generally declined across most tenure statuses and income groups, though Greece, Poland, and Slovakia experienced increases in certain groups. Overall, while some progress has been made, the data highlight that housing costs remain a widespread issue, particularly for low-income renters. However, it is evident that the perceived burden of housing costs is not limited to low-income households. Finally, subjective housing cost burden showed inconsistent patterns compared to the objective measure of overburden. This inconsistency reveals the importance of using subjective measures to complement objective measures in order to capture actual experiences of housing affordability that may be overlooked by focusing solely on objective measures, such as the increasing burden among higher-income households and the general economic and housing situation in a country.

5.2 Quality

While there is no clear definition of housing quality, housing deprivation has been widely used to define a poor quality housing. According to the Eurostat definition (Eurostat, n.d.-b), a housing is considered deprived when it has no or low quality facilities, such as a leaking roof, damp walls, floors or foundations, or rot in window frames or floors; no bath or shower; no flushing toilet; or too dark. Housing deprivation rate here is therefore the proportion of individuals living in a



deprived housing in a country. We need to note that there are four questions in EU-SILC that are used for housing deprivation³², but two of them (i.e. questions on shower facilities and toilet) were optional questions in 2023. This means that there may be underestimation of housing deprivation in some countries in 2023 with large missing data, Estonia in particular.

5.2.1 Housing Deprivation

Figure 25 presents trends in housing deprivation rate in unitary rental market countries between 2010 and 2023. While the figure is generally stable over time, a point of divergence between social-democratic countries and conservative-corporatist countries is at the year 2020. In Denmark and Sweden, housing deprivation rate remains somewhat stable between 2012 and 2020, then decreases between 2020 and 2023. While the changes in the Netherlands is less prominent, it also shows a decreasing tendency in the recent years. During the same period, countries in conservative-corporatist countries experience an increase in housing deprivation. This is also the case for Germany where it saw a rapid decline in the deprivation rate between 2018 and 2020. What has led to this divergence in the two regimes in recent years requires further investigation.

³² 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 is there 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?"



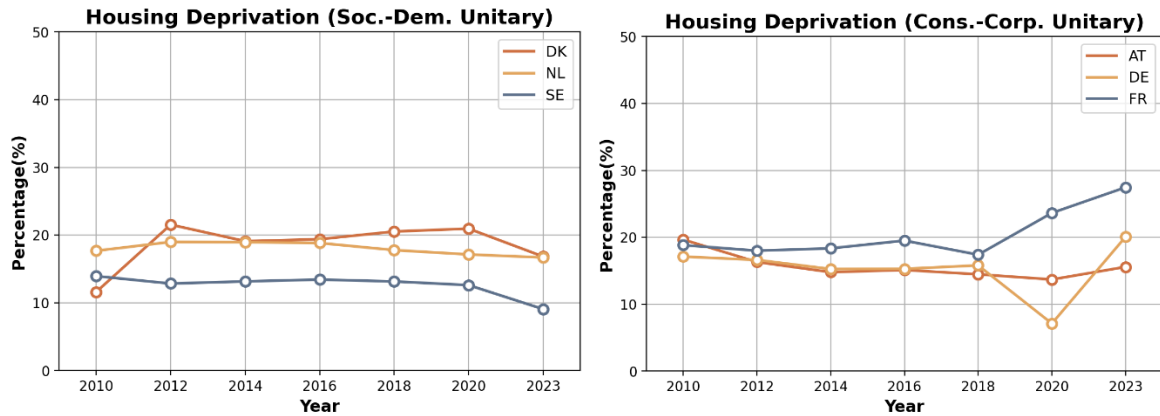


Figure 5.25 Trends in housing deprivation rate across unitary rental market countries 2010-2023 (%)

Note: disconnected line indicates no data available for that year. Soc.-dem. unitary refers to social-democratic unitary rental market countries and cons.-corp. unitary refers to conservative-corporatist unitary rental market countries.

The trends in Figure 25 is similarly presented in Figure 26 but among individuals in low-income households. It needs to be noted that overall, the gap between the low- and high-income is not as large as what we observed for affordability above. It indicates that, in unitary rental market countries, housing deprivation rate is generally low for all populations, although there is a notable increase in recent years in France. The smallest gap between the two income groups in 2010 is found in Sweden with 2.7%p. This gap in Sweden increased over time, but still remained the smallest in 2023 with 6.2%p compared to other countries in the same year. The highest gap in both 2010 and 2023 is found in France, with 13.9%p and 19.5%p respectively. This is because, while the deprivation rate increased for both the low- and high-income in France, it increased more rapidly for the former than the latter.



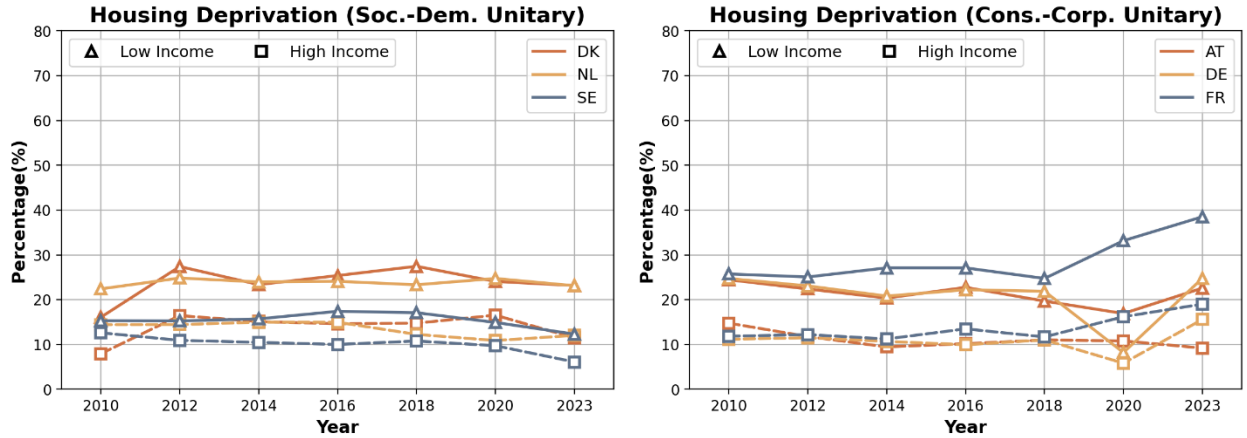


Figure 5.26 Trends in housing deprivation rate across unitary rental market countries by income 2010-2023 (%)

Note: low income refers to the first tertile and high income refers to the third tertile. Soc.-dem. unitary refers to social-democratic unitary rental market countries and cons.-corp. unitary refers to conservative-corporatist unitary rental market countries.

Figure 27 demonstrates how these changes occurred for each tenure status between 2010 and 2023. The differences are generally small in social-democratic countries. No clear pattern is observed among the three countries as the deprivation rate increased across all tenure types in Denmark and decreased for all tenure types in Sweden. In the Netherlands, it is the renters who are more likely to experience housing deprivation in 2023 than in 2010, while the opposite is found for homeowners. Austria shows decrease in housing deprivation among the homeowners. This means that the housing quality has improved for the homeowners in Austria in the last decade. In Germany, no substantial difference is noticeable, except for a small increase among homeowners. In France, however, housing deprivation rate has increased for all tenure types, albeit to a lesser extent among outright homeowners. This requires attention, because in the unitary rental market, rental sector is relatively well regulated to guarantee basic level of housing quality, and this opposite pattern found in Denmark and (particularly) France indicates that housing quality is becoming an important issue among the renters in unitary rental market as well.



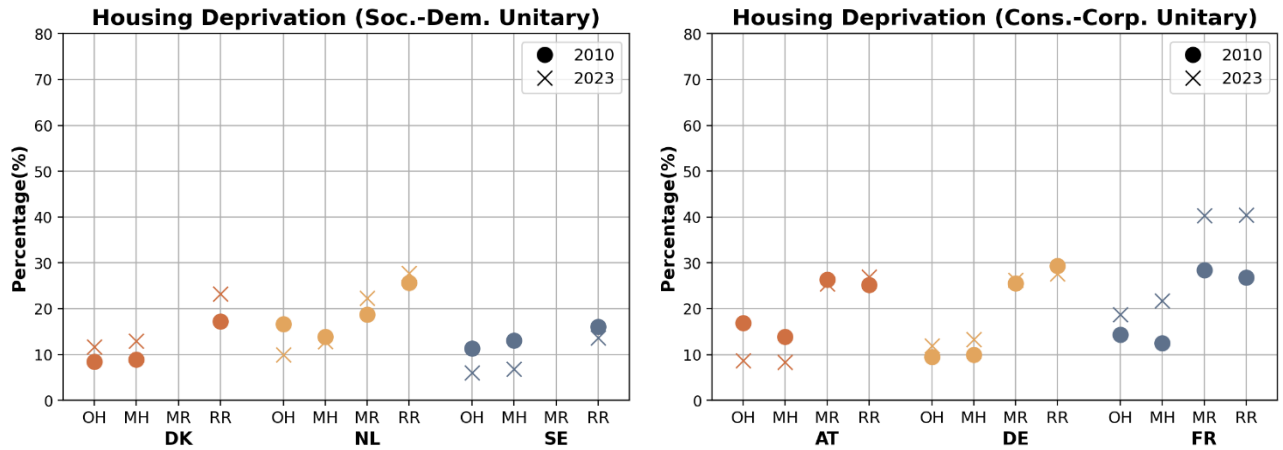


Figure 5.27 Changes in housing deprivation rate across unitary rental market countries by tenure between 2010 and 2023 (%)

Note: Some data are missing including the reduced rent in Denmark in 2010 and reduced-rent in Sweden in 2023. Soc.-dem. unitary refers to social-democratic unitary rental market countries and cons.-corp. unitary refers to conservative-corporatist unitary rental market countries. OH=Outright Homeowners, MH=Mortgage Homeowners, MR=Market Rent, RR=Reduced Rent. Given no clear distinction between market rent and reduced rent in the Soc.-dem. unitary rental market countries, where rents are strictly regulated, all tenants are coded as renting at 'reduced rent'. This applies to DK and SE. In the NL, we distinguish the two rental tenures using the 'liberalisatiegrens'. This is a fixed amount that limits the starting rent of social rental housing, as opposed to a prevailing market rent.

Figure 28 shows the changes in housing deprivation rate across North-Western European homeownership countries with dual rental market between 2010 and 2023. In contrast to most countries where the figures remain stable over time, some fluctuations are observed in Luxembourg. In Luxembourg, there is a sharp increase in housing deprivation rate between 2014 and 2016, and gradual decrease over time until a slight increase in the latest wave. Two countries that stand out with a relatively low and stable deprivation rate are Finland and Norway.



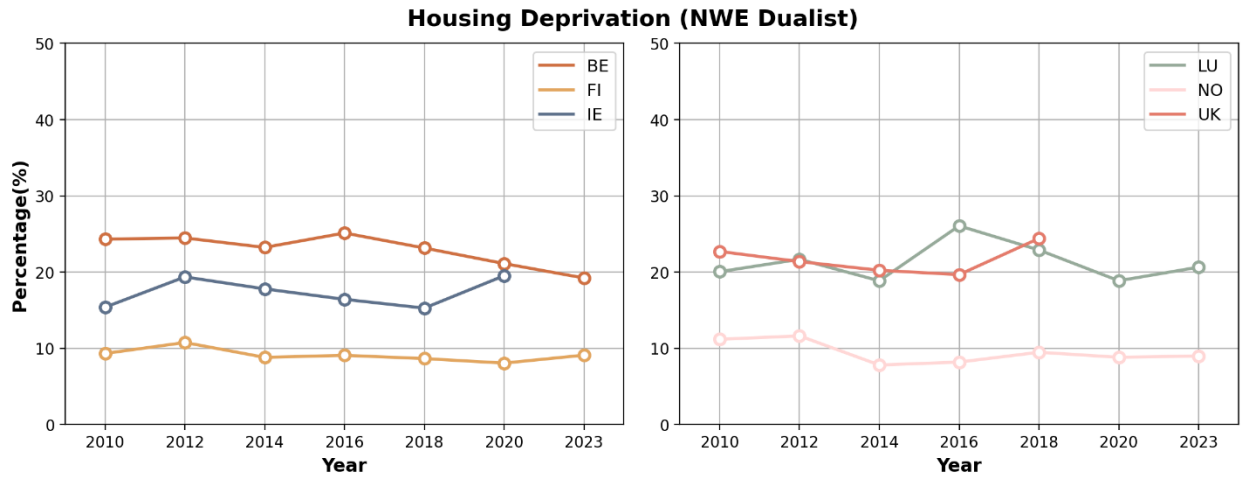


Figure 5.28 Trends in housing deprivation rate across NWE homeownership countries with dual rental market 2010-2023 (%)

Note: disconnected line indicates no data available for that year. NWE refers to North-Western Europe. 2023 data is omitted for IE due to unreliability of the data indicating 0% housing deprivation.

Figure 29 shows the trend examined in Figure 28 by income levels. Although the prevalence differs, the trends for both low- and high-income respondents follow somewhat similar patterns overall. However, closer inspection reveals some discrepancies. Overall, the difference between the low- and high-income remained consistent over time, except for a steady decrease in Belgium after reaching its highest point in 2012 (20.0%p). It is driven by the faster decrease in the deprivation rate among low-income respondents despite the overall decrease among high-income respondents. Belgium, however, shows the highest gap between the two income groups in terms of housing deprivation in 2010 and remains one of the highest in 2023 among the NWE dual rental market countries. In Ireland, the difference between the two income groups fluctuates more than other countries. Although it starts with one of the lowest gap with 8.1%p in 2010, the gap is the highest in 2020 (13.4%). Finland shows the lowest gap in all years, followed by Norway.



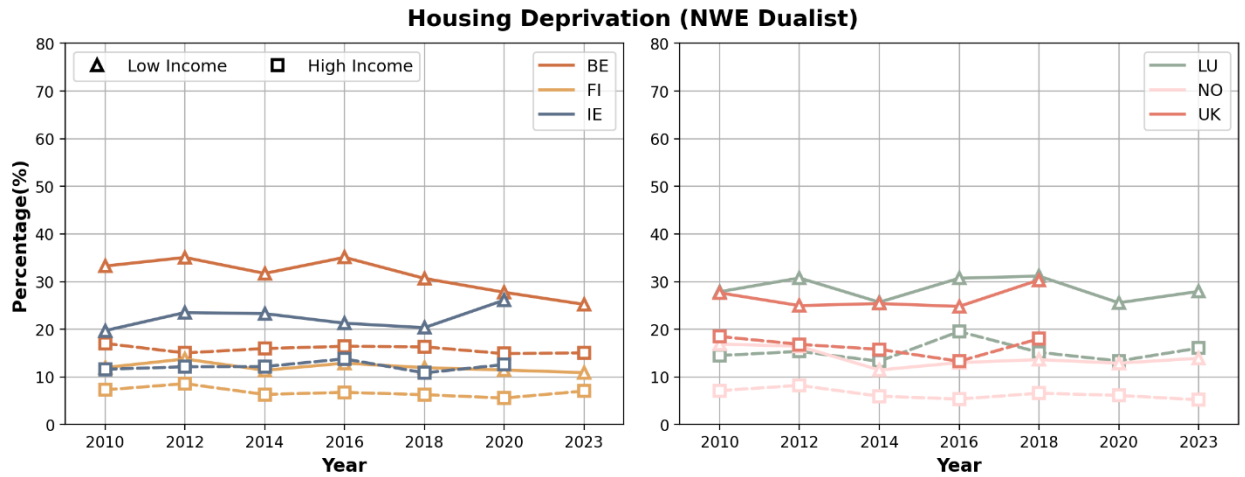


Figure 5.29 Trends in housing deprivation rate across NWE homeownership countries with dual rental market by income 2010-2023 (%)

Note: disconnected line indicates no data available for that year. NWE refers to North-Western Europe. 2023 data is omitted for IE due to unreliability of the data indicating 0% housing deprivation

Figure 30 demonstrates the changes in housing deprivation rate across tenure status between 2010 and 2023 in the NWE dual rental market countries. In Belgium, there is a decrease in housing deprivation in all tenure statuses. The largest decrease is found among the market-rate renters with 7.3%p in Belgium. In Luxembourg, while housing deprivation rate has decreased in most tenure statuses, it increased among the mortgage homeowners by 6.0%p. In Finland and Norway, the changes are generally minimal, with the exception of an increase among the reduced-rate renters in Norway by 19.4%p. It indicates that while the housing deprivation remains generally low in Norway, it is the tenants in reduced-rate rental housing that experience more housing deprivation in 2023 compared to 2010.



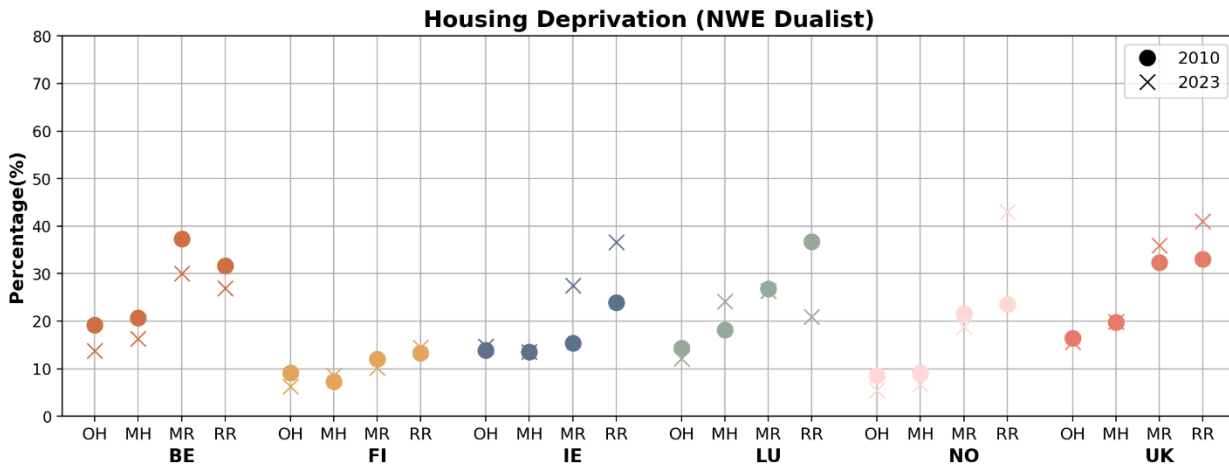


Figure 5.30 Changes in housing deprivation rate across NWE homeownership countries with dual rental market by tenure between 2010 and 2023 (%)

Note: in the UK the latest data is from 2018 and Ireland 2020, instead of 2023. OH=Outright Homeowners, MH=Mortgage Homeowners, MR=Market Rent, RR=Reduced Rent. In the UK, as of 2017, housing associations are labelled as private rather than social housing providers, leading to a break in the data lines.

Figure 31 shows the trend in housing deprivation among the Southern European countries between 2010 and 2023. Malta and Greece show relatively low deprivation rate and a stable trend with minor fluctuations. However, other countries show a high level of fluctuations in their housing deprivation rate. In Cyprus, it decreased until 2014 then increases again until 2020 and sharply decreases between 2020 and 2023. Portugal shows somewhat an opposite trend, as it increased until 2014 and decreased between 2014 and 2020, which then increased again between 2020 and 2023. In Italy, it increased until 2014, rather sharply decreased between 2014 and 2018, increased again between 2018 and 2020 then decreased again between 2020 and 2023. In Spain, it declines sharply between 2010 and 2012 and shows an overall increasing tendency.



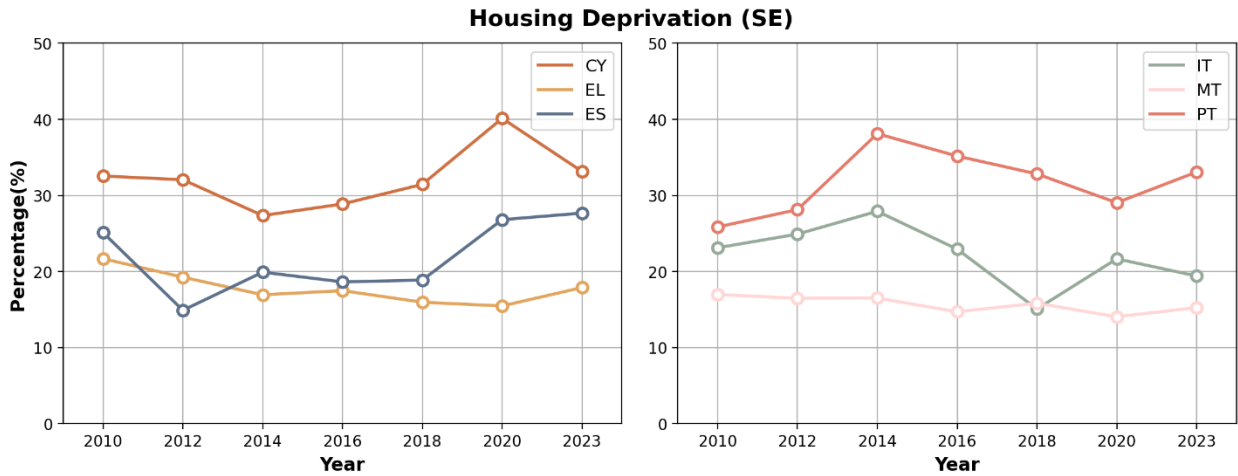


Figure 5.31 Trends in housing deprivation rate across SE family-based homeownership countries 2010-2023 (%)

Note: SE refers to Southern Europe.

Housing deprivation is a more prevalent issue among low-income respondents than high-income respondents in SE family-based homeownership countries (see Figure 32). Despite some fluctuations, certain gap between the two income groups has persisted over time in all countries. After some fluctuations, the gap is enlarged in Cyprus (from 15.4%p in 2010 to 16.6%p in 2023), Greece (from 16.3%p in 2020 to 16.3%p in 2023), Spain (from 13.7%p in 2010 to 15.5%p in 2023) and Portugal (from 14.7%p in 2010 to 18.2%p in 2023). On the contrary, the gap decreased in Italy and Malta. What needs to be noted is that in Italy this change is relatively gradual, while in Malta the gap increased until 2016 and decreases rapidly afterwards. This is mainly driven by the decline in housing deprivation among high-income respondents until 2016, which increased afterwards, while it remains somewhat consistent over time for low-income respondents until 2018 and decreased



afterwards. Malta shows the lowest gap between the two income groups in both 2010 and 2023, while Greece shows the highest gap in 2010 and Portugal in 2023.

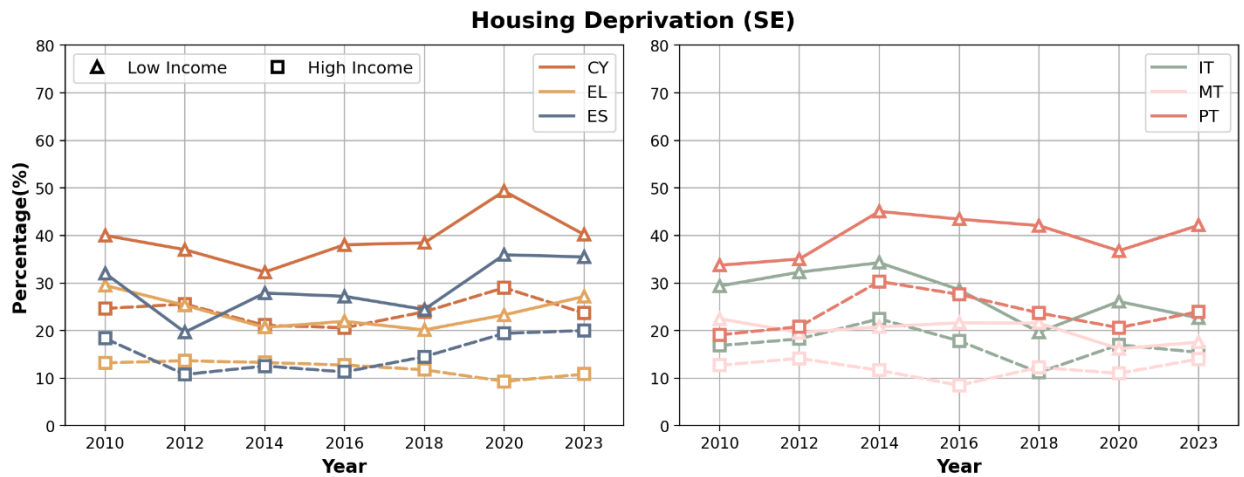


Figure 5.32 Trends in housing deprivation rate across SE family-based homeownership countries by income 2010-2023 (%)

Note: SE refers to Southern Europe.

Figure 33 demonstrates no clear pattern when it comes to changes in housing deprivation rate across tenure status in SE family-based homeownership countries. In Cyprus, it increased for the mortgage homeowners (6.8%p) and market-rate renters (5.3%p) and decreased for reduced-rate renters (4.9%p). Notable changes are found among outright homeowners in Greece (decreasing by 8.2%p), market-rate renters in Spain (increasing by 8.8%p) and Italy (decreasing by 7.2%p), and reduced-rate renters in Malta (decreasing by 14.1%p). In Portugal, all tenure statuses has experienced an increase in housing deprivation rate between 2010 and 2023.



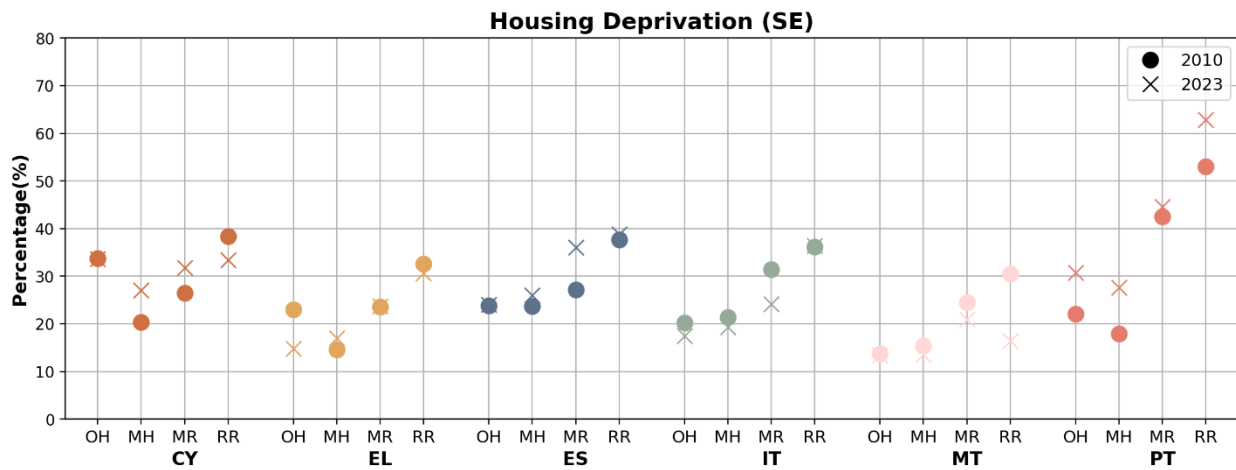


Figure 5.33 Changes in housing deprivation rate across SE family-based homeownership countries by tenure between 2010 and 2023 (%)

Note: SE refers to Southern Europe. OH=Outright Homeowners, MH=Mortgage Homeowners, MR=Market Rent, RR=Reduced Rent.

Figure 34 shows the trends in housing deprivation rate across Eastern European countries between 2010 and 2023. Overall, all countries show a declining tendency of housing deprivation, even with some stagnation in some years. Four countries stand out in the figure below for showing some fluctuations over time. First, there is a steady decline in housing deprivation rate between 2010 and 2020 in Czech Republic which has increased slightly between 2020 and 2023. Second, Slovakia shows relatively low housing deprivation rate over time. Third, there is a relatively sharp decline in housing deprivation between 2018 and 2020 in Poland which has slightly increased between 2020 and 2023. Fourth, a slight increase in the end is also evident in Latvia, which has one of the highest



rates of housing deprivation among Eastern European countries, despite a decline over time.

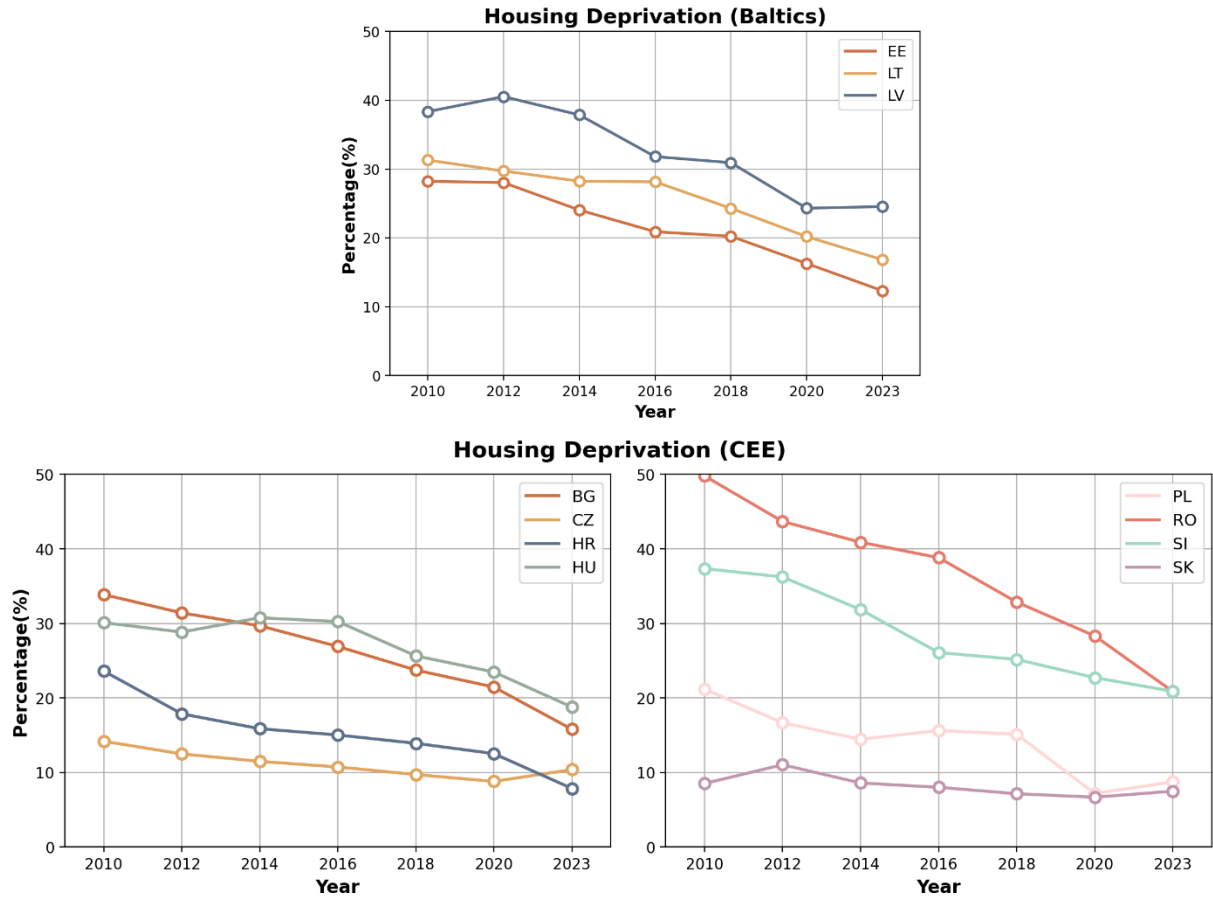


Figure 5.34 Trends in housing deprivation rate across Eastern European countries 2010-2023 (%)

Note: CEE refers to Central Eastern Europe.

Figure 35 shows a relatively high gaps in housing deprivation rate between low- and high-income groups compared to the other countries examined above, while the gap in all observed countries closes over time. This is driven by the more rapid decline in housing deprivation rate among low-income respondents in most countries compared to the more stable and low rates found among high-income respondents. This is especially the case in all Baltic countries, Bulgaria, Croatia, Hungary and Romania. In particular, roughly 77% of low-income



respondents experienced housing deprivation in Romania in 2010, but it decreased to roughly 41% in 2023. Although to a lesser extent, this pattern is also found in Czech Republic, Slovakia, and Slovenia. In Poland, there is a sharp decline between 2018 and 2020 for both low- and high-income respondents, but between 2020 and 2023, housing deprivation only declined for low-income respondents and increased for high-income respondents, albeit slightly.

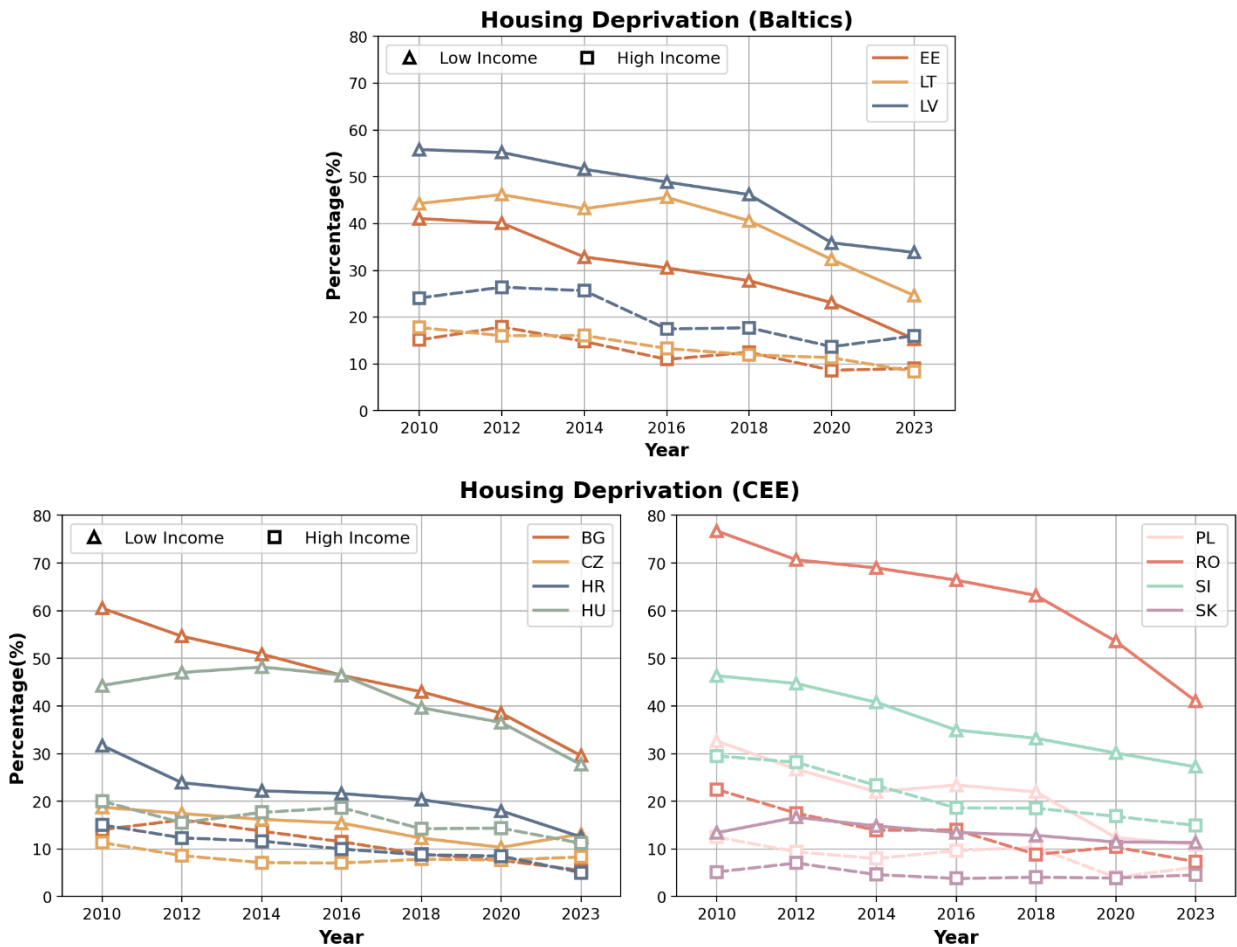


Figure 5.35 Trends in housing deprivation rate across Eastern European countries by income 2010-2023 (%)

Note: CEE refers to Central Eastern Europe. Note that reliability of household income data from Hungary between 2018-2021 are currently being debated.

Housing deprivation rate decreased for all tenure statuses in most countries, albeit to varying degrees. In Estonia, Latvia and Poland, the changes are significant for all tenure statuses except for a relatively small change for the



mortgage homeowners. It is also the case for Croatia and Hungary, although the decline is relatively small for both types of homeowners. In Romania, larger changes occurred compared to other countries, especially among the mortgage homeowners (decreasing by 43.0%p). Housing deprivation rate among mortgage homeowners is 43.3% in 2010, but falls to 0.3% in 2023. Decrease in all tenure is also found for Slovenia. Rest of the countries show somewhat mixed patterns. In Lithuania, relatively large decrease in housing deprivation occurred among the outright homeowners and reduced-rate renters, but it increased slightly for the mortgage homeowners and market-rate renters. In Czech Republic, the decrease is mainly prominent among the market-rate renters, while reduced-rate renters experience a slight increase in housing deprivation. In Slovakia, there is a large increase in housing deprivation rate among the reduced-rate renters (by 27.5%p), which contrasts with all the other cases in Eastern Europe.

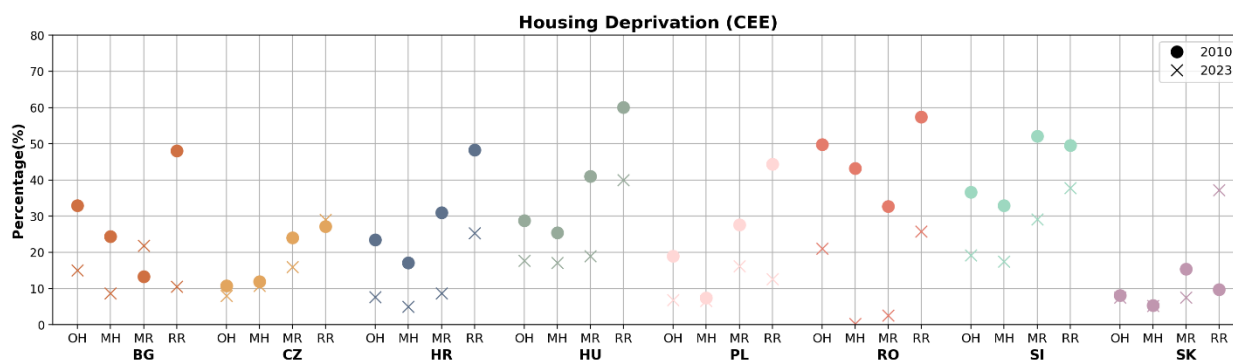


Figure 5.36 Changes in housing deprivation rate across Eastern European countries by tenure between 2010 and 2023 (%)

Note: CEE refers to Central Eastern Europe. OH=Outright Homeowners, MH=Mortgage Homeowners, MR=Market Rent, RR=Reduced Rent.

5.2.2 Summary

Housing deprivation across Europe has converged somewhat between 2010 and 2023, with housing quality generally improving in Eastern European countries and deteriorating in some countries in North West of Europe. In unitary rental market countries, deprivation rates were relatively low overall. However, recent increases, particularly in France and Germany, highlight emerging



concerns about housing quality in conservative-corporatise unitary rental market countries, as opposed to the social-democratic unitary rental market countries. France experienced a significant increase in the housing deprivation rate across all tenure statuses, with the least increase among outright homeowners. In North-Western Europe, Belgium has made gradual progress, while countries such as Luxembourg, Ireland and the UK have seen an increase in the housing deprivation rate in the recent years. The progress in Belgium was somewhat evenly distributed across tenure statuses, while the worsening of housing quality in Ireland and the UK affected renters more than homeowners. In Luxembourg, the situation improved for reduced-rate renters but worsened for mortgage homeowners. While there was a significant improvement in housing quality in Eastern Europe, Southern European countries displayed fluctuating trends. Malta and Greece were the exceptions, as they did not experience major changes over time. Portugal, which exhibited the highest level of housing deprivation, experienced a general decline in housing quality across tenure statuses, with the least decline affecting market-rate renters. In Cyprus, which had the second highest level of housing deprivation, the situation worsened for mortgage homeowners and market-rate renters. Among Eastern European countries, Slovakia was an outlier, as housing quality worsened significantly for reduced-rate renters, while improving in all other countries. Overall, changes in housing deprivation were primarily driven by individuals in low-income households, who were the most heavily affected. However, a certain level of housing deprivation persisted among individuals of high-income households in all countries, and the income gap narrowed in many countries due to faster improvement experienced by low-income individuals.

5.3 Overcrowding

This section examines the changes in overcrowding rate across countries between 2010-2023. According to Eurostat, a house is overcrowded when when a “household does not have at its disposal a minimum number of rooms equal to: 1)



one room for the household; 2) one room per couple in the household; 3) one room for each single person aged 18 or more; 4) one room per pair of single people of the same gender between 12 and 17 years of age; 5) one room for each single person between 12 and 17 years of age and not included in the previous category; or 6) one room per pair of children under 12 years of age” (Eurostat, n.d.-a). It has been a key feature of Southern and Eastern Europe given their intergenerational family support culture that coincided with housing unaffordability. As can be predicted, Figure 37 shows that the countries with the unitary rental market and dual rental market tend to show low overcrowding rate even over time. Except for some years in Sweden and in Austria, overcrowding rate in all of these countries have stayed below 10%, albeit with minor fluctuations. No clear intra-regime variations are visible in these regimes, except for the slight increasing tendency over time.

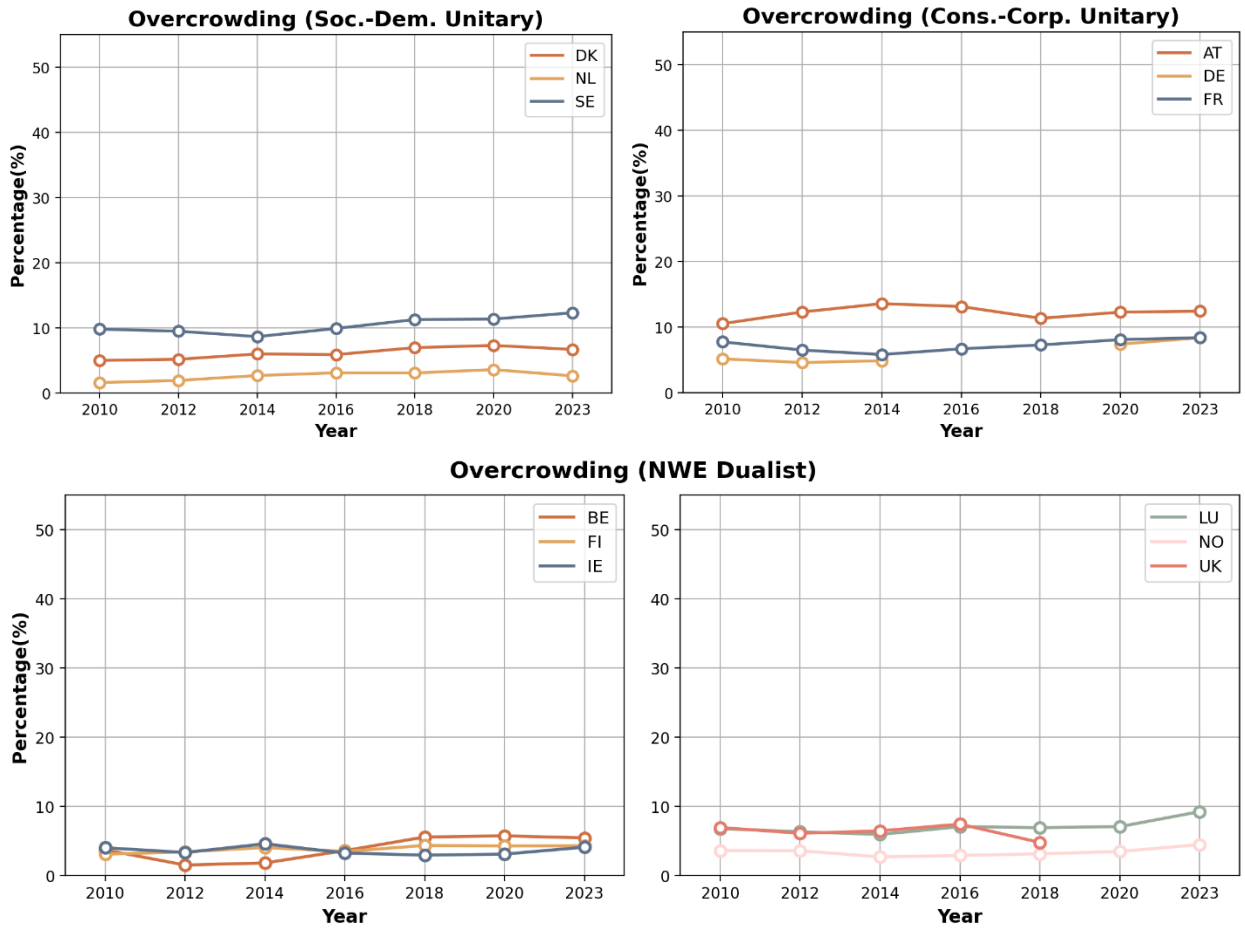


Figure 5.37 Trends in overcrowding rate across unitary and dual rental market countries 2010-2023 (%)

Note: disconnected line indicates no data available for that year. Soc.-dem. unitary refers to social-democratic unitary rental market countries and cons.-corp. unitary refers to conservative-corporatist unitary rental market countries. NWE refers to North-Western Europe

Overcrowding rate is especially low for high-income respondents in these countries, indicating that overcrowding is more of a problem for low-income respondents albeit less prevalent in these countries (see Figure 38). However, it is still relatively higher for high-income respondents in unitary rental market countries than the dual rental market countries. For instance, while the highest rate found in dual rental market regime is 2.8% in the UK in 2014, it is 5.3% in Austria (unitary rental market) in 2014. Among the dual rental market countries,



the UK can also be considered an outlier due to its relatively high share of high-income respondents experiencing overcrowding. In most countries, the overcrowding rate among high-income respondents is relatively stable over time, in contrast to the increasing tendency among low-income respondents. The gap between the low- and high-income in most countries increased when comparing the gap between 2010 and 2023. The two exceptions are Ireland and the UK. In Ireland, the gap decreases over time due to a bigger increase among high-income respondents compared to low-income respondents, while in the UK it is driven by the steeper decline among low-income respondents compared to high-income respondents. The gap is the smallest in the Netherlands with 0.4% in 2010 and 3.8% in 2023, although it increased between these two time points and decreased again, which is driven by the relatively lower overcrowding rate among low-income respondents.

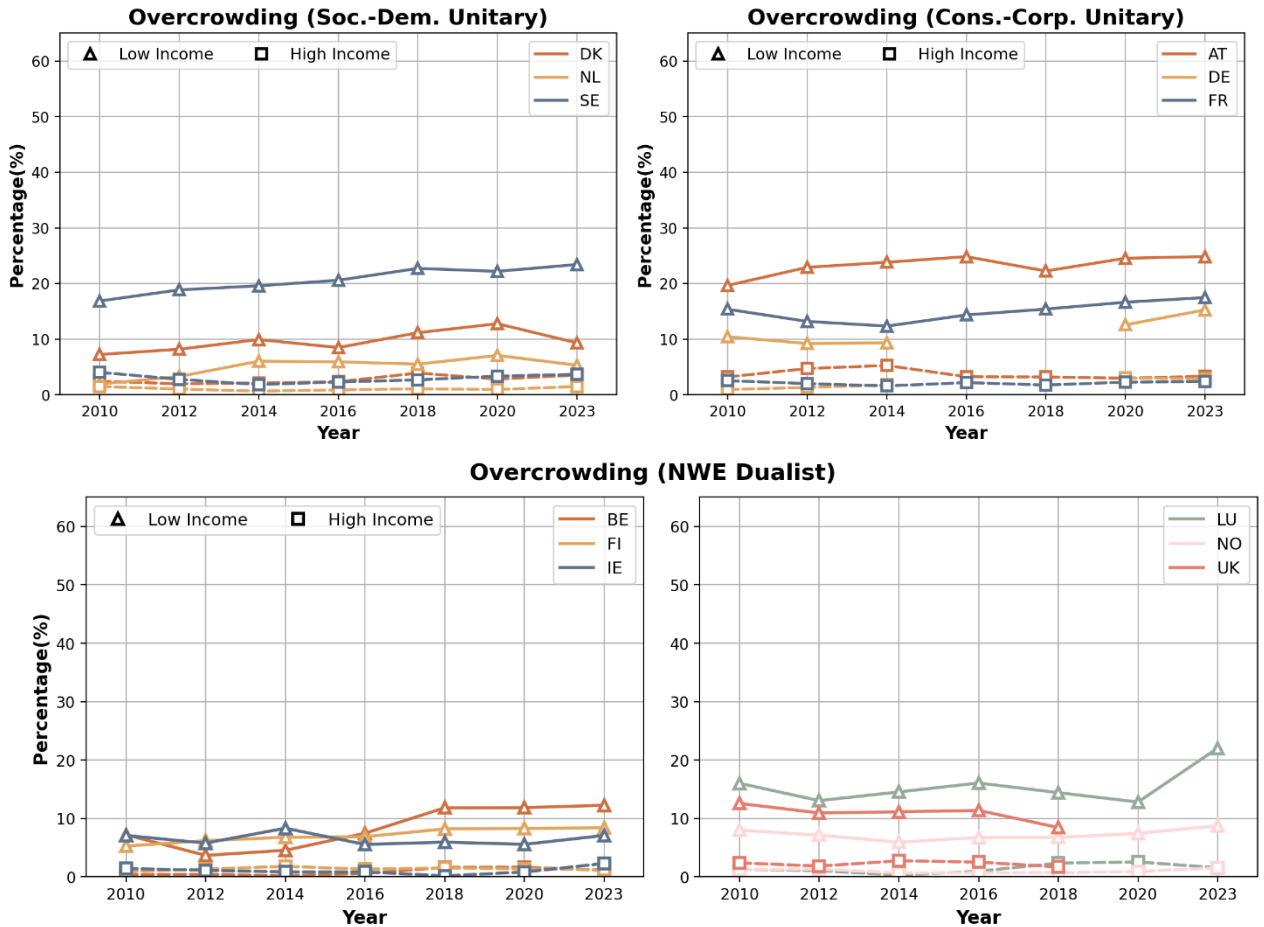


Figure 5.38 Trends in overcrowding rate across unitary and dual rental market countries by income 2010-2023 (%)

Note: low income refers to the first tertile and high income refers to the third tertile. Soc.-dem. unitary refers to social-democratic unitary rental market countries and cons.-corp. unitary refers to conservative-corporatist unitary rental market countries. NWE refers to North-Western Europe.

What is notable is that the overall increase in overcrowding, albeit small, is mainly driven by the renters in all countries (see Figure 39). We see a notable increase among the market renters in Germany, Belgium, Finland; among the reduced-rate renters in Denmark, Sweden, Austria, Germany, France and Luxembourg. However, the UK and Norway also shows a somewhat different pattern, as the overcrowding decreases especially among the renters (by 6.2%p among market-rate renters in the UK, 14.0%p among reduced-rate renters in



Norway). The Netherlands and Ireland show a mixed patterns. In the Netherlands, overcrowding rate increased across tenure status, except for market-rate renters which decreased by 3.8%p. In Ireland, while it increased among mortgage homeowners and market-rate renters, it decreased for outright homeowners and reduced-rate renters.



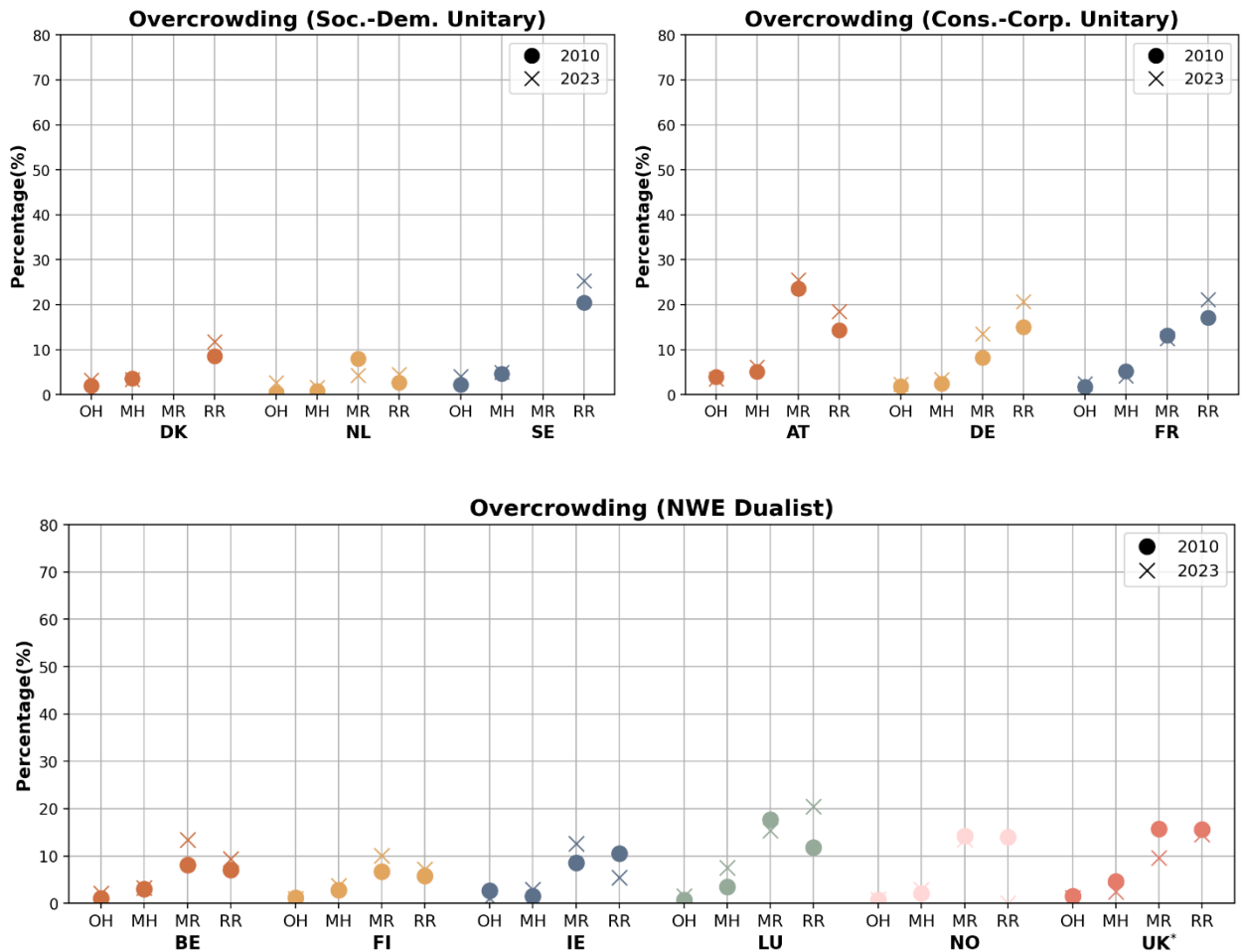


Figure 5.39 Changes in overcrowding rate across unitary and dual rental market countries by tenure between 2010 and 2023 (%)

Note: Some data are missing including the reduced rent in Denmark in 2010 and reduced-rent in Sweden in 2023. In the UK, the latest data is 2018. Soc.-dem. unitary refers to social-democratic unitary rental market countries and cons.-corp. unitary refers to conservative-corporatist unitary rental market countries. NWE refers to North-Western Europe. OH=Outright Homeowners, MH=Mortgage Homeowners, MR=Market Rent, RR=Reduced Rent. Given no clear distinction between market rent and reduced rent in the Soc.-dem. unitary rental market countries, where rents are strictly regulated, all tenants are coded as 'renting at reduced rent'. This applies to DK and SE. In the NL, we distinguish the two rental tenures using the 'liberalisatiegrens'. This is a fixed amount that limits the starting rent of social rental housing, as opposed to a prevailing market rent. In the UK, as of 2017, housing associations are labelled as private rather than social housing providers, leading to a break in the data lines.

Figure 40 demonstrates two diverging patterns when it comes to Southern European family-based homeownership countries, which are considered to show a high share of overcrowding. Greece and Italy form a group with relatively higher overcrowding rate that is persistent over time, between 20-30%. Spain, Malta and Cyprus also show a relatively stable trend over time, but show relatively lower overcrowding rate, between 0-10%. Spain and Malta somewhat diverge from



Cyprus when it comes to recent years as overcrowding rate increases between 2018-2020, although in Malta it decreases again between 2020 and 2023. Portugal is closer to the second group considering its relatively low overcrowding rate over time around 10%, but shows a distinct trend with a decrease between 2010 and 2012 and an increase between 2020 and 2023.

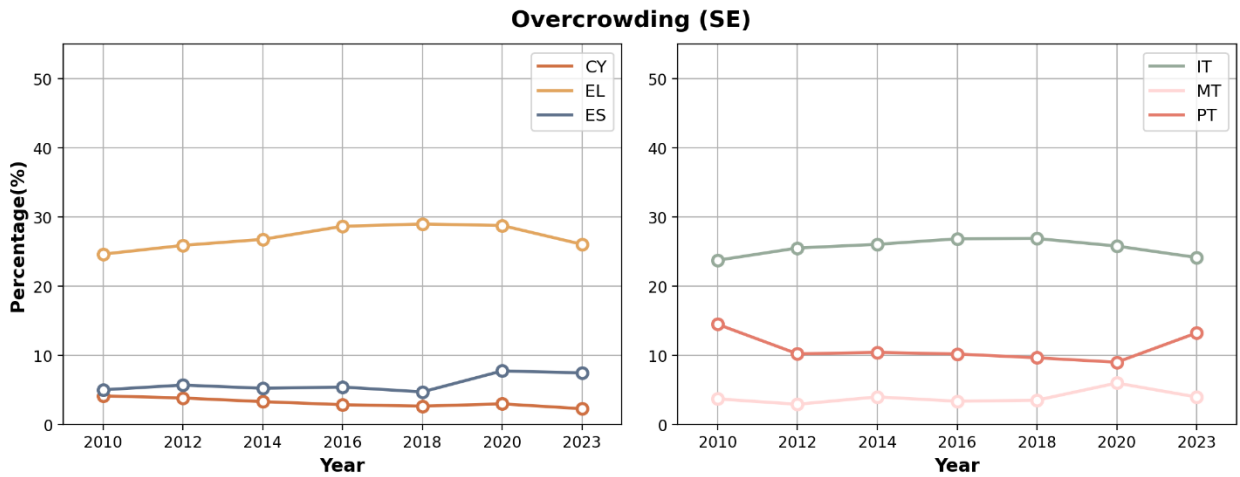


Figure 5.40 Trends in overcrowding rate across SE family-based homeownership countries 2010-2023 (%)

Note: SE refers to Southern Europe.

The two countries with relatively high overcrowding rate overall (Greece and Italy) show high overcrowding rates for both the low- and high-income (see Figure 41). Nearly 20% of high-income respondents in Greece experience overcrowding, which is higher than what low-income respondents experience in Cyprus and Spain. It is also similar for Italy. Moreover, although the share of overcrowding among high-income respondents is relatively high, the share among low-income respondents is particularly high in these countries, leading to the gap between the low- and high-income to be the largest among Southern Europe. In Cyprus, Spain and Malta, the gap between the low- and high-income are generally low, due to relatively low overcrowding rate among low-income respondents. However, in Spain, there has been some increase in the gap (although with some fluctuations) as the overcrowding rate increased for low-



income respondents faster than its increase among high-income respondents. In Portugal, the gap is somewhat stable at around 13 %p, but the increase in overcrowding rate among low-income respondents between 2020 and 2023, in contrast to a minimal increase among high-income respondents during that period, has led to a greater gap between the two income groups.

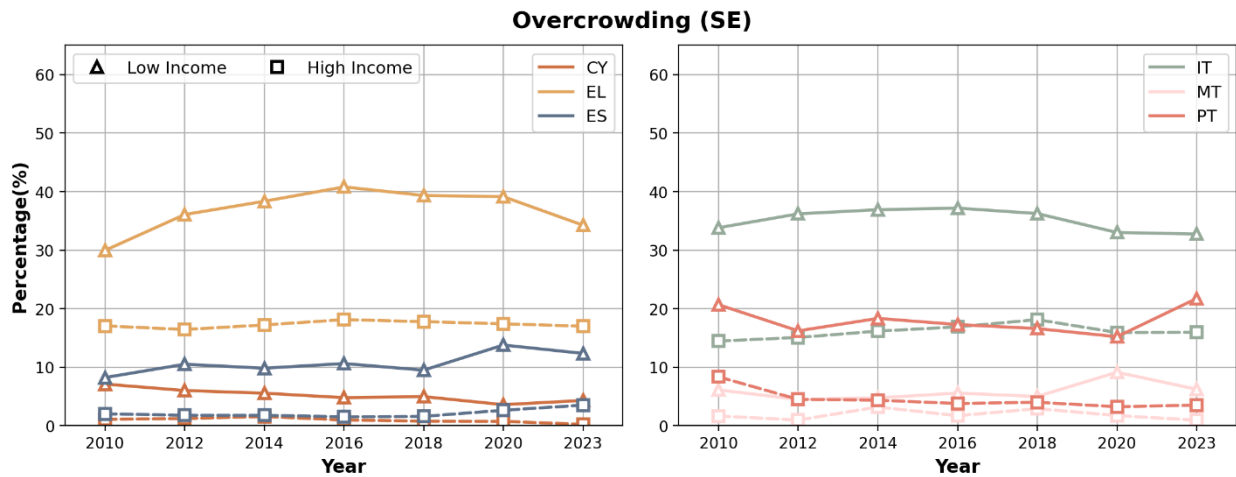


Figure 5.41 Trends in overcrowding rate across SE family-based homeownership countries by income 2010-2023 (%)

Note: SE refers to Southern Europe.

Patterns diverge when we look at the changes across tenure status in these countries (Figure 42). Overcrowding increased for mortgage homeowners for both Greece and Italy, but while it increased for all types of renters in Italy, it did not increase for renters in Greece. Instead, there is a substantial decrease in overcrowding among the reduced-rate renters (10.1%p) and to a smaller extent among the market-rate renters (1.1%p). In Spain, overcrowding increased for all tenure statuses, but more prominently for reduced-rate renters (by 5.0%p). Moreover, while the changes occurred for renters in both Malta and Portugal, they showed opposite patterns. In Malta, overcrowding increased among the market-rate renters (8.4%p) and decreased among the reduced-rate renters



(4.0%p). On the contrary, in Portugal, it decreased among the market-rate renters (4.9%p) and increased among the reduced-rate renters (18.0%p).

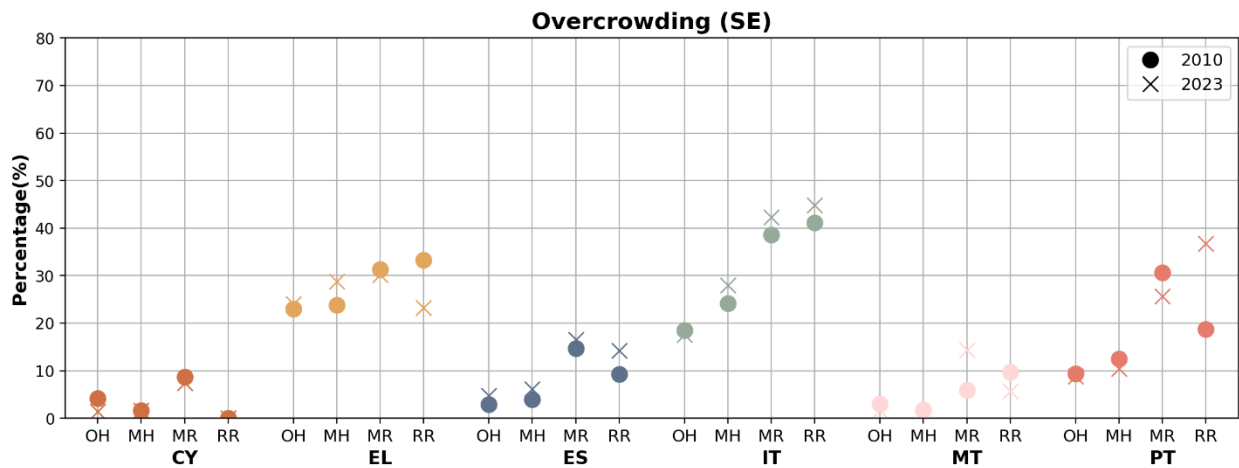


Figure 5.42 Changes in overcrowding rate across SE family-based homeownership countries by tenure between 2010 and 2023 (%)

Note: SE refers to Southern Europe. OH=Outright Homeowners, MH=Mortgage Homeowners, MR=Market Rent, RR=Reduced Rent.

In line with the literature, Eastern European countries tend to show higher overcrowding rate than other countries, albeit with cross-national differences (Figure 43). Two major patterns can be observed among the Eastern European countries. Baltic countries show somewhat a similar pattern with a sharp decline in overcrowding between 2010 and 2012, and maintained it at similar rate over time, with the exception of a rather sharp increase between 2012 and 2014 in Lithuania. Among the CEE, Slovenia shows similar pattern as these countries. It needs to be noted that while these countries share overall tendency, they vary significantly in terms of the ‘stable’ overcrowding rate. For instance, it is between 30-40% for Latvia, while it is between 10-20% in Estonia. Thus, despite the sharp



decline in early 2010s, Latvia still shows a relatively high overcrowding rate. Another pattern is a more gradual declining trend found in Romania, Bulgaria, Croatia, Poland, Slovakia and Czech Republic. It needs to be noted that while most of these countries show relatively high overcrowding rate, Czech Republic shows a relatively low rate. One outlier in Eastern Europe is Hungary, which starts similar to most of the other CEE countries, then experiences a sharp decline in overcrowding rate between 2016 and 2018.

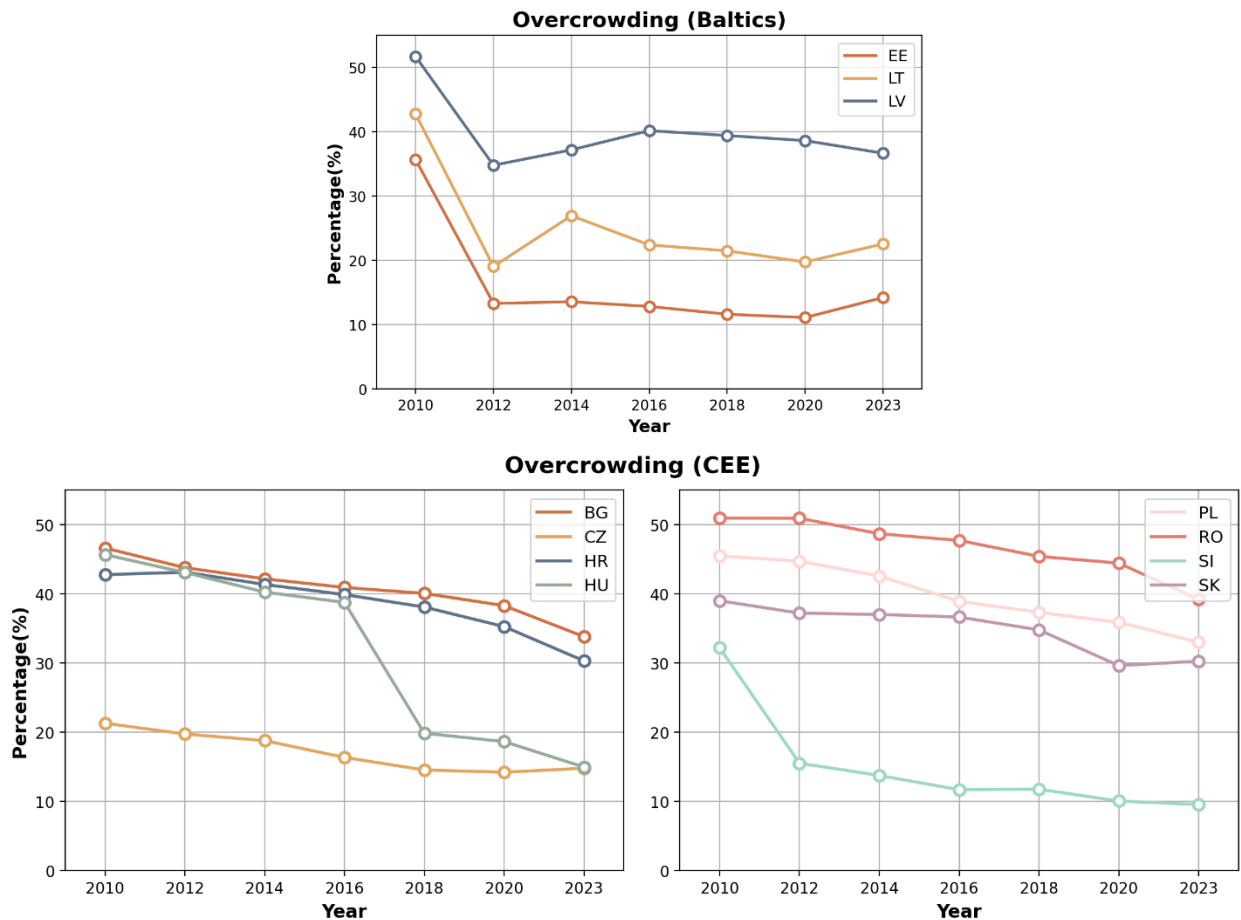


Figure 5.43 Trends in overcrowding rate across Eastern European countries 2010-2023 (%)

Note: CEE refers to Central Eastern Europe.



The two patterns discerned in Figure 43 becomes somewhat blurred when we examine its differences across income groups (see Figure 44). What is notable is that overcrowding is also a prevalent issue among high-income respondents, although to a lesser extent than low-income respondents. Overcrowding rate in Latvia among high-income respondents is higher than the overall overcrowding rate among low-income respondents in the other Baltic countries. The gap between the two income groups decreases over time in this country even to the extent that the overcrowding rate is higher among high-income respondents (although by 0.1%p), driven by the increase in overcrowding rate among high-income respondents after the 'sharp decline' between 2010 and 2012. The gap increases again as the overcrowding rate decreases among high-income respondents between 2020 and 2023. In Lithuania, the gap fluctuates over time, but decreases to 0.8%p in 2023. In Estonia, the gap between the two income groups decreased until it reached 3.7%p in 2018, but increased again afterwards. In Slovenia, a CEE country that showed similar 'sharp decline' in early 2010s, shows gradual decrease in overcrowding rate for both low- and high-income respondents. However, as it decreases faster for low-income respondents, the gap between the two decreases over time. Bulgaria is a unique case where the difference between the two income groups are small in all years observed, albeit with some fluctuations. Figure below demonstrates that overcrowding rate is high for both low- and high-income respondents in Bulgaria. The high share of overcrowding among high-income respondents is also the case in Croatia, Hungary, Poland, Romania and Slovakia, but the gap between the two income groups is large when compared to Bulgaria. Hungary especially maintains a relatively high gap over time. Although the overcrowding rate is relatively lower in Czech republic, the gap between the income groups remains persistent over time as the low overcrowding rate among high-income respondents is maintained. It shows a somewhat similar pattern as Slovenia except for the sharp decline in the beginning in Slovenia and increased overcrowding among low-income respondents between 2020 and 2023 in Czech Republic.



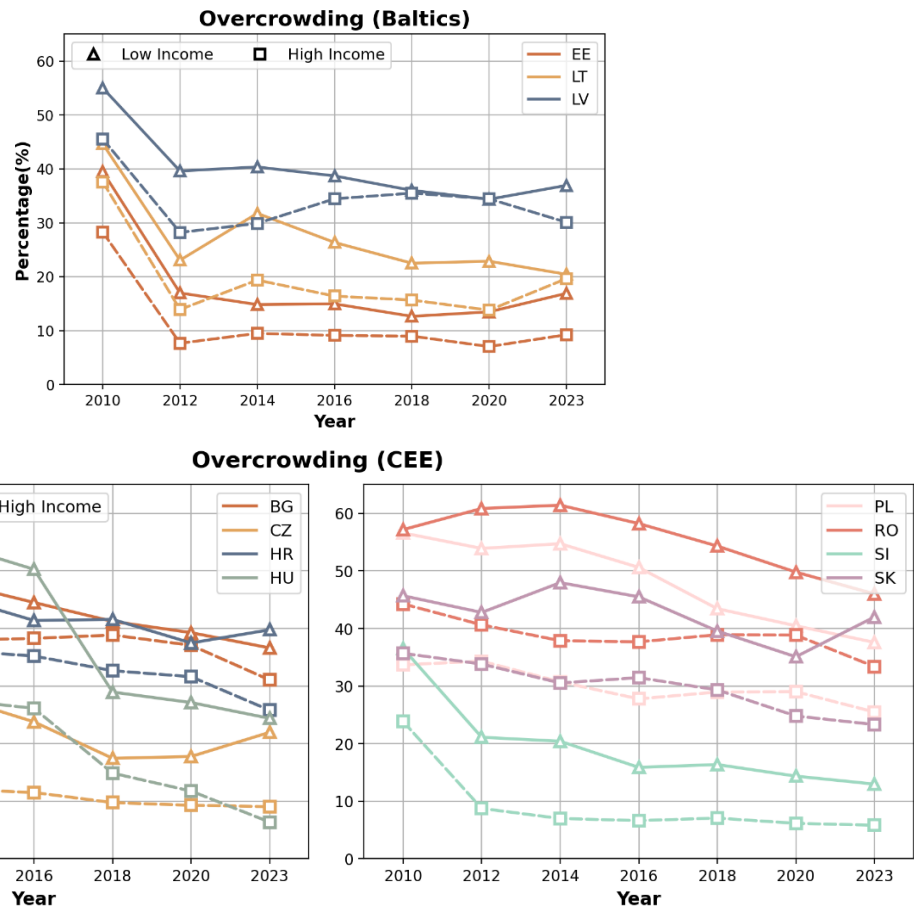


Figure 5.44 Trends in overcrowding rate across Eastern European countries by income 2010-2023 (%)

Note: CEE refers to Central Eastern Europe. Note that reliability of household income data from Hungary between 2018-2021 are currently being debated.

Overall, overcrowding decreased in all tenure statuses across Eastern Europe (Figure 45). The only exception is an increase in overcrowding among the reduced-rate renters in Slovakia (5.4%p). The decrease is somewhat evenly distributed across tenure status in Estonia, Lithuania, Bulgaria, Hungary, Croatia, and Slovenia. In Latvia, the decrease is less prominent among the market and reduced-rate renters, and in Poland, it is less prominent among the mortgage homeowners and market-rate renters. In Romania, there is almost no change



among the mortgage homeowners, but a large change among the market-rate renters (33.5%p).

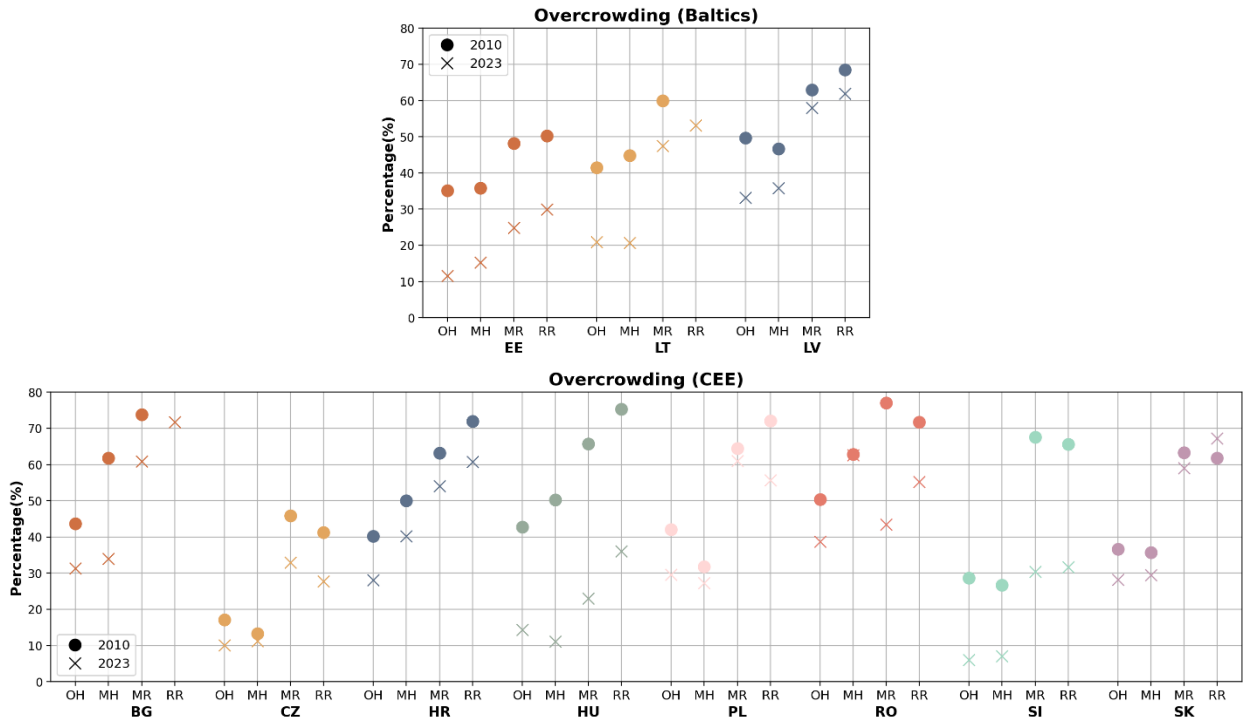


Figure 5.45 Changes in overcrowding rate across Eastern European countries by tenure between 2010 and 2023 (%)

Note: CEE refers to Central Eastern Europe. OH=Outright Homeowners, MH=Mortgage Homeowners, MR=Market Rent, RR=Reduced Rent. Few data points in 2010 are not visible in this figure due to high numbers. Reduced-rent in Lithuania in 2010 is 82.74% and reduced-rent in Bulgaria in 2010 is 86.55%.

5.3.1 Summary

Between 2010 and 2023, overcrowding remained a persistent housing issue in Europe, particularly affecting low-income households and renters. However, patterns varied by region. Countries with unitary and dual rental markets, such as Sweden, the Netherlands, and Finland, maintained relatively low rates, though some increases were observed. A closer look revealed a notable increase was observed between 2020 and 2023 in Luxembourg, affecting low-income and reduced-rent households. In these countries, overcrowding disproportionately



affects low-income households, and the gap between individuals in low- and high-income households widened in most countries. Notably, there was an increase among low-income respondents, in contrast to stable low overcrowding rates among high-income respondents. In most countries, overcrowding increased among renters.

By contrast, some Southern and Eastern European countries consistently reported the highest overcrowding rates (e.g., Greece, Italy, Latvia, Bulgaria, Croatia, Romania, Poland and Slovakia), despite a declining trend in some of these countries. Income level was not the most crucial factor in these countries, as overcrowding was prevalent among both low- and high-income respondents. Latvia and Bulgaria, in particular, have exceptionally high overcrowding rates among high-income respondents that do not differ significantly from those among low-income respondents. Changes across tenure status was relatively minor for Southern European countries, except for a decrease among reduced-rate renters in Greece and an increase among reduced-rate renters in Portugal. The rapid declines in overcrowding exhibited in the Baltic countries, Hungary and Slovenia were distributed across tenure status, albeit to a different extent. Slovakia is an outlier in that it has experienced an increase in the overcrowding rate among reduced-rate renters over time.

Overall, our data suggest that overcrowding is related to low income in Northern and Western European countries, whereas in most Southern and Eastern European countries, it is related to more than just the limited affordability of housing – specifically, norms around intergenerational co-residence (Norris & Domański, 2009; Stephens et al., 2015). Thus, a slight increase in overcrowding rates, especially among renters in Northern and Western countries, is likely to be linked to rising housing costs, particularly in the private rental sector in recent years (a phenomenon already explored in the context of Sweden by Grundström et al., 2024; Listerborn, 2023). Conversely, the sharp decline observed in some Eastern European countries among both high- and low-income respondents could indicate a change in overall living arrangements in these countries.



5.4 Security

We define housing insecurity as the state where households may be forced to move or be evicted, which in the extreme case could result in homelessness. Due to the limited data availability, we see if individuals have ever been in arrears with their rent/mortgage or utilities³³ (see also Waldron, 2023). This is a retrospective data based on the period of past twelve months.

5.4.1 Rent/Mortgage Arrears

Figure 46 presents the trend in the prevalence of rent/mortgage arrear across unitary rental market countries between 2010 and 2023. In conservative-corporatist unitary rental market countries, the three countries vary in terms of overall prevalence but share similarities in terms of stability of the trend. Sweden also shows a relatively stable trend over time. In Denmark, with the exception of a small decline in 2016, the trend is generally stable. The Netherlands shows an increasing trend between 2010 and 2014 and decreasing trend afterwards.

³³ Note that utility arrears are part of the Energy Poverty in the following section.



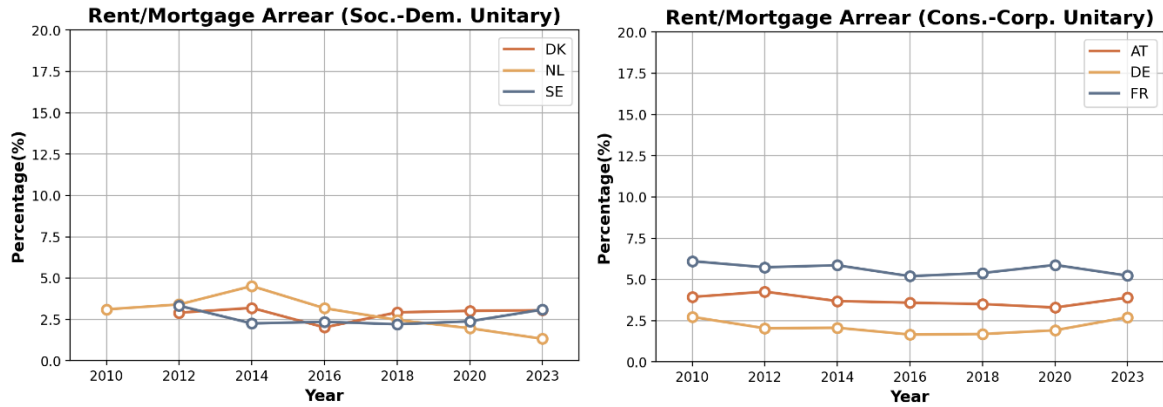


Figure 5.46 Trends in prevalence of rent/mortgage arrear across unitary rental market countries 2010-2023 (%)

Note: disconnected line indicates no data available for that year. Soc.-dem. unitary refers to social-democratic unitary rental market countries and cons.-corp. unitary refers to conservative-corporatist unitary rental market countries.

Prevalence of rent/mortgage arrear for high-income respondents is generally low in all unitary rental market countries, with the exception of 2020 in Sweden and Denmark, which shows an increase but decreases again in 2023 (see Figure 47). This increase is especially notable because we do not see as sharp an increase among low-income respondents. On the contrary, increase in the prevalence of rent/mortgage arrear in 2014 in the Netherlands is driven by low-income respondents. In the conservative-corporatist unitary rental market countries, the difference in the prevalence across countries is more visible among low-income respondents as high-income respondents generally show a low prevalence in all countries (all below 2% in all years observed). The gap between the low- and high-income is therefore driven by how prevalent these arrears are among low-income respondents. France shows the highest gap, followed by Austria and Denmark.



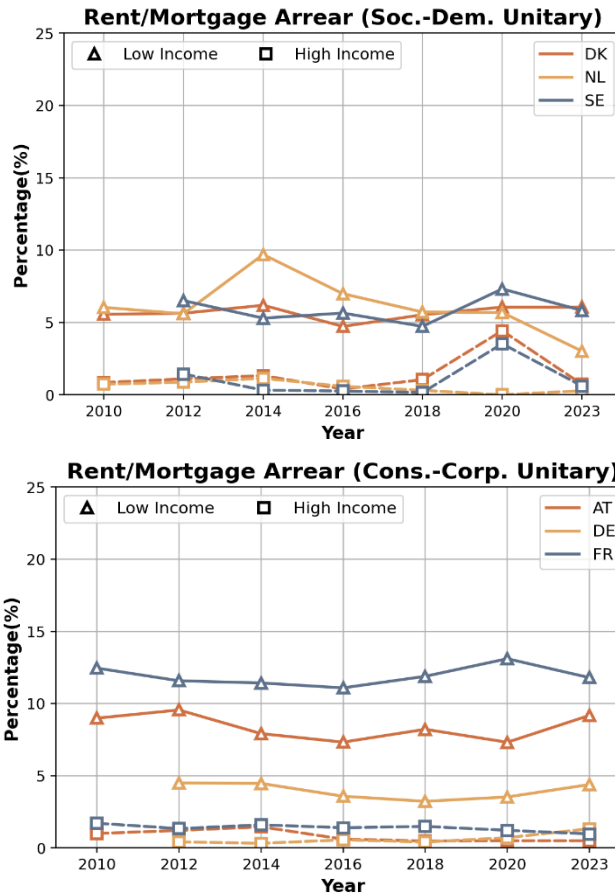


Figure 5.47 Trends in prevalence of rent/mortgage arrear across unitary rental market countries by income 2010-2023 (%)

Note: low income refers to the first tertile and high income refers to the third tertile. Soc.-dem. unitary refers to social-democratic unitary rental market countries and cons.-corp. unitary refers to conservative-corporatist unitary rental market countries.

The change in the prevalence of rent/mortgage arrears between years 2010 and 2023 is not so evidently different across tenure status, which can be expected from the generally stable overall trend (Figure 48). In Denmark and Sweden, it is the reduced-rate renters that show the highest increase in arrear, by 1.2%p and 6.7%p respectively. In both the Netherlands and France, all tenure statuses show a decrease in rent/mortgage arrears. This contrasts with Germany, where all tenure statuses except for the outright homeowners have experienced increase in rent/mortgage arrears.



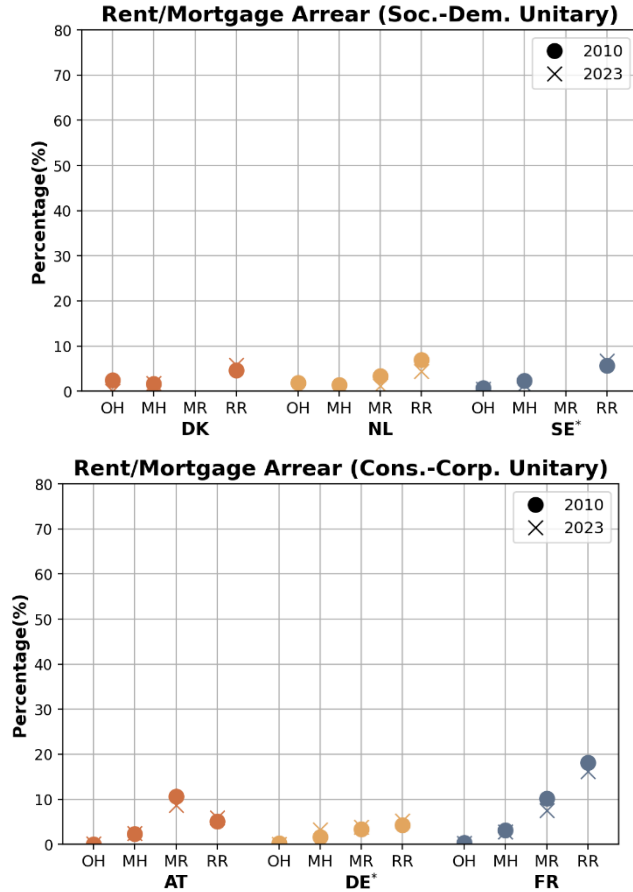


Figure 5.48 Changes in prevalence of rent/mortgage arrear across unitary rental market countries by tenure between 2010 and 2023 (%)

Note: For Sweden and Germany, the earliest available data is from 2012, instead of 2010. Soc.-dem. unitary refers to social-democratic unitary rental market countries and cons.-corp. unitary refers to conservative-corporatist unitary rental market countries. OH=Outright Homeowners, MH=Mortgage Homeowners, MR=Market Rent, RR=Reduced Rent. Given no clear distinction between market rent and reduced rent in the Soc.-dem. unitary rental market countries, where rents are strictly regulated, all tenants are coded as renting at 'reduced rent'. This applies to DK and SE. In the NL, we distinguish the two rental tenures using the 'liberalisatiegrens'. This is a fixed amount that limits the starting rent of social rental housing, as opposed to a prevailing market rent.

Among the NWW homeownership countries with a dual rental market, Ireland is the only country with significant changes over time in the prevalence of rent/mortgage arrears, as the other countries generally show a stable trend. In Ireland, slightly more than 12% of the population experienced rent/mortgage arrears in 2010, which declined sharply until 2018 to almost 5%. This increases in 2020 to 7.8%, but falls again in 2023 to roughly 5%. Despite this large decline, Ireland remains the country with the highest prevalence of rent/mortgage arrears among the countries observed in Figure 49. Belgium shows an overall decreasing trend, while Luxembourg shows the opposite. In the UK, it is stable until 2016 but



increases in 2018. In Norway and Finland, the trend is generally stable except for a decrease in 2014 and 2016 in Norway.

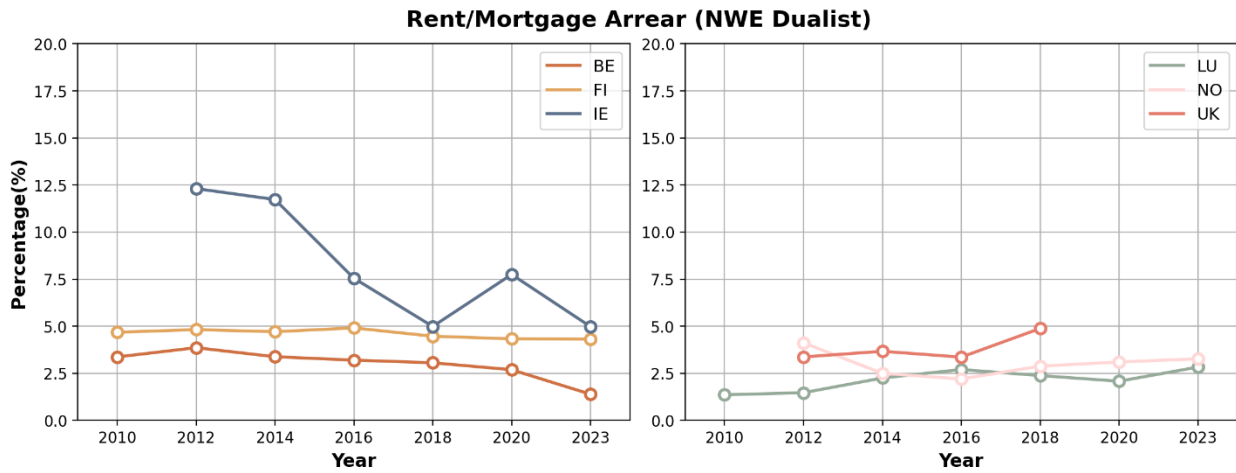


Figure 5.49 Trends in prevalence of rent/mortgage arrear across NWE homeownership countries with dual rental market 2010-2023 (%)

Note: disconnected line indicates no data available for that year. NWE refers to North-Western Europe

Figure 50 shows that the sharp decline in rent/mortgage arrear rate is mostly driven by the decrease among low-income respondents, although it also decreases among high-income respondents, but to a lesser extent. As high-income respondents rent/mortgage arrear rate remains low over time, whether it increases/decreases/remains stable among low-income respondents determines the gap between the two income groups. Figure 50 presents that the gap remains somewhat stable for Finland and Luxembourg, while it decreases for Belgium due to its decrease among low-income respondents. This is also the case in Norway between 2012 and 2014. Finally, increase in the prevalence of rent/mortgage arrears between years 2016 and 2018 has led to increase in gap between the low- and high-income in terms of rent/mortgage arrears.

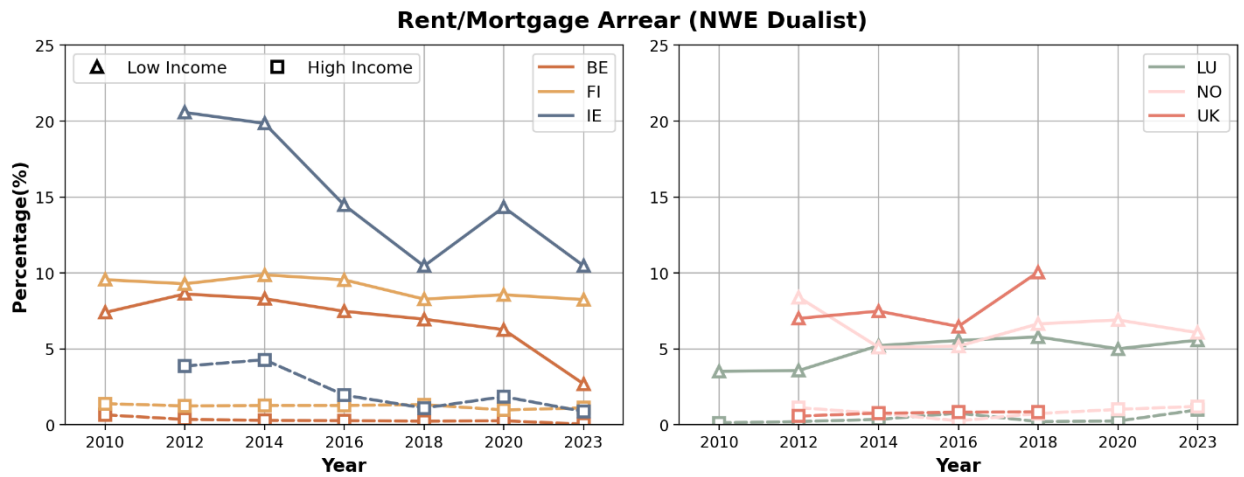


Figure 5.50 Trends in prevalence of rent/mortgage arrear across NWE homeownership countries with dual rental market by income 2010-2023 (%)

Note: disconnected line indicates no data available for that year. NWE refers to North-Western Europe

Figure 51 presents how the changes in the prevalence of rent/mortgage arrears occurred in each tenure status. In Belgium, the decrease in rent/mortgage arrears is driven by market- and reduced-rate renters, while it is the market- and reduced-rate renters as well as mortgage homeowners in Ireland. No significant change occurred to any tenure in Finland and Luxembourg, although in Finland most tenure types experienced a slight decrease in arrears while the opposite was the case in Luxembourg. In Norway, while it decreased for the market-rate renters and to a smaller extent the homeowners, it increased for the reduced-rate renters (by 5.8%p). Finally, the overall increase in the prevalence of rent/mortgage arrears in the UK is driven by the market renters and reduced-rate renters (7.6%p each). From this, we can infer that the changes are primarily driven by the renters.



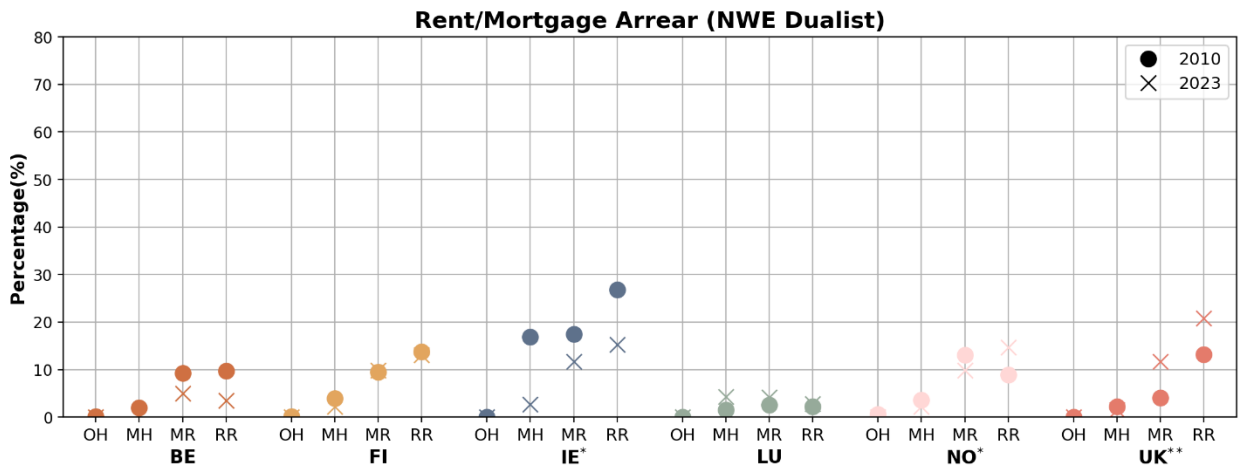


Figure 5.51 Changes in prevalence of rent/mortgage arrear across NWE homeownership countries with dual rental market by tenure between 2010 and 2023 (%)

Note: In the UK the latest data available is from 2018, not 2023, and the earliest available data is from 2012. For Ireland and Norway, the earliest data available is from 2012. OH=Outright Homeowners, MH=Mortgage Homeowners, MR=Market Rent, RR=Reduced Rent. In the UK, as of 2017, housing associations are labelled as private rather than social housing providers, leading to a break in the data lines.

Among the SE family-based homeownership countries, four patterns are observed in terms of the changes in the prevalence of rent/mortgage arrears (Figure 52). First, in Cyprus and Greece, there is an increase in arrears until 2014-2016, and starts to decrease over time. The differences between the two are the different level of prevalence (Greece being higher than Cyprus) and the fact that it increases again between 2020 and 2023 in Cyprus. Second, there is a more gradual decrease in Italy and Portugal. The two countries share similar prevalence, but the difference is one-time increase in 2014 in Portugal. Spain shares a similar trend as Portugal between 2010 and 2018, but diverges from it as the prevalence increases between 2018 and 2020, although it slightly decreases after. In Malta, the change is mostly stable, with a small upside-down U shaped curve due to an increase in the beginning and a decrease in the end.



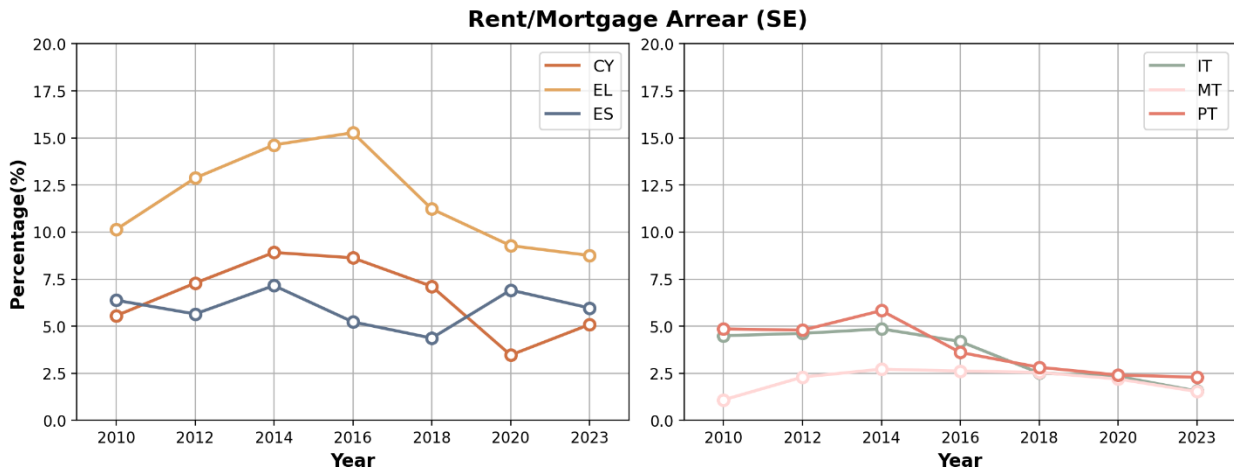


Figure 5.52 Trends in prevalence of rent/mortgage arrear across SE family-based homeownership countries 2010-2023 (%)

Note: SE refers to Southern Europe.

Figure 53 shows that the trends observed in Figure 52 is mostly driven by the prevalence of rent/mortgage arrears among low-income respondents and is more pronounced when only low-income respondents are considered. Low-income respondents in Greece shows the highest prevalence in all years, although high-income respondents in Greece also shows a relatively high prevalence of rent/mortgage arrears, the gap between the two is one of the largest in the SE family-based homeownership countries, due to a large prevalence among low-income respondents. The second largest gap is found in Spain, where the prevalence of rent/mortgage arrears is the second largest among low-income respondents but one of the lowest among high-income respondents. Cyprus, in most years, also shows relatively high prevalence of rent/mortgage arrears among high-income respondents, but it decreases after 2020. This, in contrast to the sharp increase among low-income respondents between 2020 and 2023, leads to an increased gap between the low- and high-income in 2023. In Portugal, except for year 2014, when the rent/mortgage arrears become more prevalent among low-income respondents, the gaps decline over time. Italy shows a somewhat similar pattern. Rent/mortgage arrears are least



prevalent in Malta for both low- and high-income respondents. The gap between the two income groups declined between 2020 and 2023 with the relatively larger decrease among low-income respondents.

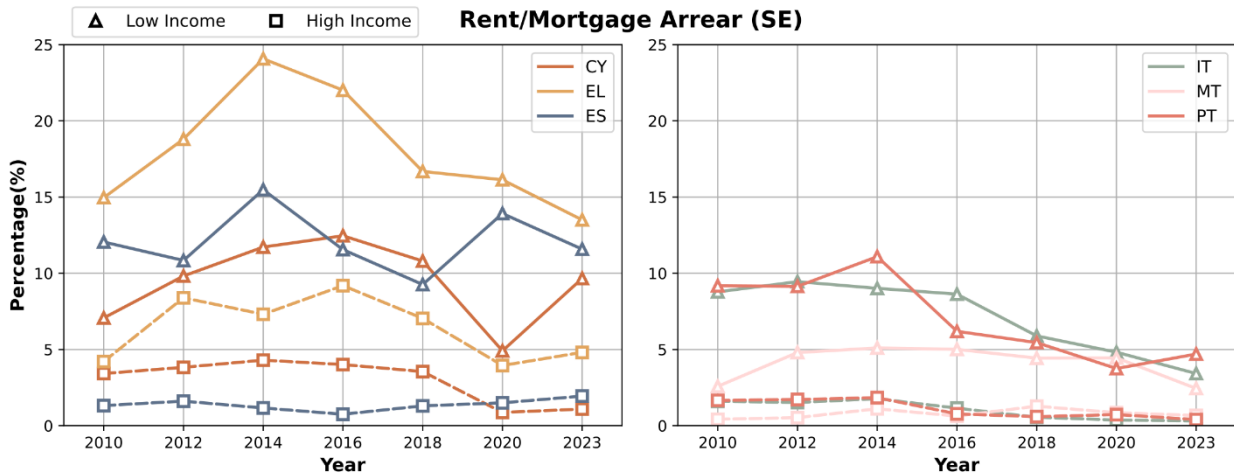


Figure 5.53 Trends in prevalence of rent/mortgage arrear across SE family-based homeownership countries by income 2010-2023 (%)

Note: SE refers to Southern Europe.

The prevalence of mortgage homeowners' mortgage arrears have declined in all countries between 2010 and 2023, although by different extents, while different patterns are found for the market- and reduced-rate renters (see Figure 54). In Cyprus, it decreased for both renters, but more significantly among the reduced-rate renters (by 34.9%p). It also decreased for both renters in Italy, but more prominently for the market-rate renters (by 12.2%p). In Greece, both renters show increase in the prevalence of rent/mortgage arrears, while in Portugal it shows a mixed picture with a decrease among market-rate renters and an increase among reduced-rate renters.



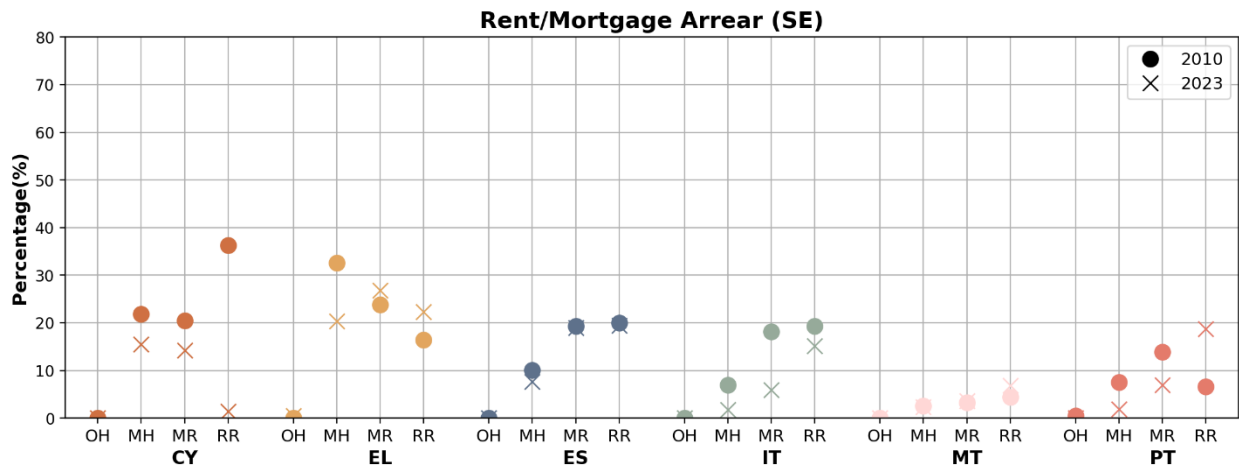


Figure 5.54 Changes in prevalence of rent/mortgage arrear across SE family-based homeownership countries by tenure between 2010 and 2023 (%)

Note: SE refers to Southern Europe. OH=Outright Homeowners, MH=Mortgage Homeowners, MR=Market Rent, RR=Reduced Rent.

In all Eastern European countries, the prevalence of rent/mortgage arrears has decreased between 2010 and 2023, but in different patterns, and with an exception of Romania that increased by 0.03%p (see Figure 55). Most notable change occurred in Latvia and Hungary, with the former showing a steady decline over time, while it decreases after increasing until 2014. Slovenia shows a similar pattern as Hungary although with smaller changes, and Czech Republic shows a relatively steady decline similar to Latvia. Relatively large fluctuations are found in Slovakia, although showing a decreasing trend overall. The other countries show relatively stable trends in the prevalence of rent/mortgage arrears over time.



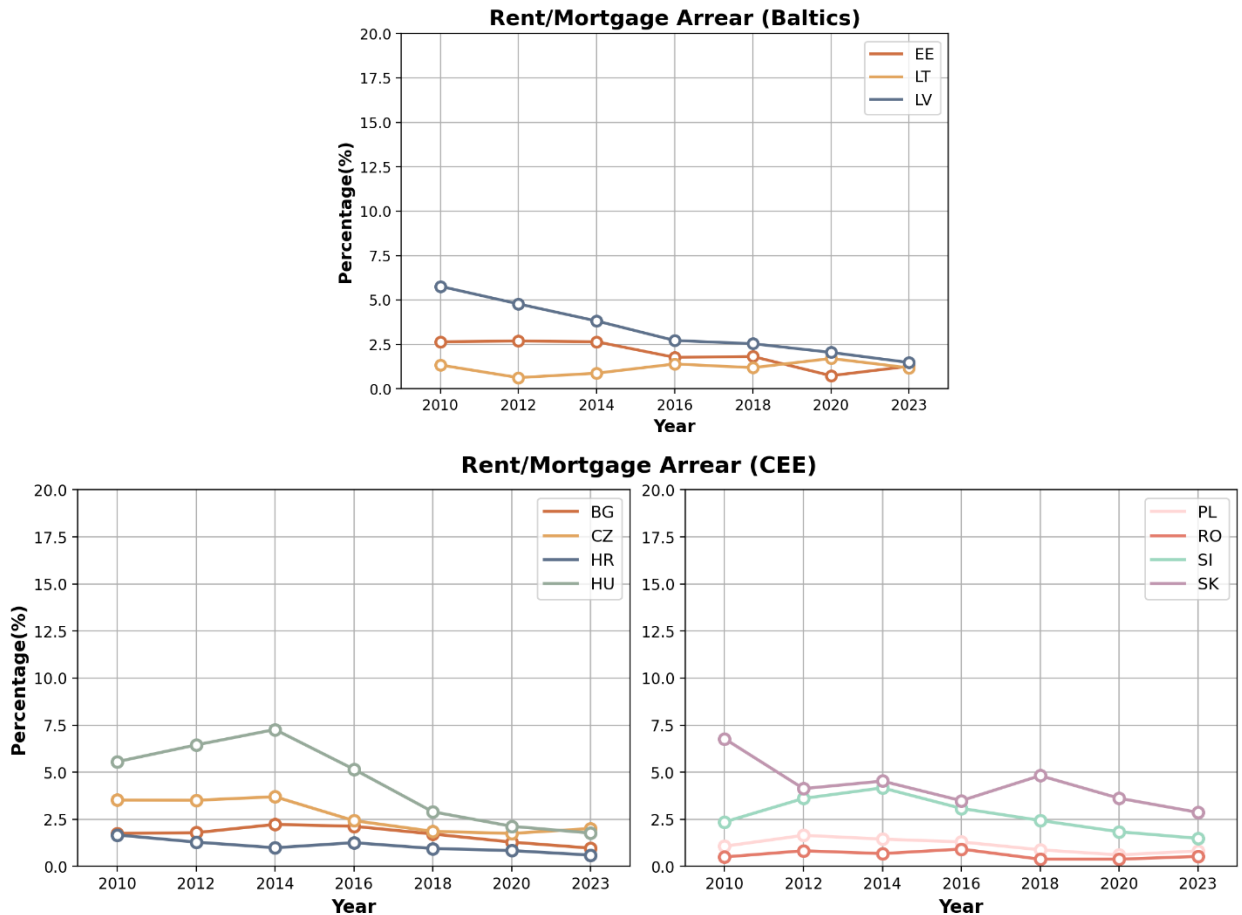


Figure 5.55 Trends in prevalence of rent/mortgage arrear across Eastern European countries 2010-2023 (%)

Note: CEE refers to Central Eastern Europe.

With the exception of Slovakia, there is less fluctuation in the prevalence of rent/mortgage arrears among high-income respondents in all Eastern European countries examined in Figure 56. The change is primarily driven by low-income respondents and so is the gap between the low- and high-income. What needs to be noted is that in a number of countries, the difference between the low- and high-income is close to non-existent. This is the case in Estonia, Lithuania, Bulgaria, Croatia, Poland and Romania. In Latvia, Hungary and Slovakia, due to the overall decrease in the prevalence of rent/mortgage arrears among low-income respondents, the gap between the low- and high-income decreased over time. Note that in Slovakia, the gap even though the overall prevalence is



relatively high among low-income respondents, the gap decreased due to relatively higher prevalence among high-income respondents. The highest low-high income gap is found in Czech Republic as the prevalence among high-income respondents remains stably low.



Figure 5.56 Trends in prevalence of rent/mortgage arrear across Eastern European countries by income 2010-2023 (%)

Note: CEE refers to Central Eastern Europe. Note that reliability of household income data from Hungary between 2018-2021 are currently being debated.

In all countries in Eastern Europe, with the exception of Poland, Estonia, Romania and Slovakia, show decrease in the prevalence of rent/mortgage arrears in all tenure statuses between 2010 and 2023 (Figure 57). Patterns vary in terms of the extent of decrease. For instance, in Latvia and Czech Republic, the biggest decrease is found among the reduced-rate renters (28.4%p and 5.6%p



respectively), while it is among the market-rate renters in Lithuania, Croatia, Hungary, Bulgaria and Slovenia (12.5%p, 17.2%p, 18.4%p, 14.3%p and 19.4%p respectively). In Estonia, almost no change has occurred among the market-rate renters, and in Poland and Slovakia it increased for reduced-rate renters as opposed to the decreasing trend found in other tenure statuses. On the contrary, it is the mortgage homeowners who experienced an increase in prevalence of rent/mortgage arrears in Romania.

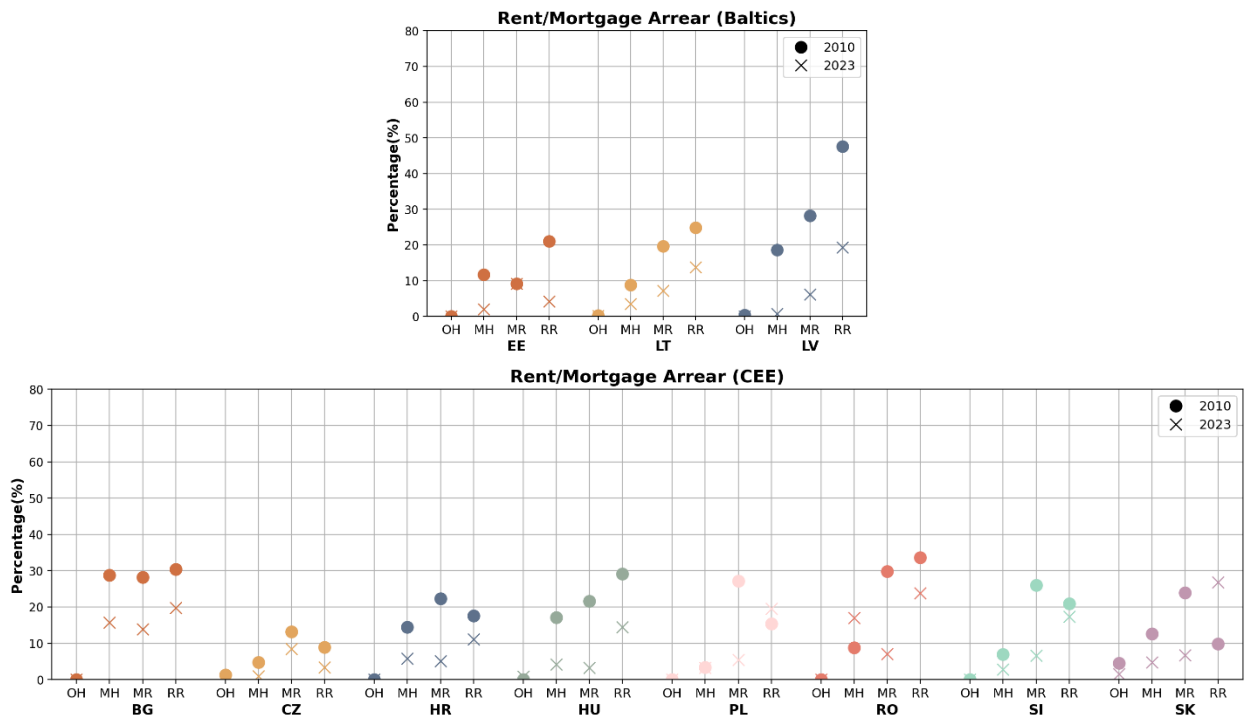


Figure 5.57 Changes in prevalence of rent/mortgage arrear across Eastern European countries by tenure between 2010 and 2023 (%)

Note: CEE refers to Central Eastern Europe. OH=Outright Homeowners, MH=Mortgage Homeowners, MR=Market Rent, RR=Reduced Rent.

5.4.2 Summary

Between 2010 and 2023, rent or mortgage arrears across Europe remained stable or declined. However, disparities persist between income levels and tenure statuses. Low-income households consistently experienced higher arrears, driving the disparity between income groups, particularly in countries such as France, Greece, and Spain. While arrears remained low among high-income



households, temporary increases were observed in Sweden and Denmark in 2020, returning to lower levels by 2023. In Greece and Cyprus, the prevalence of arrears remained relatively high, even among high-income respondents, although it has declined in recent years. Changes across tenure status show mixed results. There were no substantial changes in any tenure status in countries with a unitary rental market, while notable changes were observed for renters in few North-Western homeownership countries with a dual rental market. Housing security in terms of rent or mortgage arrears improved among renters in Belgium and Ireland, but worsened among the renters in the UK and reduced-rate renters in Norway. It should be noted that the significant progress in Ireland was also driven by a substantial decline in arrears among mortgage homeowners. Despite the general improvement in arrears, the number of reduced-rate renters in arrears increased in some countries, including Greece, Portugal, Poland and Slovakia. While Romania maintained low arrears over time, changes were observed across tenure status. The situation improved for renters, but it worsened for mortgage homeowners. Overall, the data highlight a general improvement in housing security across Europe over time. However, low-income households and renters remain relatively more vulnerable to rent or mortgage arrears, which, in extreme cases, could even lead to eviction or homelessness.

5.5 Energy poverty

Energy poverty is when “*a household must reduce its energy consumption to a degree that negatively impacts the inhabitants' health and well-being*” (European Commission, n.d.). Building on the list of indicators developed by EU Energy Poverty Observatory (EPOV) to measure energy poverty using different sources (see Gouveia et al., 2023), we use two of the available indicators that do not overlap with the other housing problems above: (1) heating affordability (i.e. the ability to keep housing adequately warm) and (2) having arrears on utility

bills. Similar to the rent/mortgage arrears, utility arrears refers to having arrears in the past twelve months.

5.5.1 Heating Unaffordability

Figure 58 shows the trend in heating unaffordability rate over time between 2010 and 2023 in North Western European countries with unitary and dual rental markets. Note that in this section, we examine “unaffordability” as an indicator of energy poverty, as the variable is reverse-coded to have high rate to indicate lower ability to afford adequate heating in the housing. The countries generally show a low and stable trend that increases overall. Although it is not as visible on the figure due to the scale of y-axis³⁴, Ireland, Belgium, Germany and France show a relatively higher heating unaffordability rate than other countries. France, in particular shows the highest rate in 2023 compared to all the other time points and countries in Figure 58.

³⁴ The range of y-axis is set to be consistent for all other figures with the same housing problem



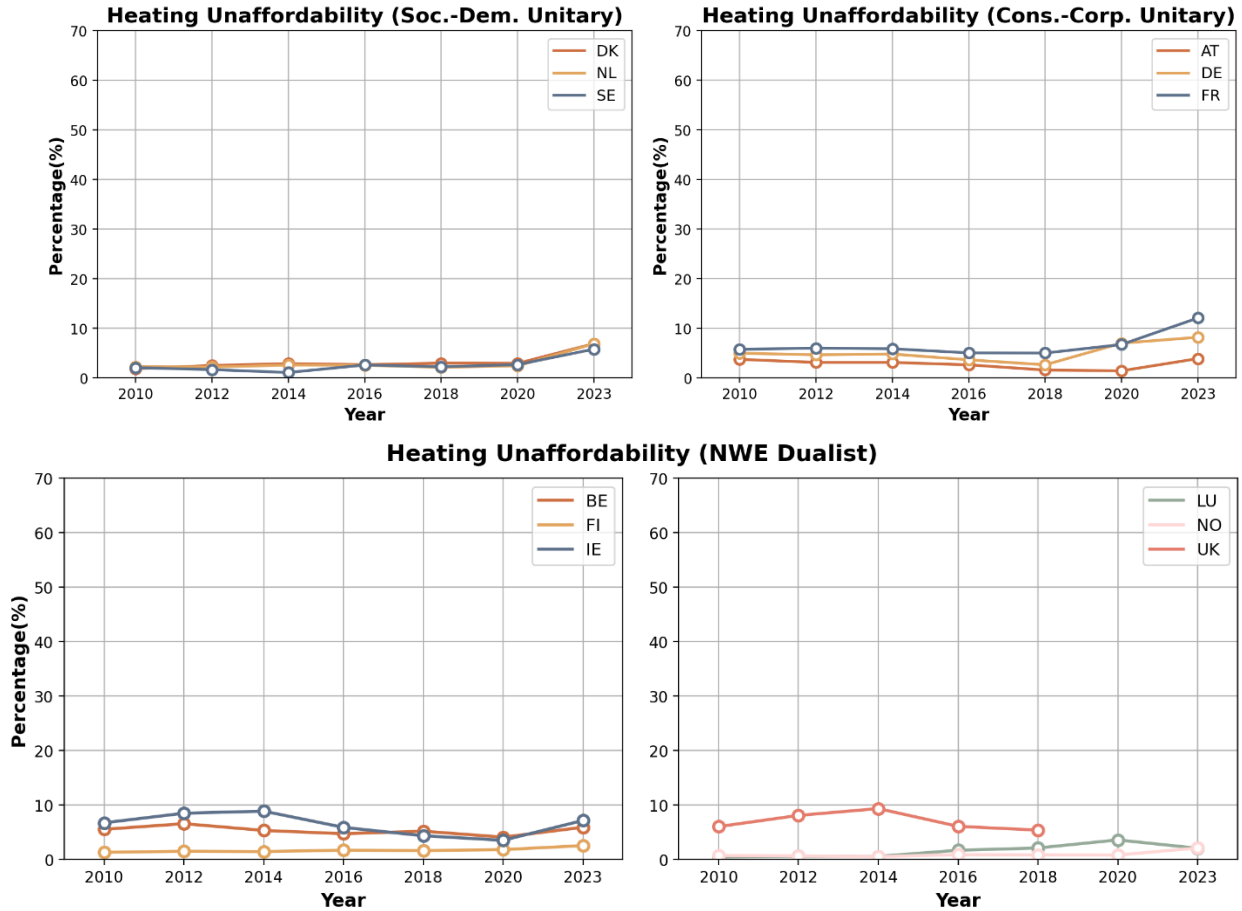


Figure 5.58 Trends in heating unaffordability rate across unitary and dual rental market countries 2010-2023 (%)

Note: disconnected line indicates no data available for that year. Soc.-dem. unitary refers to social-democratic unitary rental market countries and cons.-corp. unitary refers to conservative-corporatist unitary rental market countries. NWE refers to North-Western Europe.

Heating unaffordability rate among high-income respondents is generally very low (i.e. less than 3% for most years and countries), although it increased in most countries between 2020 and 2023 (see Figure 59). The gaps in heating unaffordability between the low- and high-income depends on the rate among low-income respondents. In general, we see an increase in the gap between the low- and high-income across these countries over time, but it also shows an overall decrease in some countries, such as Belgium and Ireland. In Finland, Norway and Luxembourg, both low- and high-income respondents show low



heating affordability rate over time, although the overall increase among low-income respondents contributes to increase in low-high income gap.

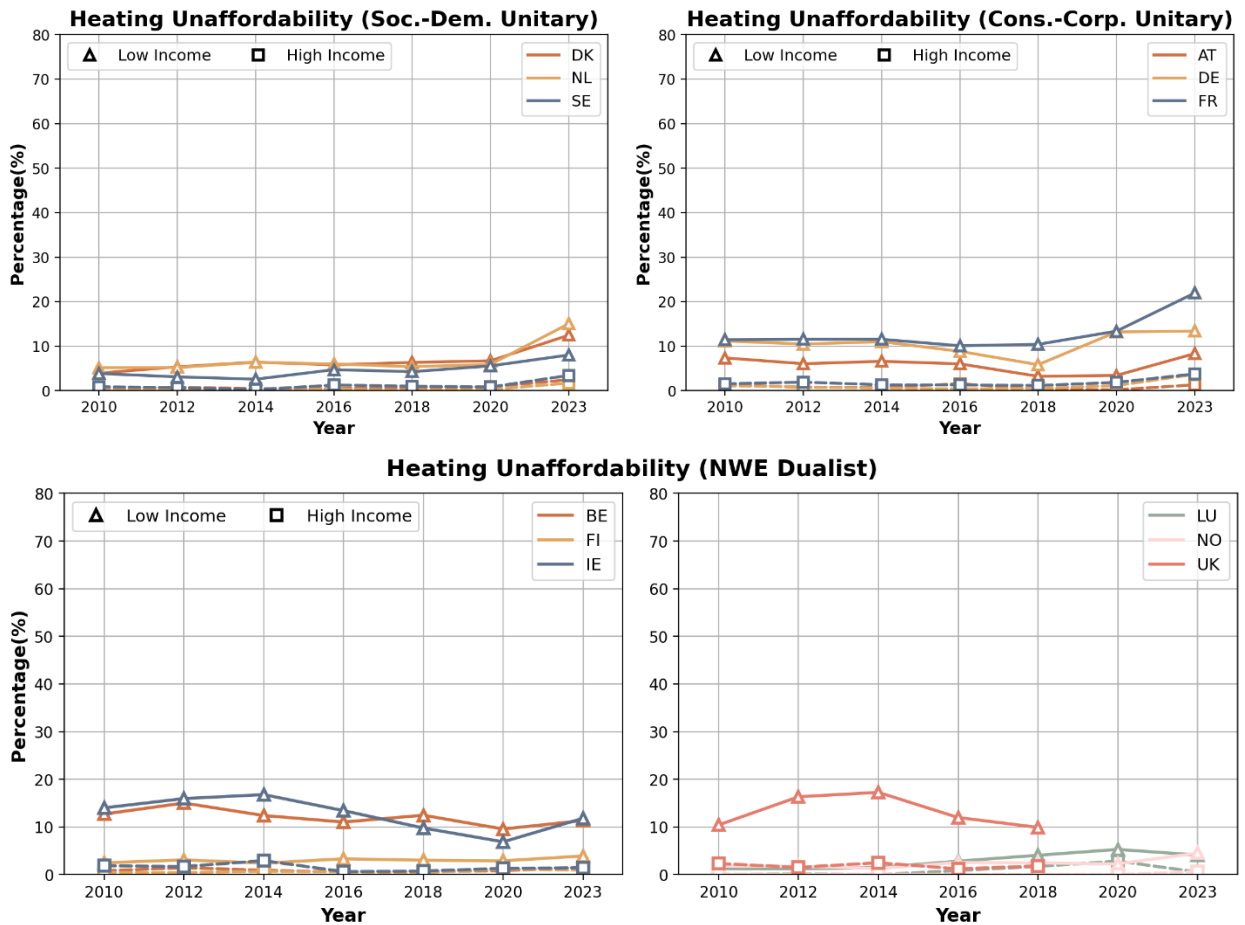


Figure 5.59 Trends in heating unaffordability rate across unitary and dual rental market countries by income 2010-2023 (%)

Note: low income refers to the first tertile and high income refers to the third tertile. Soc.-dem. unitary refers to social-democratic unitary rental market countries and cons.-corp. unitary refers to conservative-corporatist unitary rental market countries. NWE refers to North-Western Europe.

In all social-democratic unitary rental market countries, heating unaffordability rate increased across tenure status (see Figure 60). The most notable difference is found among the reduced-rate renters in the Netherlands (13.0%p) and Denmark (6.9%p). Among the conservative-corporatist unitary rental market countries, while Germany and France show an increase in heating unaffordability rate across all tenure statuses, the change is more prominent in France than in Germany, especially among the renters. Moreover, Austria does not show a



significant change between 2010 and 2023. Somewhat mixed patterns are observed for the NWE homeownership countries with dual rental market. In Belgium and Ireland, heating became more unaffordable among the market-rate renters, while it became less unaffordable for the reduced-rate renters. No substantial changes are observed in Finland, Luxembourg and Norway, but they show increase in heating unaffordability in all tenure statuses. On the contrary, heating became more affordable for more people in the UK over time for all tenure statuses between 2010 and 2020, although the change is minimal.

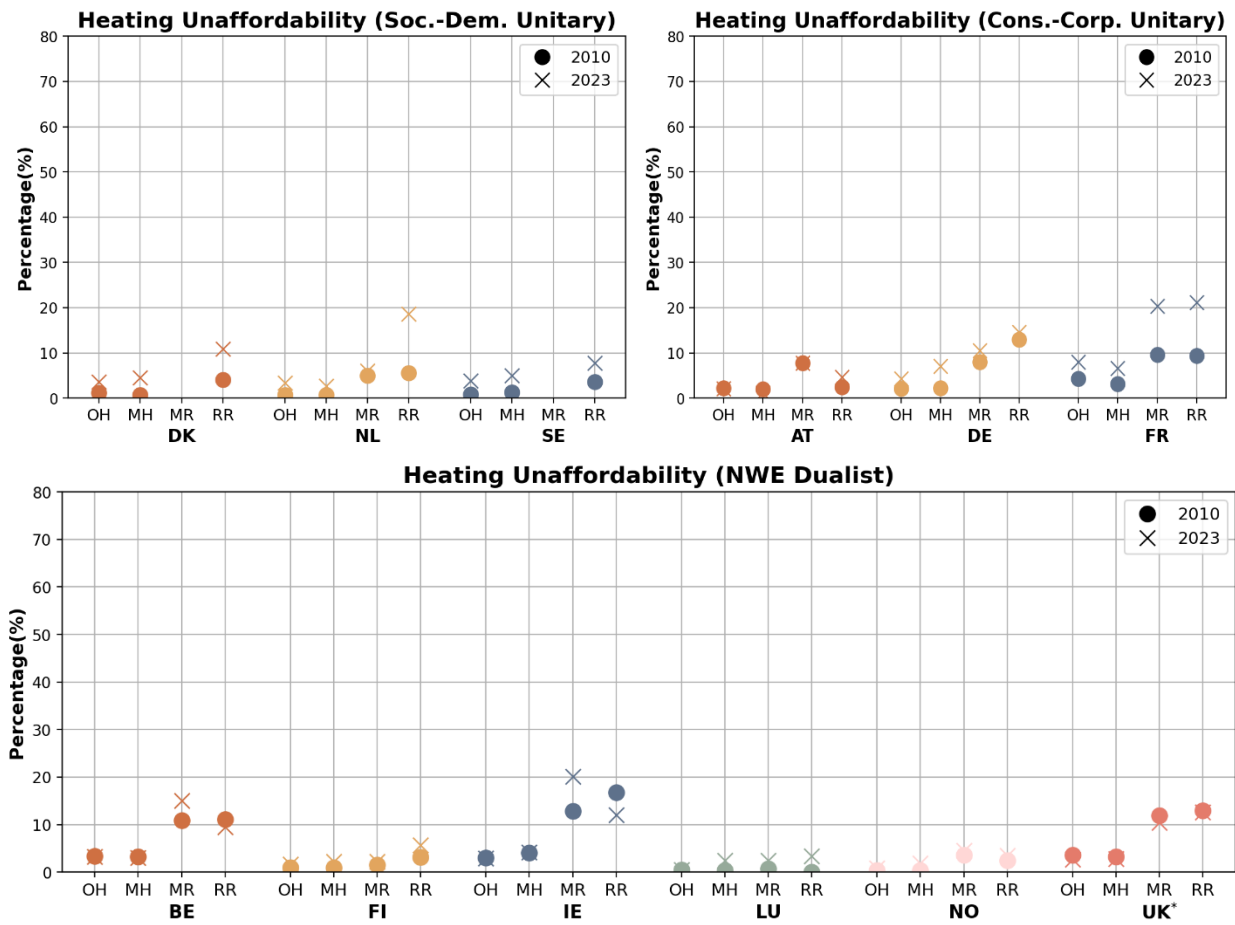


Figure 5.60 Changes in heating unaffordability rate across unitary and dual rental market countries by tenure between 2010 and 2023 (%)

Note: Some data are missing including the reduced rent in Denmark in 2010 and reduced-rent in Sweden in 2023. Soc.-dem. unitary refers to social-democratic unitary rental market countries and cons.-corp. unitary refers to conservative-corporatist unitary rental market countries. NWE refers to North-Western Europe. OH=Outright Homeowners, MH=Mortgage Homeowners, MR=Market Rent, RR=Reduced Rent. Given no clear distinction between market rent and reduced rent in the Soc.-dem. unitary rental market countries, where rents are strictly regulated, all tenants are coded as renting at 'reduced rent'. This applies to DK and SE. In the NL, we distinguish the two rental tenures using the 'liberalisatiegrens'. This is a fixed amount that limits the starting rent of social rental housing, as opposed to a prevailing market rent. In the UK, as of 2017, housing associations are labelled as private rather than social housing providers, leading to a break in the data lines.





Heating affordability rate is generally higher among the SE family-based homeownership countries than among the countries with NWE unitary or dualist rental market. However, there is no clearly discernible pattern that can be observed among these countries (Figure 61). Spain shows relatively low heating unaffordability, although it increases in the recent years, especially between 2020 and 2023. It is the only country with a somewhat steady increase over time. Greece shows an increasing trend until reading the highest point in 2014 (32.9%), then decreases over time until it increases again in 2023. Somewhat similar pattern is found in Italy, with its peak in 2012 (21.3%) and a slight increase in 2023 after a decreasing trend. Both Cyprus and Portugal shows a relatively steady downward trend over time, except for the divergence in the year 2023, when it continues to decrease in Cyprus but increases slightly in Portugal. Malta shows a very unique pattern with a sharp decline in heating unaffordability rate between 2014 and 2016, and this rate is maintained over time afterwards.

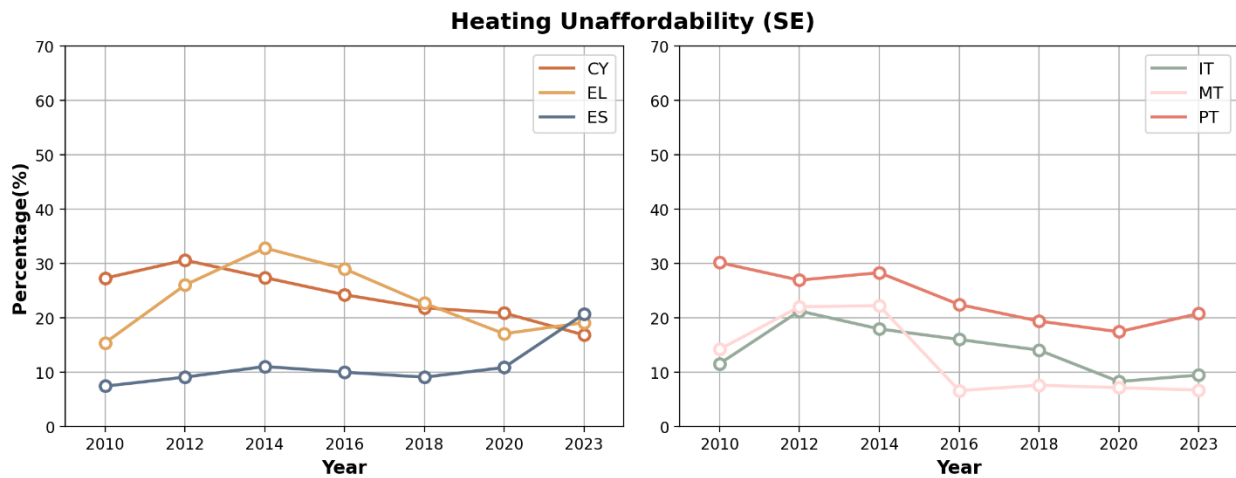


Figure 5.61 Trends in heating unaffordability rate across SE family-based homeownership countries 2010-2023 (%)

Figure 62 shows the trends in heating unaffordability rate across SE family-based homeownership countries by income between 2010 and 2023. The similarity in the trends among low-income respondents with the overall trends examined in Figure 61 indicates that the heating unaffordability is more



pronounced among low-income respondents. However, even high-income respondents in these countries show relatively high heating unaffordability compared to the countries in Northern Europe examined above. The biggest gap between the low- and high-income is found in Cyprus, Greece and Portugal, due to the generally high heating unaffordability rate among low-income respondents in these countries. The gap is not only smaller in Italy and Malta but got smaller over time, due to the decrease in heating unaffordability rate among low-income respondents in these countries over time.

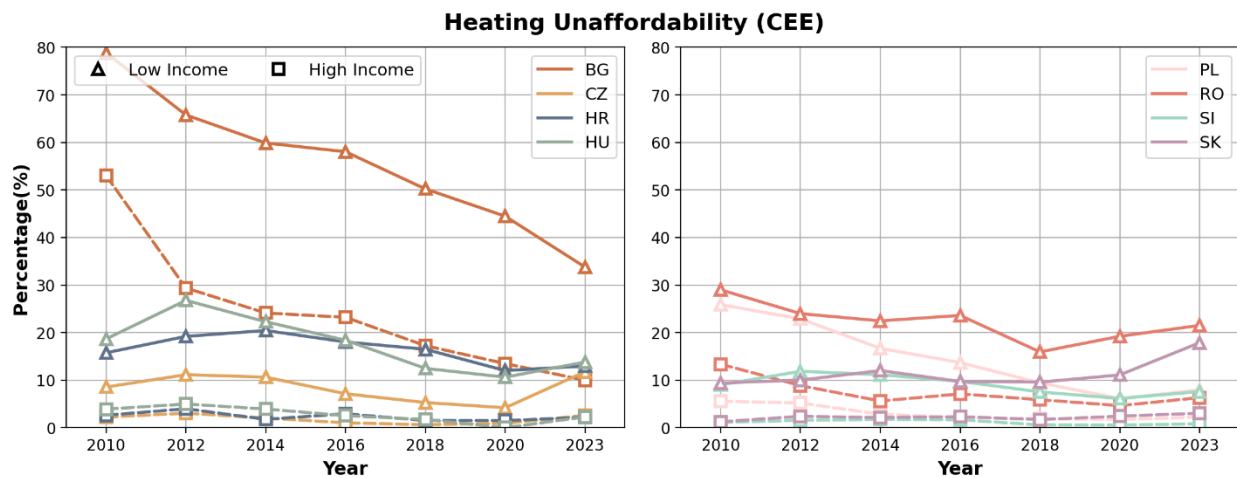


Figure 5.62 Trends in heating unaffordability rate across SE family-based homeownership countries by income 2010-2023 (%)

Note: SE refers to Southern Europe.

Figure 63 shows how the changes in heating unaffordability unfolds across tenure status comparing the year 2010 and 2023. Cyprus is the only country where it decreased for all tenure statuses, the reduced-rate renters in particular (45.0%p). In Greece and Spain, all tenure statuses experienced an increase in heating unaffordability, especially for the reduced-rate renters. In the other three countries, the picture is rather mixed. In Italy, it increased for mortgage homeowners (although slightly) while it decreased for the rest; and Malta shows somewhat the opposite with a slight increase among the renters but a more substantial decrease among the homeowners. Portugal shows decreased heating



unaffordability for all tenure statuses with the exception of reduced-rate renters that also increased substantially (by 15.7%p).

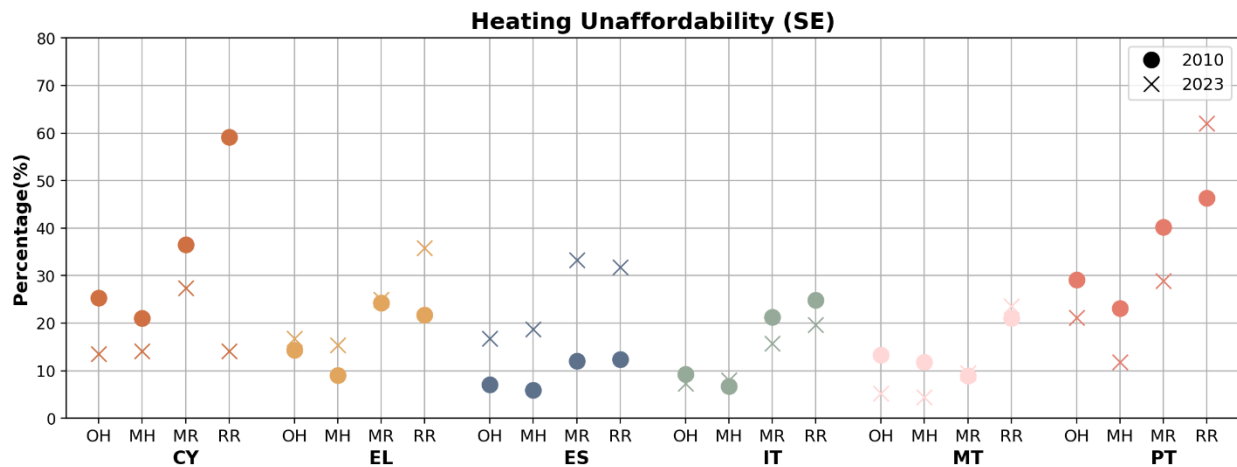


Figure 5.63 Changes in heating unaffordability rate across SE family-based homeownership countries by tenure between 2010 and 2023 (%)

Note: SE refers to Southern Europe. OH=Outright Homeowners, MH=Mortgage Homeowners, MR=Market Rent, RR=Reduced Rent.

Figure 64 shows the trends in heating unaffordability rate across Eastern European countries between 2010 and 2023. Lithuania and Bulgaria show significantly higher heating unaffordability rate compared to the other countries, despite the decrease over time that is especially rapid in Bulgaria. In Bulgaria more than 60% of the population experienced not being able to afford adequate heating in 2010, and, although it decreased over time, still shows one of the highest rate in all Europe in 2023. Latvia shows a somewhat high rate of heating unaffordability in 2010 but it gradually decreases over time. Although it is not very visible in the figure below, the decreasing trend is found for Hungary, Romania and Poland. The rest of the countries show a relatively stable trend in heating unaffordability over time. Overall, Estonia, Czech Republic and Slovakia show an increase in heating unaffordability over time, and it is the opposite for Croatia and Slovenia.



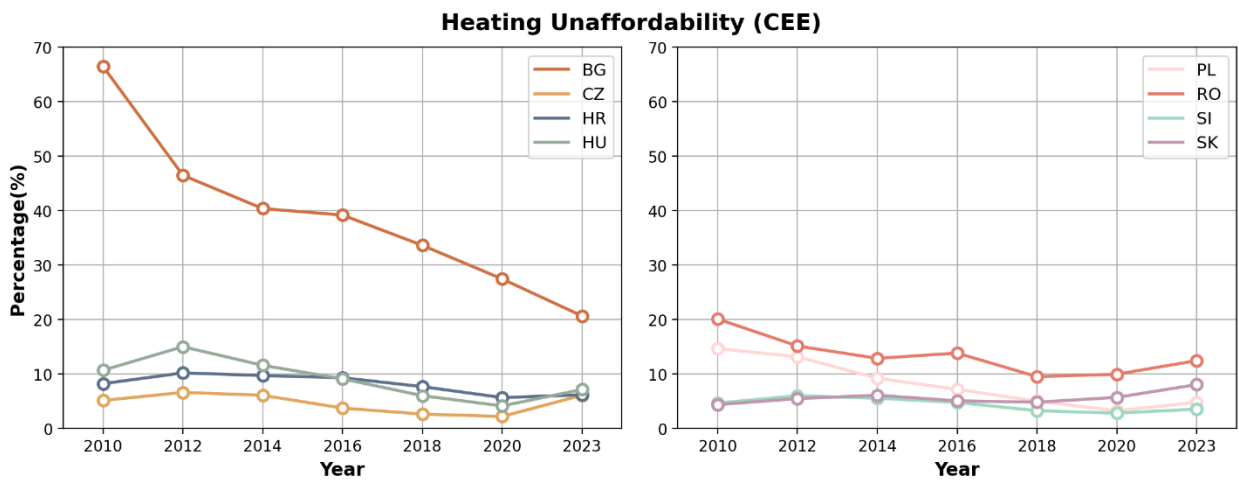
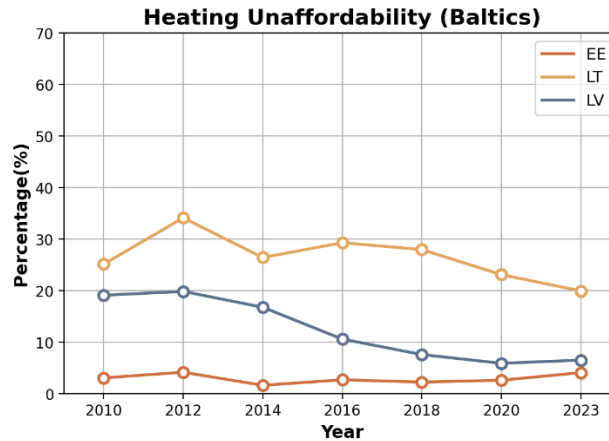


Figure 5.64 Trends in heating unaffordability rate across Eastern European countries 2010-2023 (%)

Note: CEE refers to Central Eastern Europe.

While in most countries it is low-income respondents driving the general trends in heating unaffordability rate over time in Eastern Europe with overall low and stable trend among high-income respondents, Lithuania and Bulgaria show distinct patterns across income. In Lithuania, due to the stable trend among low-income respondents in contrast to the volatile trend among high-income respondents, the general trend observed in Figure 64 is driven by the changes among high-income respondents. Figure 65 shows an upward trend between 2010 and 2012 and then a continuous downward trend in heating unaffordability



rate among high-income respondents in this country. This indicates that the heating affordability only improved among high-income respondents over time, while it was an issue across income levels in the early 2010s. In Bulgaria, heating is unaffordable even to more than half of high-income respondents in 2010, but they are still doing better than low-income respondents, almost 80% of which experienced heating unaffordability in 2010. Although both declined over time, the gap between the two remained persistently high and is the highest among all Eastern European countries observed. In Romania, although the heating unaffordability among high-income respondents is relatively higher than the other countries, the gap between the low- and high-income remains persistent as both income groups share similar trends over time.



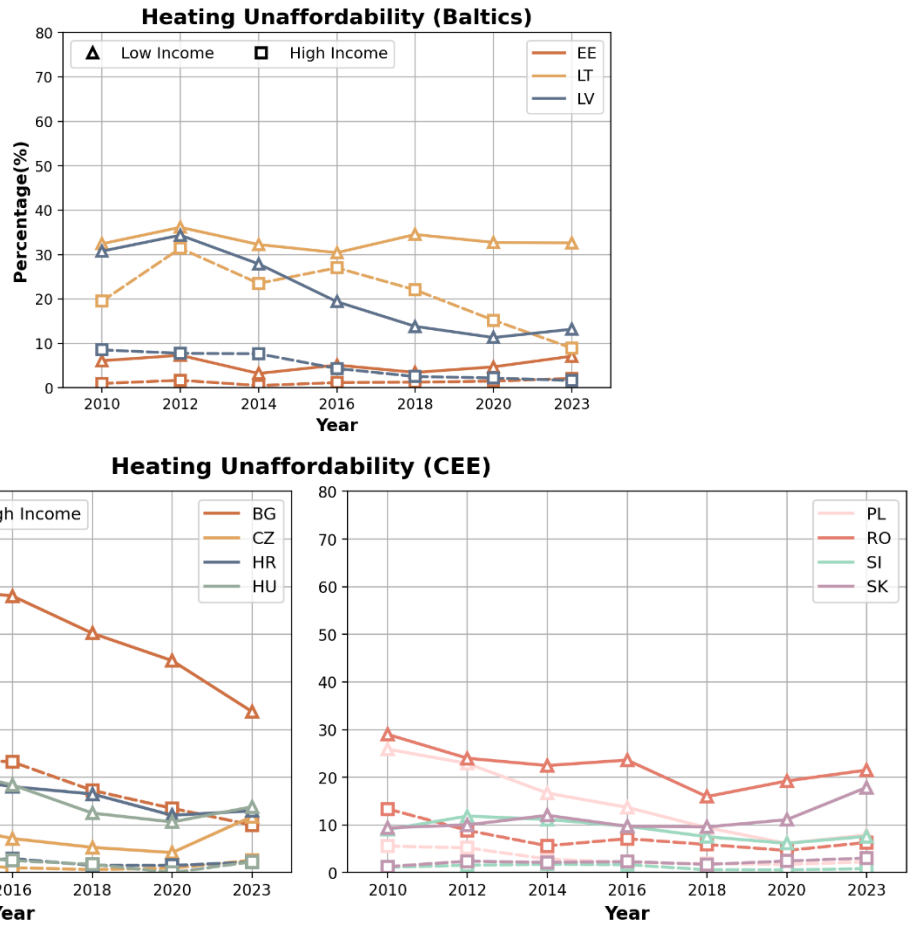


Figure 5.65 Trends in heating unaffordability rate across Eastern European countries by income 2010-2023 (%)

Note: CEE refers to Central Eastern Europe. Note that reliability of household income data from Hungary between 2018-2021 are currently being debated.

Figure 66 shows how the changes in heating unaffordability across Eastern Europe between 2010 and 2023 manifests across tenure status. In Lithuania, Latvia, Bulgaria and Hungary, it decreased for all tenure statuses. The largest change is found among the market-rate renters in Lithuania (44.0%p), reduced-rate renters in Latvia (26.1%p) and Hungary (11.6%p), and mortgage homeowners in Bulgaria (52.3%p). Most tenure statuses improved in terms of heating affordability in Croatia, Poland, Romania and Slovenia. It got worse among reduced-rate renters in Croatia and Slovenia (1.7%p and 5.1%p, respectively), among outright homeowners in Poland (2.9%p) and mortgage homeowners in Romania (2.5%p). Mixed patterns are found in Estonia, but the changes are rather



small. On the contrary, heating affordability worsened for all tenure types in Czech Republic, albeit slightly, and for most of the tenure statuses in Slovakia, especially the reduced-rate renters (50.3%p).

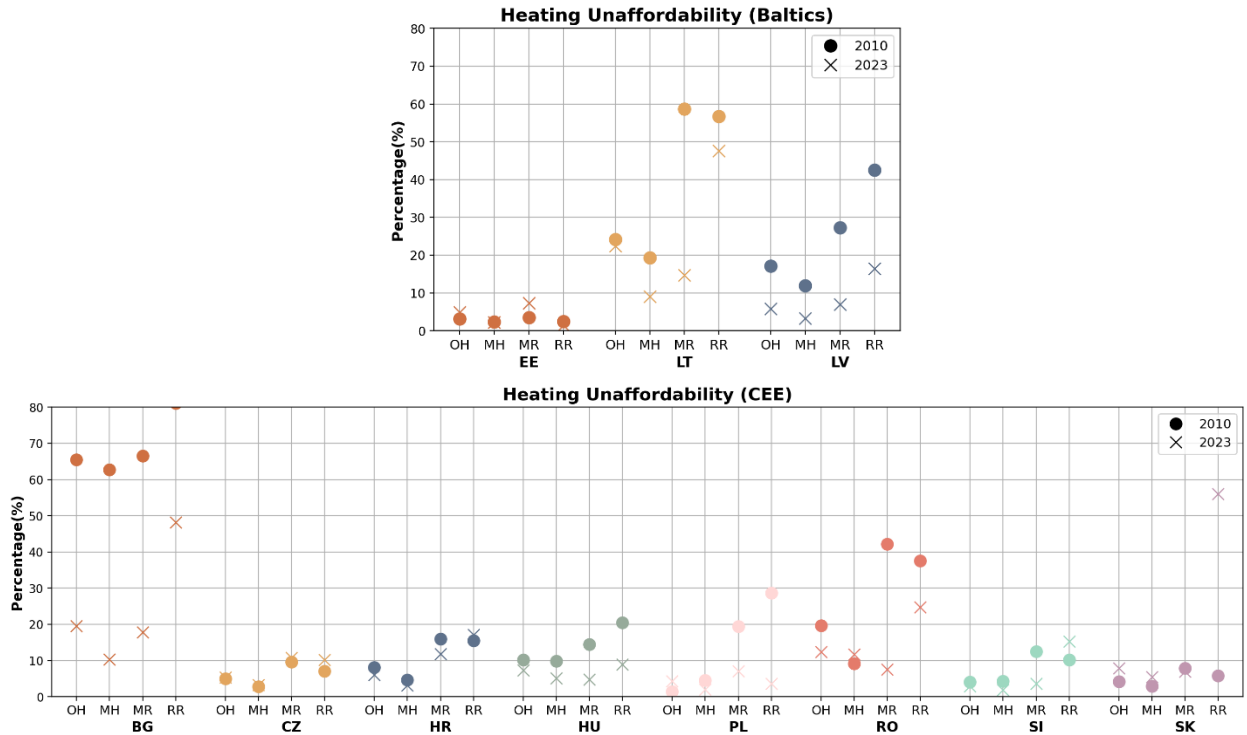


Figure 5.66 Changes in heating unaffordability rate across Eastern European countries by tenure between 2010 and 2023 (%)

Note: CEE refers to Central Eastern Europe. OH=Outright Homeowners, MH=Mortgage Homeowners, MR=Market Rent, RR=Reduced Rent.

5.5.2 Utility Arrear

Similar to what was observed above with the rent/mortgage arrears, Figure 67 shows that the prevalence of utility arrear across unitary rental market countries is generally stable and low. The only country that shows prevalence higher than 5% for all time points is France. Compared to social-democratic countries, all conservative-corporatist countries show an upward trend in the recent years. NWE homeownership countries with a dual rental market also shows similarly stable trends, with the exception of Ireland. Ireland is an outlier in this group of countries because as high as roughly 18% of the population experienced utility arrears until 2014. However, it decreased over time and now shows a rate smaller



than 10%. Although the changes are not as visible in the figure below, Luxembourg shows an overall upward trend, while Belgium and the UK show over downward trends.

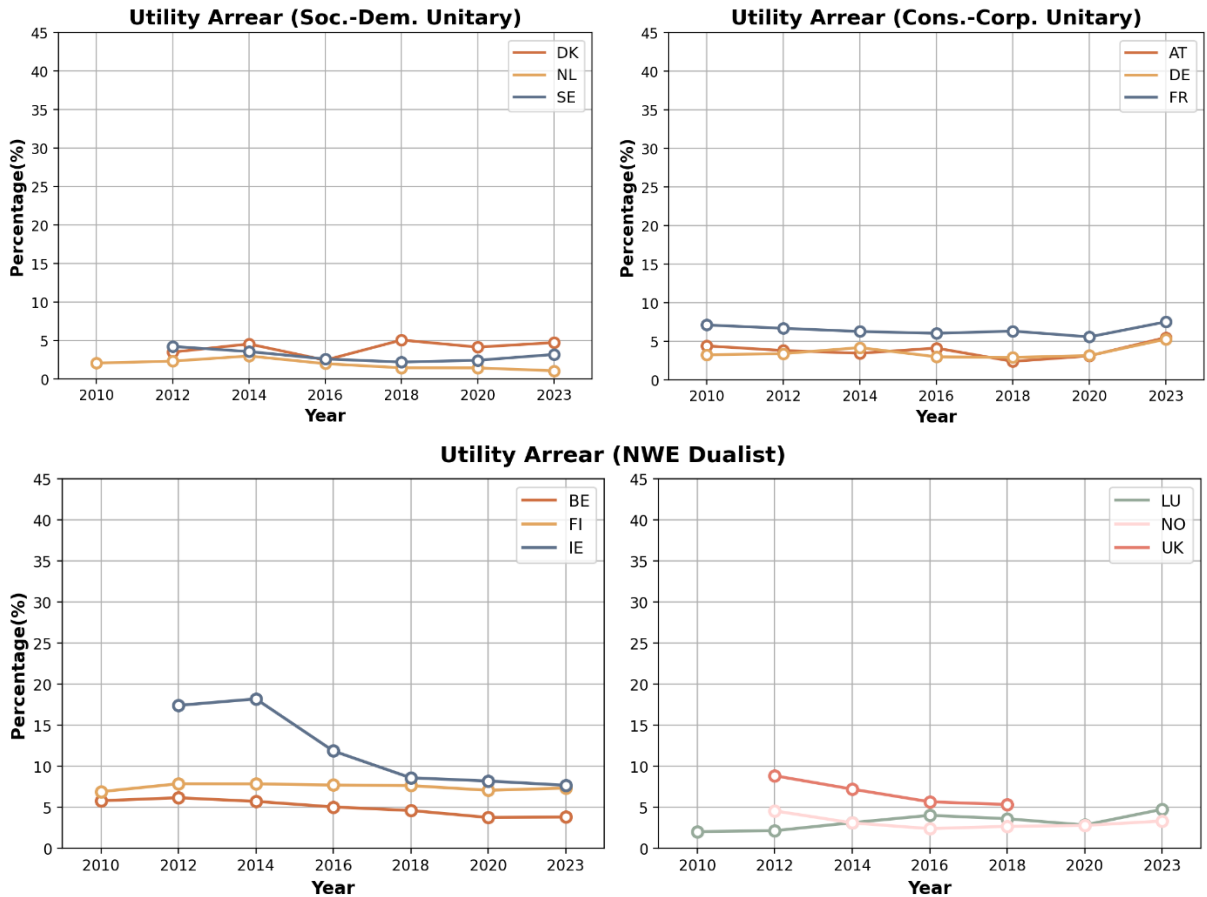


Figure 5.67 Trends in prevalence of utility arrear across unitary and dual rental market countries 2010-2023 (%)

Note: disconnected line indicates no data available for that year. Soc.-dem. unitary refers to social-democratic unitary rental market countries and cons.-corp. unitary refers to conservative-corporatist unitary rental market countries. NWE refers to North-Western Europe.

The trends observed in Figure 67 can also be observed in Figure 68 among low-income respondents. With the exception of Ireland and Finland, utility arrear is very rarely experienced among high-income respondents. Even in these two countries, the highest rate is 3.5% in Finland in 2014 and 5.7% in Ireland in 2014. As



the prevalence is mostly low and stable over time among high-income respondents, the gap between the low- and high-income and its trend over time is mostly determined by the rate of low-income respondents. The gap is the lowest over time in the Netherlands and the highest in Ireland.

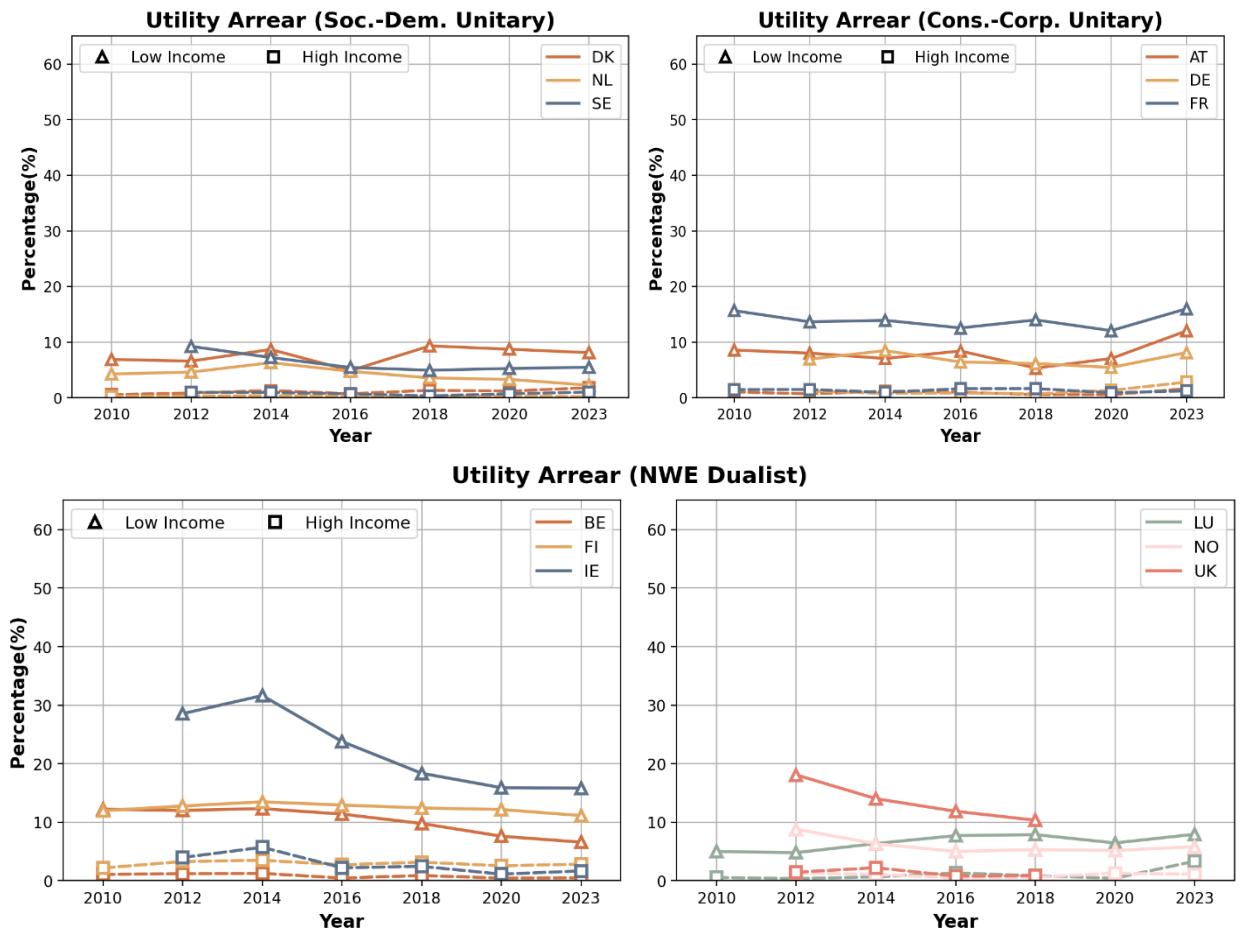


Figure 5.68 Trends in prevalence of utility arrear across unitary and dual rental market countries by income 2010-2023 (%)

Note: low income refers to the first tertile and high income refers to the third tertile. Soc.-dem. unitary refers to social-democratic unitary rental market countries and cons.-corp. unitary refers to conservative-corporatist unitary rental market countries. NWE refers to North-Western Europe.

Figure 69 shows the changes in the prevalence of utility arrears between the years 2010 and 2023 across tenure status. The change is generally minimal across the unitary rental market countries for all tenure statuses. It decreased for all



tenure statuses in the Netherlands and increased for all in Germany. In France, utility arrears increased for both the market- and reduced-rate renters but decreased for the homeowners. Among the NWE homeownership countries with dual rental market, the prevalence of utility arrears decreases for all tenure statuses in Belgium, Ireland, Norway and the UK. In Luxembourg, utility arrears increase for all tenure statuses, with the highest change among the market-rate renters by 4.8%p.

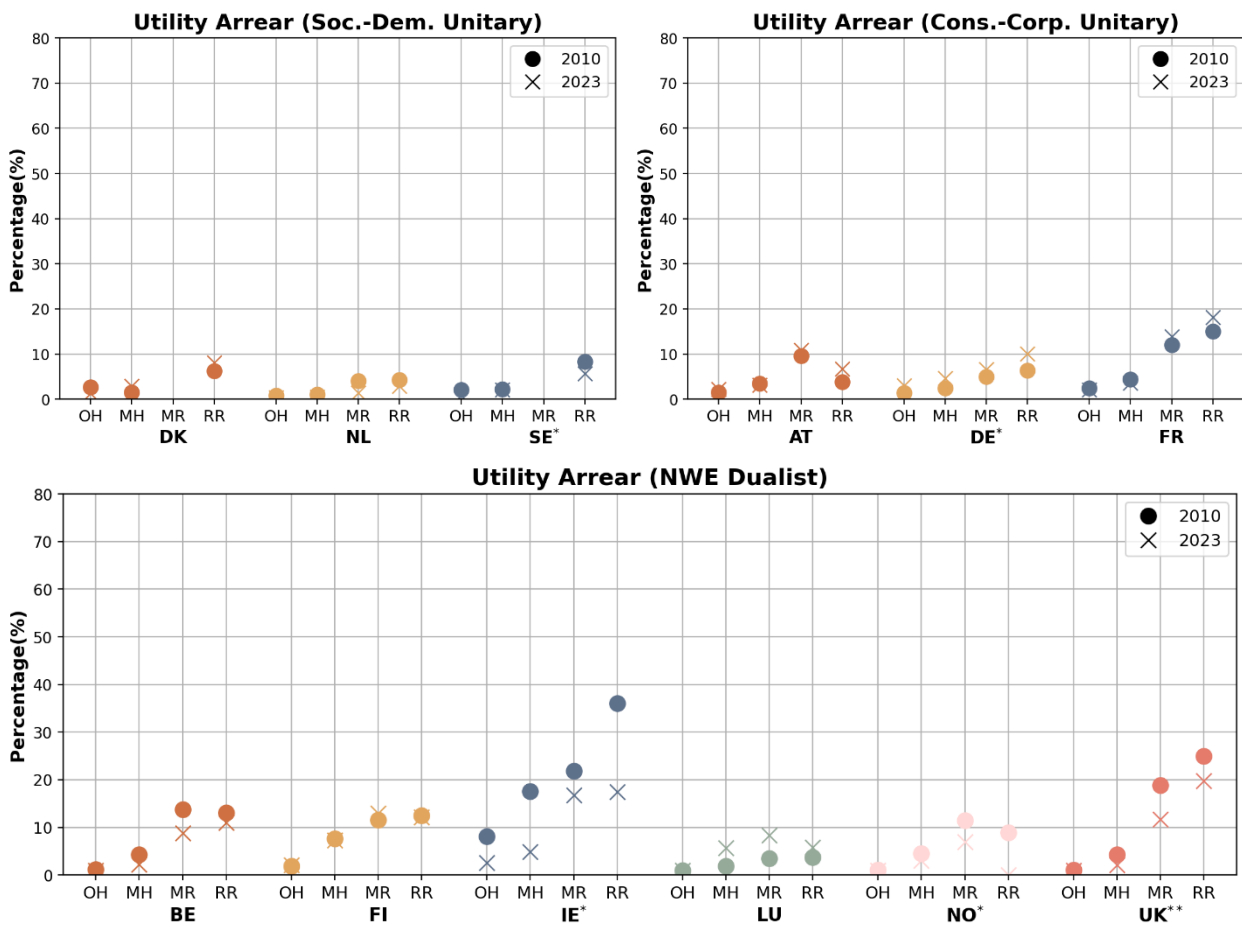


Figure 5.69 Changes in prevalence of utility arrear across unitary and dual rental market countries by tenure between 2010 and 2023 (%)

Note: Ireland compares year 2012 and 2023, and the UK compares 2012 and 2018 data due to data availability. Soc.-dem. unitary refers to social-democratic unitary rental market countries and cons.-corp. unitary refers to conservative-corporatist unitary rental market countries. NWE refers to North-Western Europe. OH=Outright Homeowners, MH=Mortgage Homeowners, MR=Market Rent, RR=Reduced Rent. Given no clear distinction between market rent and reduced rent in the Soc.-dem. unitary rental market countries, where rents are strictly regulated, all tenants are coded as renting at 'reduced rent'. This applies to DK and SE. In the NL, we distinguish the two rental tenures using the 'liberalisatiegrens'. This is a fixed amount that limits the starting rent of social rental housing, as opposed to a prevailing market rent. In the UK, as of 2017, housing associations are labelled as private rather than social housing providers, leading to a break in the data lines.





Figure 70 shows the trends in the prevalence of utility arrears between 2010 and 2023 across Southern European family-based homeownership countries. In all countries, with the exception of Greece, the prevalence of utility arrears increased until it reaches its peak in 2014, and decreased afterwards. However, this decrease is relatively small in Spain, so when it increases again from 2020, it reaches higher than 2014 (9.6% in 2023). Even though it increases again in 2020 in Italy as well, the decrease after 2014 is relatively large that the prevalence remains low. As mentioned, Greece is an outlier in this figure, not only in terms of its high prevalence of utility arrears which reaches 42.2% at its highest, but also in terms of its changing pattern. In contrast to the other continues, prevalence of utility arrears increase until 2016 and decrease from then to 2020, and then increases again in 2023. Despite the rapid decrease between 2016 and 2020, it remains the highest in all countries observed in this chapter.

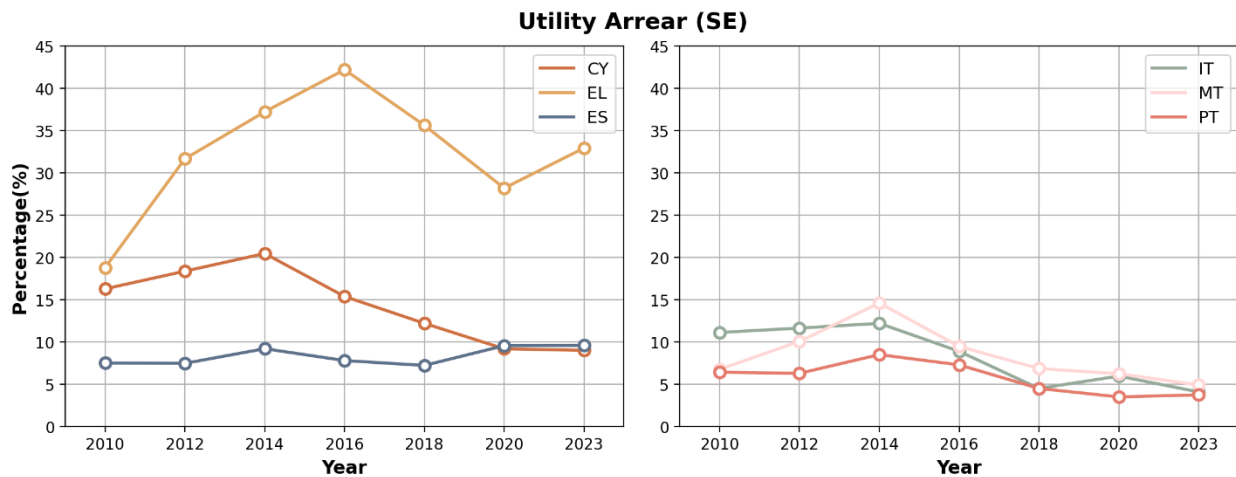


Figure 5.70 Trends in prevalence of utility arrear across SE family-based homeownership countries 2010-2023 (%)

Note: SE refers to Southern Europe.

Figure 71 shows how the trends observed in Figure 70 varies by income. This figure provides some explanations for the unique features observed in Greece. Focusing on the change between 2014 and 2016, we can observe only a small



increase among low-income respondents, and the continued rapid increase in the overall prevalence is driven by the rapid increase among high-income respondents during this time. While in most SE countries, the prevalence reaches its peak in 2014, it rose substantially among high-income respondents shortly after this period. Moreover, increase observed in the overall trend since 2020 for Spain is strengthened by the small but steady increase among high-income respondents, especially in 2023. Another thing to note is that while in some countries (e.g. Cyprus and Malta) both low- and high-income respondents follow similar patterns of change over time, in some countries (e.g., Spain, Italy, Portugal) the prevalence of utility arrears remains low and stable over time. This indicates that in some countries (such as the former cases) certain national context influences both low- and high-income households, although the gaps remain persistent, while in other countries (such as the latter cases) changes only occur among low-income respondents.

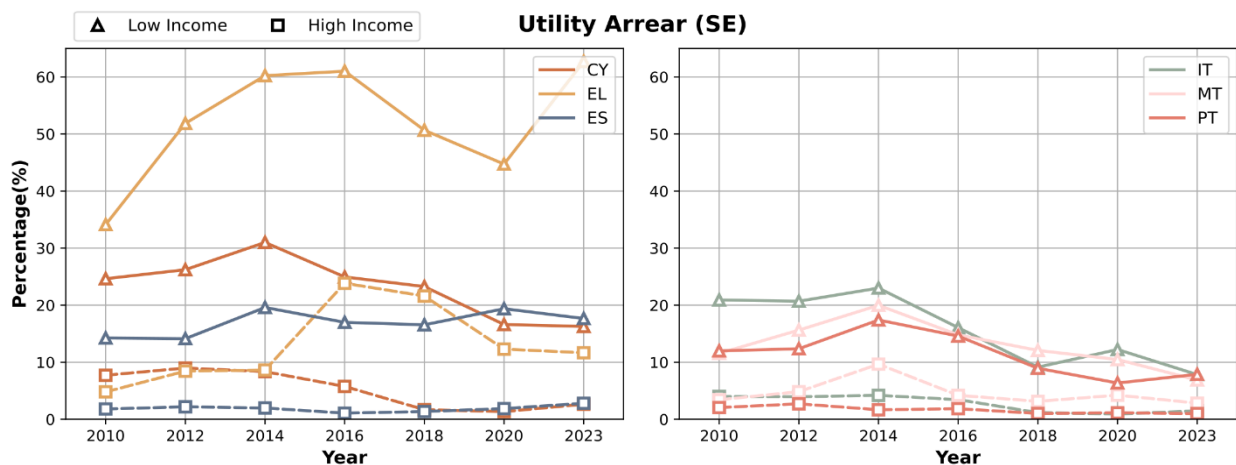


Figure 5.71 Trends in prevalence of utility arrear across SE family-based homeownership countries by income 2010-2023 (%)

Note: SE refers to Southern Europe.

Figure 72 shows the changes in the prevalence of utility arrear across the SE family-based homeownership countries by tenure between the year 2010 and 2023. In Cyprus, Italy and Malta, there is a decrease in the prevalence across all tenure statuses. The largest change in in Cyprus and Malta countries occurred



among the reduced-rents (Cyprus: 27.9%p; Malta: 3.7%p), while it is among the market renters in Italy (17.0%p). Increase in all tenure statuses is observed in Greece and Spain, with the largest change found also for the reduced-rate renters (Greece: 26.5%p; Spain: 5.4%p), however, followed by mortgage homeowners in Greece (23.5%p) and market-rate renters in Spain (4.4%p). In Portugal, utility arrears became more prevalent by 1.1%p among the reduced-rate renters, while it became less prevalent in all the other tenure statuses. The largest

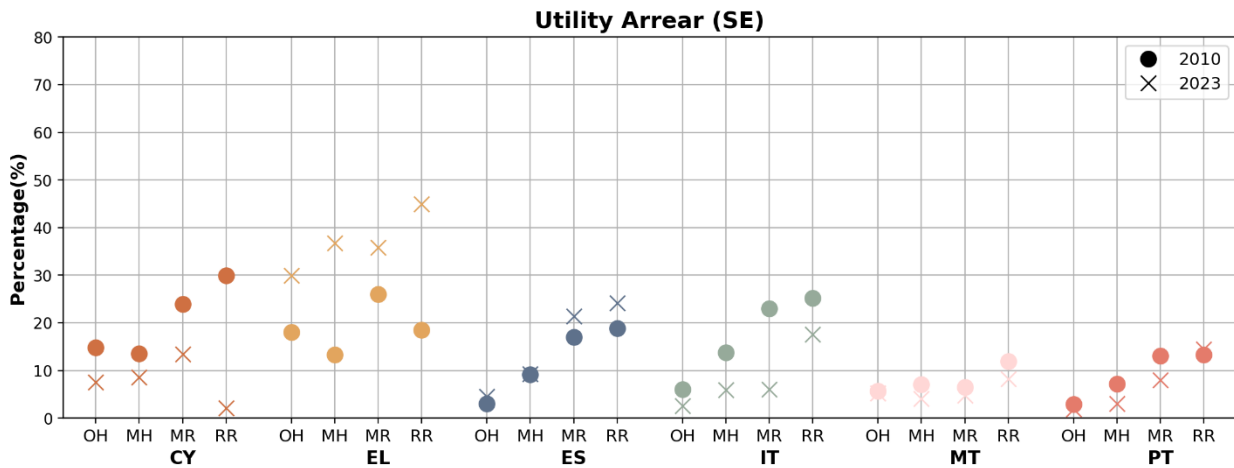


Figure 5.72 Changes in prevalence of utility arrear across SE family-based homeownership countries by tenure between year 2010 and 2023 (%)

Note: SE refers to Southern Europe. OH=Outright Homeowners, MH=Mortgage Homeowners, MR=Market Rent, RR=Reduced Rent.

Figure 73 shows the trends in the prevalence of utility arrears across Eastern European countries between 2010 and 2023. In Baltics, all countries show an overall declining trend. Two notable things are; first, prevalence of utility arrears starts to decrease after reaching its highest point in 2012 in Lithuania (12.6%); second, Latvia has experienced a large decline in utility arrears since 2010, as it started from relatively high rate of 22.5% and decreased to be show similar rate as the other Baltic countries. Three patterns can be observed among the Central Eastern European countries. First, similar to the Southern European countries, utility arrears tend to increase in early 2010s and decrease over a decade after reaching its highest point in 2012 or 2014. This is the case for Romania, Croatia,



Latvia, Slovenia, Poland and to a small extent Czech Republic. Second, although following the similar pattern as the first pattern since reaching its highest point in 2014, Bulgaria shows a decrease of utility arrears in 2012. Third, Slovakia maintains a relatively similar prevalence of utility arrears over time, despite some fluctuations.



Figure 5.73 Trends in prevalence of utility arrear across Eastern European countries 2010-2023 (%)

Note: CEE refers to Central Eastern Europe.

Figure 74 shows how the trend observed in Figure 73 varies across income level. With the exception of Czech Republic where the utility arrears is relatively not common even among low-income respondents, all other countries show relatively higher prevalence of utility arrears among high-income respondents



compared to the other European countries outside of Eastern Europe. However, in all countries, low-income respondents are more likely to experience utility arrears than high-income respondents, and their trend is more volatile than that of high-income respondents. This is a consistent finding across regimes. In most countries, the decrease in the prevalence of utility arrears among low-income respondents contributed to decreasing the gap between the low- and high-income over time. However, some countries (i.e. Bulgaria, Croatia, Romania, Slovakia) show an overall increase in the gap between the low- and high-income. In Bulgaria, this is because of the increase among low-income respondents in 2016, when it already starts to decrease among high-income respondents. Similar can be said about Croatia and Romania, because the prevalence of utility arrears only decreased over time among high-income respondents, while it increased in 2012 (and 2014 for Croatia) among low-income respondents. In Slovakia, the trend fluctuated for both income groups over time, but the bigger gap in 2023 is mostly due to the relatively rapid increase in the prevalence of utility arrears in 2023 among low-income respondents.



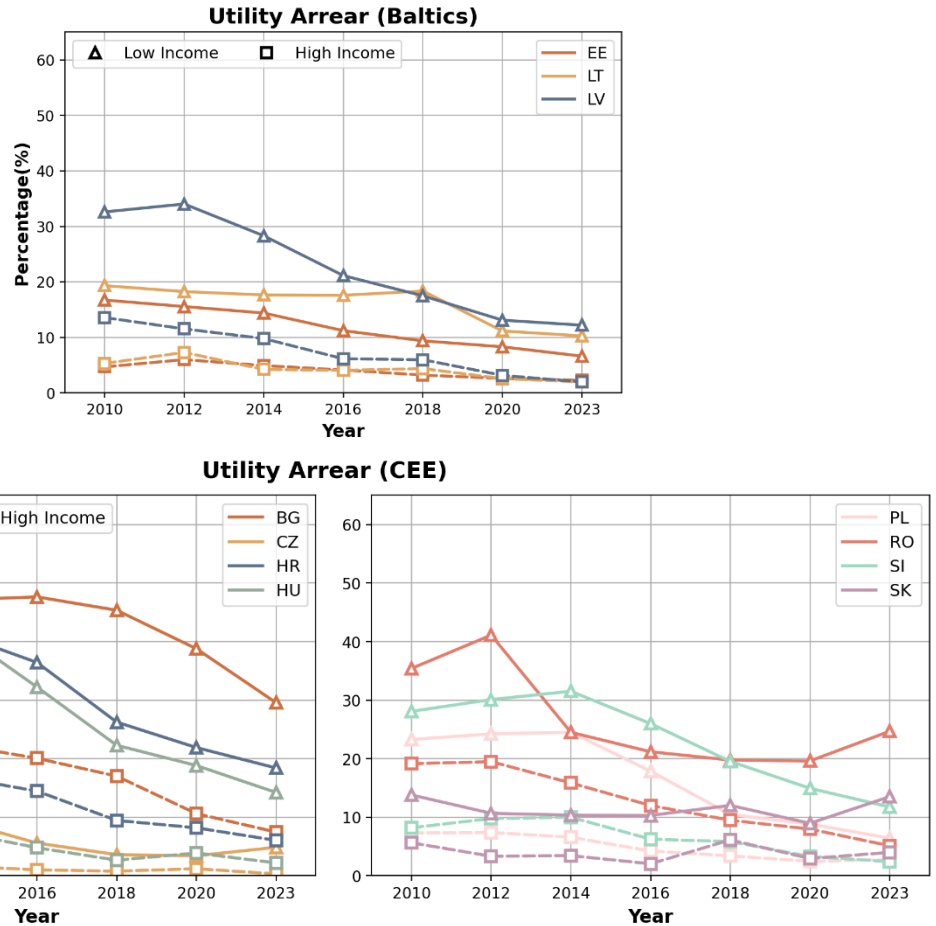


Figure 5.74 Trends in prevalence of utility arrear across Eastern European countries by income 2010-2023 (%)

Note: CEE refers to Central Eastern Europe. Note that reliability of household income data from Hungary between 2018-2021 are currently being debated.

Figure 75 shows the changes in the prevalence of utility arrears by tenure status between years 2010 and 2023 in Eastern Europe. In all countries, with the exception of Poland and Slovakia, there is a decrease in all tenure statuses. The largest difference within each country is found among the market-rate renters in Bulgaria (23.3%p) and Czech Republic (5.6%p), mortgage homeowners in Croatia (28.5%p), reduced-rate renters in Romania (41.7%p) and market-rate renters in Slovenia (22.5%p). In Hungary, mortgage homeowners, market- and reduced-rate renters experience less utility arrears to a similar extent, all almost 25%. In Poland and Slovakia, there is a decrease in all tenure statuses except for the reduced-rate rent, which increases by 7.8%p in Poland and 12.6%p in Slovakia.



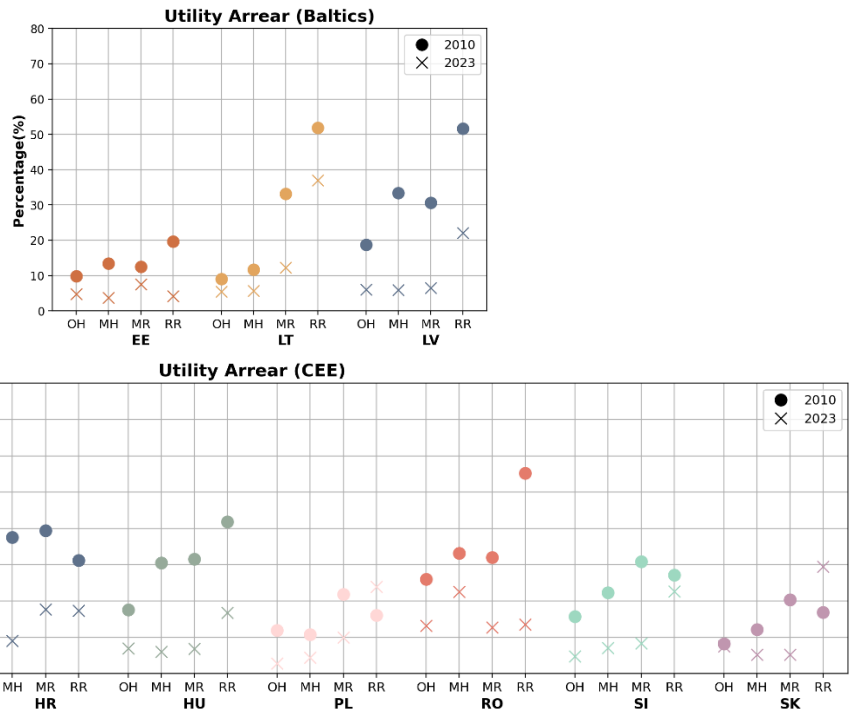


Figure 5.75 Changes in prevalence of utility arrear across Eastern European countries by tenure 2010-2023 (%)

Note: CEE refers to Central Eastern Europe. OH=Outright Homeowners, MH=Mortgage Homeowners, MR=Market Rent, RR=Reduced Rent.

5.5.3 Summary

Between 2010 and 2023, heating unaffordability — used as a measure of energy poverty — remained a significant issue across Europe, particularly for low-income households and renters. Even in countries with a generally low housing unaffordability rate (notably Northern and Western European countries), many countries observed a slight increase after 2020. While individuals in high-income households generally experienced low and stable unaffordability rates, Lithuania and Bulgaria stood out due to their high level of heating unaffordability, even among individuals in high-income households. Furthermore, while a large gap between the two income groups remained in Bulgaria, Lithuania showed a distinct pattern where changes over time were led by high-income individuals. In Lithuania, the housing unaffordability rate remained relatively stable over time for



low-income respondents, but fluctuated considerably for high-income respondents. Moreover, Cyprus, Greece, and Portugal exhibited significant income-based disparities. By tenure status, reduced-rate renters were consistently the most affected, with notable increases in countries such as the Netherlands, Denmark, Greece, Portugal and Slovakia. In contrast, Cyprus and several Eastern European countries (e.g., Lithuania, Latvia and Bulgaria) saw improvements across most tenure statuses. In Spain and France, both market- and reduced-rate renters found heating more difficult to afford.

We observed significant regional differences in terms of utility arrears. It remained relatively low and stable in Northern and Western Europe (with the exception of Ireland), in contrast to the fluctuations and high levels of utility arrears as well as the overall decline, in Southern and Eastern Europe (with the exception of Greece, which has seen a sharp increase in recent years). Low-income respondents consistently faced higher arrears, with the gap between income groups narrowing in some countries due to improvements among low-income households. Greece is a notable outlier, with relatively high arrears for high-income respondents, but also a widening gap in recent years due to a sharp increase among low-income respondents. Slight increases in recent years in Conservative-corporatist unitary rental market countries were driven by low-income respondents, while the slight increase in Luxembourg was driven by high-income respondents. Among countries experiencing substantial changes over time, all tenure statuses exhibited similar patterns (either increasing or decreasing). However, Poland and Slovakia are two notable outliers, where arrears increased for reduced-rate renters while decreasing for all other tenure statuses.

Overall, the data reveal that energy poverty remains a key issue in Southern and Eastern Europe and that more attention is needed for Northern and Western Europe, especially for low-income respondents households and renters. The data demonstrate how the sharp increase in energy prices in recent years (FEANTSA, 2024) has affected households differently depending on their income level and whether they are homeowners or renters.

5.6 Conclusion

This chapter examined trends in five key housing problems (i.e. affordability, quality, overcrowding, security and energy poverty) between 2010 and 2023 across Europe. The analysis focused on seven indicators: objective overburden, subjective burden, housing deprivation, rent or mortgage arrears, heating affordability and utility arrears. We found diverging trends in Europe's housing market, mainly driven by low-income households and renters.

Overall, social-democratic unitary rental market countries showed a generally low and stable level of the housing problems observed in this chapter, with the exception of the objective overburden rate. While the conservative-corporatist unitary rental market countries showed similar patterns to social-democratic countries in many problems, variations were observed within this regime with regard to affordability and quality issues. Germany tends to have a relatively high level of objective overburden rate, while France has a relatively high subjective burden rate and rate of housing deprivation. Austria, on the other hand, has experienced a sharp increase in the overburden rate in recent years. North-Western European dual rental market countries demonstrated substantial differences in most housing problems across countries. This calls for closer examination of what constitutes a dual rental market regime, as different outcomes may be due to variations in individual attributes. Norway, in particular, has more in common with social-democratic countries than countries in the dual rental market regime.

Southern and Eastern Europe experienced more dramatic shifts. Greece stands out in Southern Europe with its high objective overburden rate and high level of (both) arrears, albeit with fluctuations over time and declines in rent or mortgage arrears. This suggests that housing costs are a significant issue in Greece, endangering the housing security of its population. This further explains its high rate of overcrowding, which is potentially related to intergenerational co-

residence (see Dagkouli-Kyriakoglou, 2018). Conversely, Cyprus and Portugal showed persistently poor housing quality, which may explain their high heating unaffordability rates and utility arrears (for Cyprus's case), albeit with a decline over time. By contrast, most Eastern European countries showed overall improvements in the observed housing problems over time. Housing quality improved substantially in particular (with the exception of Slovakia and the Czech Republic, which already had better housing quality than the rest), reaching a level similar to that in some Western countries, such as Belgium, Luxembourg, France and Germany. Overall improvements in utility arrears are likely to be related to housing quality and, consequently, improvements in subjective burden. Despite sharp declines in some countries, especially between 2010 and 2012, overcrowding has remained a persistent issue in Eastern European countries.

Across Europe, individuals in low-income households consistently bore the brunt of housing problems. These respondents face higher rates of housing cost overburden, poor housing quality, housing insecurity, overcrowding, and energy poverty. By contrast, high-income respondents were generally insulated from these issues, with cost overburden rates typically below 3%. However, subjective housing cost burdens have risen even among high-income respondents in many countries. While a certain level of housing deprivation persists among high-income groups, notable improvements in housing deprivation among low-income groups in Eastern Europe have narrowed income-based disparities. In Northern and Western European countries, income level was a key determining factor in overcrowding, while in some Southern and Eastern European countries, overcrowding at a high level implies other contributing factors besides income. Some Eastern European countries and Greece have a relatively high level of energy poverty among high-income respondents, which has declined over time. Nevertheless, the persistence of high burdens among low-income respondents across housing problems underscores inequality in the European housing market.

Examining the trend by tenure status revealed nuances that varied across countries. Renters, especially those in reduced-rate rental housing, were more vulnerable across all observed indicators. In contrast, outright homeowners generally fared better, with mortgage homeowners showing mixed results depending on the country and indicator. The Netherlands, Ireland, the UK and Spain are good examples of these opposing patterns between homeowners and renters when it comes to overburden rate. Furthermore, discrepancies were found between market- and reduced-rate renters. In some cases, market-rate renters fare better over time, while the housing situation for reduced-rate renters worsens (e.g. overburden in Spain, Malta, Lithuania; subjective burden in Portugal; housing deprivation in Slovakia; overcrowding in Portugal and Slovakia; renter/mortgage arrears in Norway, Portugal, Slovakia; heating affordability in Portugal, Slovenia; and utility arrears in Poland and Slovakia). This may be due to the residualisation of social housing or state intervention in housing issues (Angel, 2023). Slovakia, in particular, stands out for its worsening situation for reduced-rate renters over time. Conversely, there have been cases where the situation has improved for reduced-rate renters but worsened for market-rate renters (e.g., overburden in Estonia; subjective burden in Ireland; housing deprivation in Cyprus and Bulgaria; overcrowding in Ireland; and heating affordability in Ireland). This may be due to deregulation and increased housing costs in the private rental sector in most countries (EUROFOUND, 2023). Ireland stands out as a typical example of a worsening situation for market renters. These patterns highlight nuanced changes in each country that could be obscured by aggregate data, revealing how housing problems in Europe have primarily affected renters over time.

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