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Abstract

Finally, after a lengthy hiatus, the empirical facts of economic inequality need no introduction. In a blaze of publicity during a decade or more, the re-polarization of income and wealth across nearly half a century has been widely documented

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and is substantially uncontested. There is debate on whether incomes have peaked, no doubt that capital is back, and a great deal of speculation on what might happen next. What is surprising is the limited attention afforded to the pivotal role of housing. To address that gap, conceptually and empirically, this paper draws from panel surveys in three countries across two decades to locate residential property generally, and owner-occupation in particular, within a wider literature on the shape of economic inequality in the long run.

Keywords: housing; home-ownership; economic inequality; Australia; UK; USA.

Introduction: 'Peak inequality'?

The turn to economic inequality over the last half century is a well-documented, substantially uncontested discovery. It follows a game-changing empirical intervention in otherwise-theoretical debates by a group of methodical economists who assembled long runs of data from income tax records and related sources. Definitive early interventions from Alderson and Nielson (2002), Atkinson *et al.* (1989), Atkinson (2003), and Piketty and Saez (2003) culminated in the construction, in 2011, of the world inequality database (WID) now covering over 60 countries in an international effort to harmonize key data on both income and wealth (Blanchet *et al.*, 2021).

The early headlines, graphically presented by Atkinson *et al.* (2011) and Piketty (2014) show that for all income from all sources, within a range of jurisdictions across a century or more, there is a U-shaped curve in the plot over time of the proportion accruing to the top decile. At the zeniths, in the more developed economies and especially the English-speaking world, between a third and a half of all incomes flow to little more than one tenth of the population (Alvaredo *et al.*, 2018).

Initially, the late twentieth century return to inequality was associated with what Piketty and Saez (2014) describe as a 'great inequality reversal'. In the 1930s, the majority of income at the top of the range derived from the ownership of capital, whereas, following a collapse in the value of private wealth, the U-turn to inequality in the 1980s was spearheaded by the polarization of earnings (Alvaredo *et al.*, 2013). As economic inequality intensified into the 2000s, therefore, capital income was less important relative to labour income than it had been a century before, turning particular attention to the salaries of the super-rich (e.g. Volscho & Kelly, 2012).

More recently, however, with corporate profits rising steeply against a background of wage stagnation, income from the ownership of capital has recovered, as has the underlying value of private property (Chancel, 2019). Wealth inequality has always been more extreme than income inequality; its resurgence is now apparent across Europe (Balestra & Tonkin, 2018) especially the United Kingdom (Advani & Summers, 2020), in Australia and the United States (Fisher-Post, 2020) and, indeed, throughout the world (Ranaldi, 2021). As Piketty and Zucman (2014) so evocatively put it: 'capital is back'.

As key measures of economic inequality across a variety of jurisdictions regain their former strength, possibly levelling off (Morgan & Neef, 2020), it is tempting to imagine a new peak in a long economic cycle which, whether by accident or design, prefaces a more egalitarian future (Dorling, 2018; Milanovic, 2016). However, the recovery of capital values and the growth of capital income are relatively recent, and the ratio of capital income to labour income is still increasing. Piketty (2015a), therefore, is circumspect: 'one central question for the future' he argues 'is to better understand the conditions under which the concentration of property might return to pre-1914 levels' (p. 635). That better understanding depends partly on the rate at which surplus top incomes are rolled over into capital as described by Berman and Milanovic (2020) for the United States; partly on the speed of enclosure of public land documented by Christophers (2018) for the United Kingdom; and mainly on a factor related to both, the changing ownership of the world's largest class of assets – residential property – which is the subject of this paper.

Housing as capital in the twenty-first century

A distinguishing feature of the past half century is the unprecedented accumulation of wealth into residential property through a long wave of house price appreciation that was, for the first time, global in reach and synchronized across jurisdictions (Renaud & Kim, 2007). This turned residential property into the largest capital asset in the investable economy, exceeding the combined value of equities, commercial property, agricultural land, forestry and all gold ever mined (*The Economist*, 2020). Housing accounts for the majority of the twenty-first century rise in total private wealth (Piketty & Zucman, 2014), for the lion's share of total return on aggregate wealth (Saez & Zucman, 2016), and for the majority of growth in wealth-to-income ratios (Blanchet *et al.*, 2020); it is the best long run investment ever (Jordá *et al.*, 2019) whose value in relation to the overall stock of capital and income 'is truly without historical precedent' (Fernandez & Aalbers, 2017, p. 152). Today, residential real estate forms the heart of what Adkins *et al.* (2020) describe as a new 'asset economy'.

Put another way, the absorption of capital by residential real estate is one of the defining characteristics of the current regime of accumulation, providing much of the territory on which Piketty's (2014) core disparity between (stagnant) earned incomes and (rising) returns on the ownership of capital now plays out (Maclennan & Maio, 2017). Although Piketty himself locates housing among the 'diversity of forms' (2015b, p. 521) that capital takes, he does, by his own admission, underplay its role in answering the 'central question for the future'. It may, nevertheless, be key; because, in contrast to the assets (agricultural land, industrial plant) associated with capital accumulation in previous regimes of inequality, the ownership of residential property today is widely dispersed. It is the one class of assets that, across the turn of the millennium, to a much greater extent than shares or other financial wealth, was distributed into the hands of the many. This was achieved by the steady expansion of mortgaged owner-occupation which, by the early 2000s, had inserted itself into the otherwise slim wealth portfolios of between two-thirds and three-quarters of the populations of most countries in the more developed world (Causa *et al.*, 2019).

As a style of shelter, owner-occupation – a bundle of housing services tied indivisibly to an investment vehicle – though popular, has not been an unqualified success. It is an awkward hybrid of asset, debt and consumption good which, contrary to ingrained ideological claims, can be unaffordable, exclusionary and unsustainable, fuelling speculation that 'post-homeownership' futures beckon and indeed may be welcome (Arundel & Doling, 2017; Arundel & Ronald, 2021). As a tenure-type, on the other hand, owner occupation was not designed to be universal or egalitarian. It was never part of a welfare ideal using progressive taxation to mitigate market risk or allocate homes according to need. That was the province of state-owned housing on state-owned land whose expansion and decline has its own chapter in the story of why wealth-holdings were slower to repolarize than incomes (Christophers, 2020). The growth of owner-occupation was, rather, fuelled by the same neoliberal political-economic nexus – the same deregulatory, low-inflation, regressive taxation regime – that inspired the entire U-turn to inequality.

Owner-occupation should, at the height of financial neoliberalism, be questioned on its achievements as a housing service; but for its unique place in the distribution of wealth, it should also be interrogated for its role in mediating the present regime of inequality. That is the aim of this paper, which tracks households in three jurisdictions through the twenty-first century to shed light on how shifts in the ownership of residential capital figure in the changing shape of economic inequality over the relatively long run.

After introducing the data resources and approach, we summarize the empirical results and draw out their conceptual implications in three sections. First, we document changes, over the twenty-first century and across successive cohorts, of buy-in to, and lock-out from, owner-occupation. We then follow mortgage debt from the mainstream to the margins of the sector, exposing a social, perhaps politicizing, divide in its wake. Finally, we turn to the changing distribution of unmortgaged housing equity and its implications for 'peak inequality'. In conclusion we consider whether 'post-homeownership' societies are inevitable or desirable, what they might look like and whether, indeed, housing may be a route by which, in Piketty's (2014) own words, 'democracy is someday to regain control of capitalism' (p. 570).

An empirical inquiry

This paper is not the first to consider how Piketty's broad thesis may apply to, or be developed through, residential property. It is, however, among only a few attempts to insert housing empirically into wider debates on economic inequality in the long run, contributing to a project that brought trends in income inequality to the fore over a decade ago. It is also original in comparing three iconic 'home-ownership' societies using matched longitudinal, as well as cross-sectional, data from well-established representative national panel surveys over nearly 20 years.

The three jurisdictions span the English-speaking world in which mortgaged owner-occupation first gained traction. Two of them – the United States and the United Kingdom – spearheaded the turn to inequality in the 1980s (Alderson & Nielson, 2002), during which the United Kingdom shifted from being one of the most, to one of the least, egalitarian European regimes (Dorling, 2015). Australia, meanwhile, is a country that looks more like the rest of Europe (Fisher-Post, 2020). As the 2020s dawned, in Australia, the United Kingdom and the United States respectively, the top 1 per cent were accruing 13, 13 and 19 per cent of all income (World Inequality Database, accessed 20/08/2021), and held around 16, 23 and 41 per cent of all wealth (OECD, 2021). In terms of income and wealth inequality these jurisdictions are far from egalitarian yet span a wide range.

These countries also exhibit important institutional differences (not least the structure of mortgage markets, the role of state pensions, and the configuration of the rental sector). However, in a time-frame spanning a housing-triggered global financial crisis, such differences are eclipsed by one key commonality: they all support tenure-divided housing systems with substantial highly mortgaged, tax-benefitted owner-occupied sectors that, in their heyday, accommodated between two-thirds and three-quarters of all households. That institutional congruity is our starting point.

To track individuals and cohorts through time we use data from the national panel surveys for each jurisdiction which share design features to facilitate comparison. They are the Household, Income and Labour Dynamics in Australia Survey (HILDA), the British Household Panel Survey (BHPS) together with its successor (to which it is incorporated) Understanding Society (UKHLS), and the US Panel Survey of Income Dynamics (PSID). In our analysis, the last data point for all three surveys is 2017. Although PSID dates from 1968 and BHPS/UKHLS from 1991, HILDA dating from 2001, is the constraint on a common baseline. Our analysis therefore refers broadly to the opening two decades of the twenty-first century – years during which the resurgence of within-country economic inequality, notwithstanding fluctuations through the GFC, became increasingly apparent (Keeley, 2015).

Panel surveys return to the same households in every wave, enabling researchers to track individuals over time as they age. Here, focussing on the over-25s, we offer a mix of cross-sectional and longitudinal analyses. For the latter we use balanced panels of households or individuals who responded to key questions (on tenure, housing finance and age) in all waves. The loss of those who cannot be tracked over all waves (about 10 per cent) compounds the attrition bias from which all panel surveys suffer. However, to the extent that we aim to paint a large canvas with a broad brush, balanced panels add consistency and robustness to our estimates of trends through time. Further details on sample design, population weights (for cross-sectional analyses), and the empirical approach overall are described in the supplemental material.

Owner-occupation: Buy-in to 'the people's wealth'

Owner-occupation (whether outright, or mortgaged) has conveyed to a broad cross-section of the American, Australian and British publics the title to a class of assets which, a century ago, most could not hold. Since the turn of the millennium, however, that sector has waned: looking cross-sectionally from 2001 to 2017, we observe an overall decline from 69 per cent to 64 per cent in Australia, 67 per cent to 59 per cent in the United States, and in the United Kingdom, from a peak of three-quarters in 2007–2008, a drop to just two-thirds.

Figure 1 shows that this trend obtains in all jurisdictions, particularly in the aftermath of the GFC, and especially among the young. The age differential is not unexpected: substantial deposits, like regular incomes to support mortgage repayments, take time to acquire. For practically every observable year of the twenty-first century in every jurisdiction, therefore, rates of owner-occupation are lower among the early-career under-35s than among the more established over-45s. What is striking, however, is how much that differential has

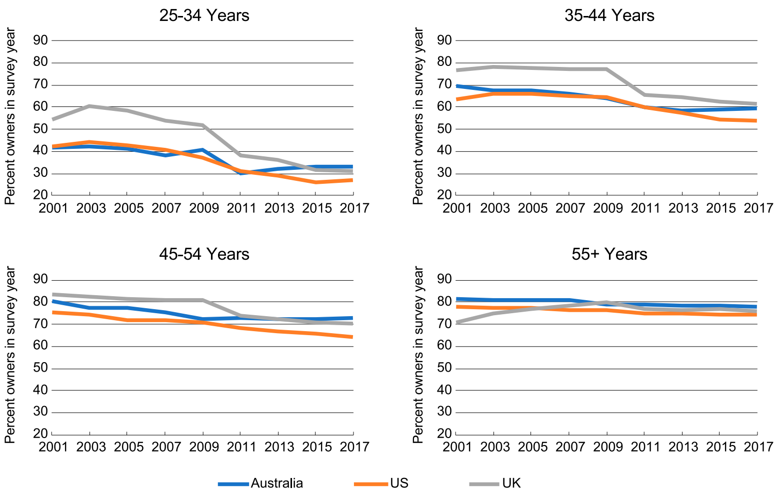

Figure 1 Rates of owner-occupation, by age, 2001–2017
Source: Authors' estimates; HILDA 2001–2017, PSID 2001–2017, BHPS 2001–2008, UKHLS 2011–2017.
Note: Cross-sectional weighted sample of individuals (supplemental material section A4.2.1)

widened over time. Owner-occupation is contracting among all age groups (with the exception of the over-55s in the United Kingdom), but it is shrinking disproportionately and increasingly among the young. In fact, only around a third of 25–34-year-olds in any jurisdiction (even less in the United States) had attained owner-occupation by 2017.

This dramatic loss of purchase on owner-occupation among young people has been widely reported. In the United Kingdom, Arundel (2017), and for the United States, Clark (2019), for example, find owner-occupation at its lowest in half a century among young adults, and in Australia the proportion of new buyers in the market is at an all-time low. This same trend is observed by Arundel and Ronald (2021) using cross-sectional data from the Luxembourg Income Study. In Figure 2, we exploit the longitudinal nature of the panel survey data to show how this pattern emerged. The figure shows the shift between 2001 and 2017 in the tenure shares held by four 10-year birth cohorts, tracking people born between the mid-1940s and the mid-1970s as they approach the present day. Three things are of note.

First, mirroring the cross-sectional patterns above, as older cohorts entered the 2000s they had a much higher likelihood than their younger counterparts of being owner-occupiers. They generally maintained this advantage over time, notwithstanding a slight decline among those who are now in their seventies. Second, among the two younger cohorts, the likelihood of being in owner-occupation in all three countries nevertheless *increased* with each successive year of the millennium to as much as 70–80 per cent by 2017. Third, the under-35s

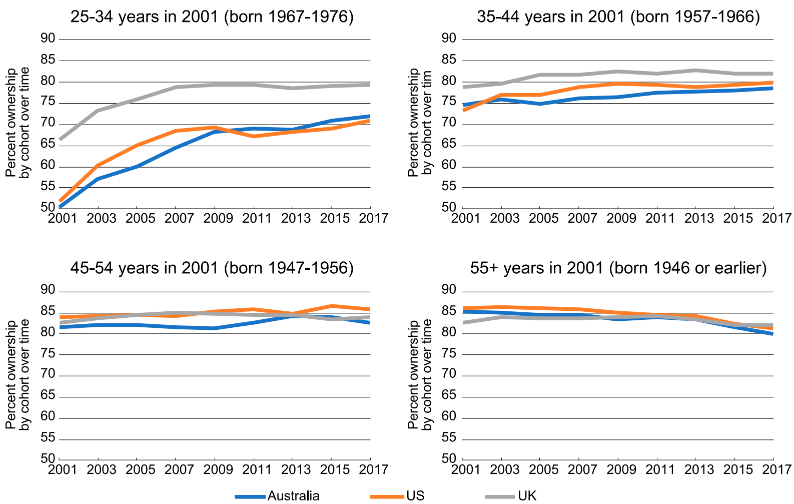

Figure 2 Owner-occupation: cohort effects, 2001–2017
Source: Authors' estimates; HILDA 2001–2017, PSID 2001–2017, BHPS 2001–2008, UKHLS 2011–2017.
Note: Balanced panel of individuals (supplemental material section A4.1.1)

stand out, not only for starting the millennium with far higher ownership rates than their present-day counterparts, but for expanding their share by10 per cent in the United Kingdom, and as much 20 per cent in the United States and Australia, over the studied period. In all three jurisdictions, those entering the housing market as young people in 2001 had good prospects of attaining and sustaining owner-occupation over the following 17 years. Any shift is very recent.

This is underlined by comparing the rates of ownership attained by successive cohorts as they age at different times. For example, in Australia the ownership rates of those who were 35–44 years old in 2001 hovered around three-quarters in that year and in each of the subsequent three years. In contrast, the ownership rates of those who were 35–44 years old a decade later, in 2011 (i.e. who were 25–34 years old in 2001) were consistently lower, rising from 69 to 72 per cent over three years but never quite catching up. This depression of a few percentage points as one cohort follows the next is paralleled in the United States. The lag is small but worth noting because when the ownership rates of the older groups are compared in the same way – starting with those over 55 in 2001 whose rates climbed to as much as 85 per cent – there is no cross-cohort decline. That means that the drop off in ownership rates among older cohorts in Australia and the United States, like the taper among the young, is a new tendency.

In short, the longitudinal data enlarge on the cross-sectional perspective by showing the relatively-recent steadily-loosening grip of the dominant tenure type in all three jurisdictions, primarily among the young. When tracked longitudinally from the turn of the millennium, those aged 25–34 in 2001 were able to expand their rates of ownership to the end of the study period. Yet, when viewed cross-sectionally, year on year since 2001 young people's ownership rates have fallen. While it is, of course possible that today's 25–34-year-olds are simply postponing their first-time purchase, the scale of these shifts and their coordination across jurisdictions signals a more systematic, structural shift. House prices are outstripping incomes to an extent that neither imaginative savings schemes, nor special incentives for first-time buyers can bridge and whose effects are exacerbated by post-GFC macro-prudential tools (Williams *et al.*, 2017), all raising the possibility of permanent exclusion.

Although the contraction of home-ownership is generally attributed to the progressive 'lock out' of younger generations, these data equally raise the possibility of 'drop out' at any age, perhaps as the edges of ownership become less sustainable. A glimpse of this can be seen for Australia in Table 1, which shows the proportion of renters at three points in time across four age bands who have never owned, as well as the proportion who have.

Overall, the likelihood of renters having never owned has increased, primarily due to exclusion among the under-35s. Drop out, in contrast, dominates in later life, where it has become more marked among the over-55s, notwithstanding some transition back and forth between tenures which is itself age-selective (Ong *et al.*, 2021). As wage stagnation sets in, and with older households

Table 1 Proportion of renters who have ever been in owner-occupation: Australia

Age	25–34		35–44		45–54		55+		All over 25	
Year	Never	Ever	Never	Ever	Never	Ever	Never	Ever	Never	Ever
2007	80	20	62	38	46	54	39	61	60	40
2011	80	20	59	41	47	53	34	66	58	42
2015	86	14	62	38	46	54	35	65	63	37

Source: Authors' estimates; HILDA 2006–2007, 2010–2011, 2014–2015.
Note: Unbalanced panel of individuals (supplemental material section A4.1.2.)

easing out, owner-occupation seems not only less attainable, but also less sustainable over the long term, than it was (Wood *et al.*, 2017). So the scene seems set across the piece for housing wealth to slip from the hands of home-occupiers into the portfolios of individual and institutional rentiers – a point we return to later.

The edges of ownership

While the expansion of home-ownership is an important part of the story of inequality, the narrative is complicated by the role and relevance of mortgage debt which, for most households, is a condition of entry to the sector. Mortgagors own the title to their property, bear the risks of price volatility and benefit from any net (usually tax-advantaged) investment gain that may accumulate in their home. However, mortgages place a third-party charge over properties which remains in effect unless and until the debts it secures are cleared. So mortgaged homes are closer to the edges of ownership than homes that are owned outright, and trends in mortgage debt have a bearing both on the sustainability of owner-occupation and on the distribution of net housing wealth.

The growth and deregulation of mortgage lending was key to the expansion of owner-occupation through the late twentieth century. Traditionally, mortgages were steadily paid down across the life course, leaving little residual debt and high rates of outright ownership in older-age. However, against mixed underlying trends (an expansion in the proportion of mortgagors in Australia from just under to just over half, a mirror-image contraction in the United Kingdom, and a drop from nearly three-quarters to two thirds in the United States), this pattern changed in the twenty-first century, in at least three ways.

First, as shown in Figure 3, while the mortgaged frontier belongs to young people, it has been expanding up the age range, particularly in Australia. Here the proportion of households with outstanding loans climbed to nearly three-quarters among 45–54-year-olds, while more than doubling among the over-55s (to just over a quarter); even among 35–44-year-olds the already-low rate of outright ownership halved (to 12 per cent). The United States also saw a disproportionate net uplift in mortgagors among the over-55s, half or more reporting outstanding loans at each survey point since 2009. In the United Kingdom, by contrast, over 80 per cent of over-55s own outright – the highest figure in the study, and one that has changed little over time. Nevertheless, even here, around three quarters of 45–54-year-olds still have a mortgage to pay.

Among the under-35s, the vast majority (over nine out of 10) were mortgagors in every observable year. As ownership rates decline overall, however, there is a slight leaning towards outright ownership among this group, especially in the United States, where the proportion of young people who are outright owners doubled to 13 per cent. This may reflect the extent to which young home buyers now rely on gifts and bequests to bridge an affordability gap. It also suggests that entry to owner occupation is increasingly wealth-selective.

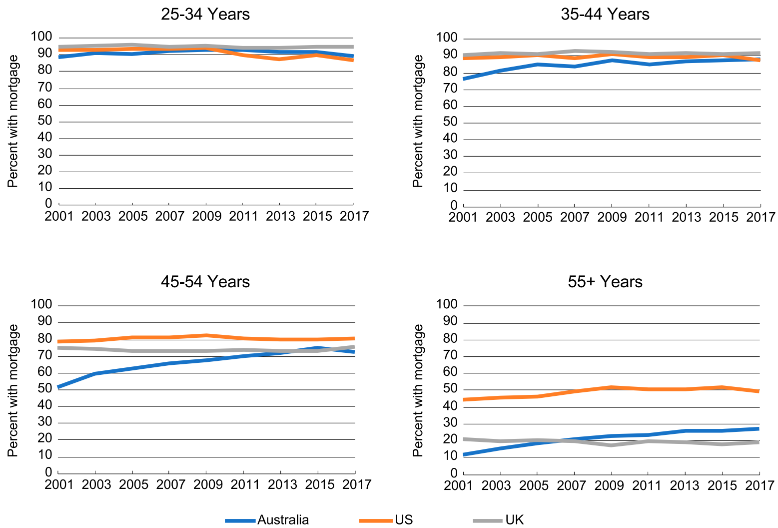

Figure 3 Share of owner-occupiers who are mortgagors, by age
Source: Authors' estimates; HILDA 2001–2017, PSID 2001–2017, BHPS 2001–2008, UKHLS 2011–2017.
Note: Cross-sectional weighted sample of individuals (supplemental material, section A4.2.1.)

Second, while the majority of mortgagors are consistently net equity injectors – i.e. they reduce the size of their outstanding loan year on year – this is no longer a trend we can take for granted. In fact, as many as two in five borrowers increased rather than paid down their loan between survey waves, as a surge of new funds for lending made its way through the housing market in the early 2000s. Furthermore, while the sharp credit constraints imposed by the GFC curbed this to some extent, at least one in four mortgagors in every country ended every accounting period of the twenty-first century with a higher outstanding home loan than they held at the start, and the size of these debts has increased (except among the top 1 per cent by housing wealth in the United States).

To the extent that this uplift in borrowing constitutes leverage for up-sizing as incomes grow and buyers seek to maximize their tax-advantaged home investments, its distributional impact can be seen in Table 2, which compares changes in borrowing with trends in home values.

Australia is distinctive in that overall mean outstanding mortgage debts, which expanded by over 150 per cent between 2001 and 2017, accumulated well ahead of the growth in home values. This tendency is particularly marked among the top 1 and 10 per cent ranked by net home equity, for whom the magnitude of new borrowing dramatically outstripped house price appreciation. This appetite for debt among the 'housing asset-rich' may have an institutional explanation related to pension wealth-holdings (Haffner

Table 2 Property values and mortgage debt among owner-occupiers, 2001–2017

	Mean primary home value			Mean primary home debt		
	Top 10%	Top 1%	All	Top 10%	Top 1%	All
AUS ('000 AU$)						
2001	948	2,371	387	48	64	72
2017	1,691	3,642	762	155	315	183
Change 2001–2017 (%)	*78*	*54*	*97*	*221*	*390*	*152*
USA ('000 US$)						
2001	658	1,542	227	115	237	85
2017	899	1,952	284	120	137	101
Change 2001–2017 (%)	*37*	*27*	*25*	*4*	*−42*	*19*
UK ('000 GB£)						
2001	451	827	167	60	74	36
2017	951	2,312	314	97	139	50
Change 2001–2017 (%)	*111*	*180*	*88*	*62*	*89*	*37*

Source: Authors' estimates; HILDA and PSID 2001, 2017, BHPS 2001, UKHLS 2017.
Note: Cross-sectional weighted sample of households. Top percentiles relate to the distribution of unmortgaged housing equity (see supplemental material sections A4.2.1, A4.2.2). Small discrepancies in % change calculations are rounding errors.

et al., 2015); however, it has (for now) a moderating effect on the distribution of net housing wealth.

In the United States and United Kingdom this added leverage has worked rather differently. In both cases, price appreciation has eclipsed extra borrowings, both overall, and among the top 10 and 1 per cent. In the United Kingdom, proportionately this advantage is spread fairly evenly, though in real terms, of course, the gains are higher for the better off. In the United States the difference has worked more directly to the advantage of those in high-value homes among whom a declining appetite (or need) for debt strengthens their asset-base. We return to the distribution of net housing wealth shortly.

There is, in the meantime, a third and critical twist to these data. Chasing the value in owned homes is only part of the twenty-first century story of mortgage debt. Since the turn of the millennium, the role and relevance of mortgage finance has changed, reshaping financial behaviours in its wake (Smith, 2020). The tide of low-cost borrowing that flooded through early twentieth-century housing markets is best known for driving the subprime sector in ways that are now well-documented. However, the expansion of mortgage markets far outstripped the growth in underlying housing markets (Kohl, 2018). Surplus credit was channelled through a suite of new mortgage facilities into existing borrowers' accounts, enabling them readily to switch from paying down their loans to levering up against unmortgaged equity, to raise funds for *other things* (Smith & Searle, 2010, part 2).

We measure this practice – equity borrowing – by focusing on households who, in a given year, without moving home, increase their mortgage debts

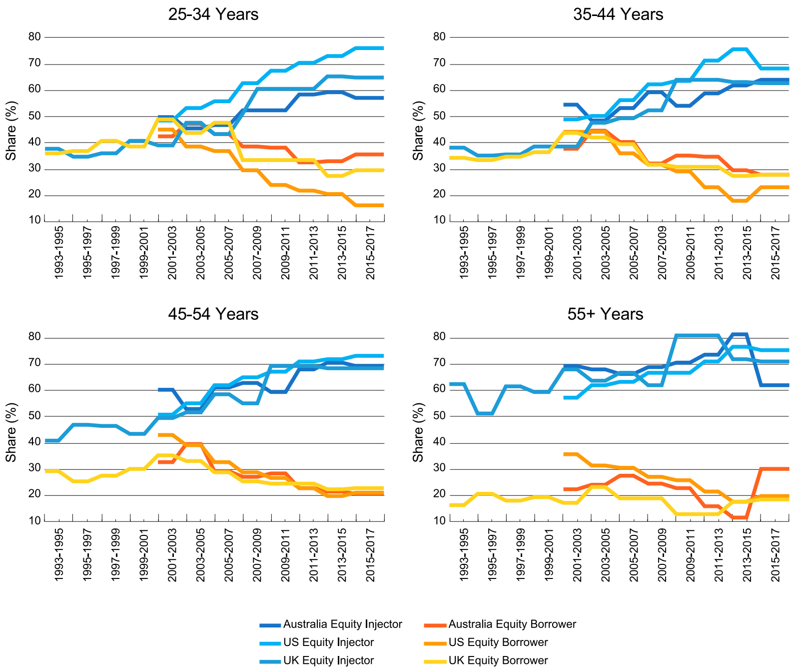

Figure 4 Share of *in situ* mortgagors who engage in equity injection and equity borrowing, by age, 2001–2017
Source: Authors' estimates; HILDA 2001–2017, PSID 2001–2017, BHPS 2001–2008, UKHLS 2011–2017.
Note: Unbalanced panel of individuals (see supplemental material, section A4.1.2)

thus by definition, releasing funds for discretionary spend. Trends for the past two decades (a little longer where data allow) are captured in Figure 4.

Most apparent is the sharp drop in funds for lending occasioned by the GFC, which tipped mortgagors firmly towards the traditional model of equity injection and away from the practice of adding to debt. This should not, however, detract from the strikingly high propensity in all age groups, across all years, and in all three jurisdictions, to engage in equity borrowing. At its peak in the early 2000s take up in all three jurisdictions, on the back of a dip in interest rates and a surge in house prices, was close to or in excess of 40 per cent. Even at its lowest ebb, between one in four or five non-mover households ended each accounting period with an uplift in their outstanding loan.

Equity borrowing may be one of the reasons why a growing proportion of older owner-occupiers are still mortgagors. Although the use of this facility by the asset-rich over-55s dipped after the GFC in the United States (from over a third to around 20 per cent), it steadily recovered to one in five in the United Kingdom and rebounded to a peak of 30 per cent in Australia by 2017. This raises a question of whether and how such debts will eventually be cleared: pension lump sums are one option (particularly in Australia and United Kingdom, where there is mandatory enrolment in pension schemes); other savings are a possibility (though equity borrowing tends on the whole to feature where investment portfolios are narrow). Debt-overhang is a third scenario, which some might address by postponing retirement, others by trading down, and some, almost certainly, by dropping out (Ong *et al.*, 2013).

Equity borrowing is, nevertheless, the province of the young. In all three jurisdictions, 25–34-year-olds were, as they entered the millennium, likely to be extracting as well as injecting equity via their mortgages. Although that balance was to change, among the under 35s in Australia and the United Kingdom in each of the 17 years of the study between a quarter and a half were net equity extractors. In the United States the age gradient is less marked mainly because the rate of equity borrowing among younger households plunged by nearly a third following the abrupt end of a 'refinancing ratchet' after the GFC (Khandani *et al.*, 2009). Overall, nevertheless, equity borrowing has been a popular way for young people with few savings or other investments to supplement stagnating earnings in an age of austerity.

More on this latter point can be inferred from Table 3 which shows changes in the real value of equity borrowing over the study period, by income tertile (lowest to highest), for each country. The shift is striking. In 2001–2003 the average (mean) borrowings of the lower income tertiles were less than those of the higher income groups, but the differential was small. However, in all three jurisdictions, the increase in mean equity borrowing among the lower income groups outstripped that of their higher income counterparts. In the United Kingdom and the United States, by the end of 2017, those whose gross incomes (from all sources, excluding loans) were lowest were, on

Table 3 Real value of *in situ* equity borrowing, by income tertile, at 2017 values

	First tertile	Second tertile	Third tertile
AUS (AU$)			
2001–2003	68,459	75,414	100,612
2015–2017	130,535	110,912	181,348
Change (%)	*91*	*47*	*80*
UK (GB£)			
2001–2003	21,601	21,819	25,992
2015–2017	55,126	54,673	46,488
Change (%)	*155*	*151*	*79*
USA (US$)			
2001–2003	34,588	37,983	37,223
2015–2017	50,548	35,387	36,065
Change (%)	*46*	*–7*	*–3*

Source: Authors' estimates; HILDA and PSID 2001, 2003, 2015, 2017, BHPS 2001, 2003, UKHLS 2015, 2017.
Note: Unbalanced panel of individuals. Income tertiles are based on home owners' individual gross annual income. Tertiles for 2001–2003 and 2015–2017 are generated from 2001 and 2015, respectively (see supplemental material section A4.1.2).

average, raising most by adding to mortgage debt. This chimes with a wider literature positioning equity borrowing less as a boost to consumption to bail out whole economies, and more as a financial buffer for cash-poor households with pressing spending needs (Lowe *et al.*, 2012). Far from the property-owning democrat dipping into unencumbered housing assets, this is, in practice, a style of debt-based welfare (Wood *et al.*, 2013). Trends in equity borrowing could thus signal a new watershed in owner-occupation dividing those at the top of the distribution, who use leverage to strengthen their asset-base and can pay down their loans, from those on the margins who borrow to make ends meet and whose debts may be unsustainable. Forrest and Hirayama (2018) envisaged as much when arguing that housing might be driving a new process of social re-stratification.

Housing wealth inequality

Against a background of falling rates of owner-occupation and increasing mortgage debt, we turn finally to the distribution of unmortgaged home equity. Key trends are captured in Tables 4 and 5, which track changes over time in the distribution across all households (owners and renters) of the unmortgaged housing wealth accruing to owner-occupiers. We consider primary home assets first.

Table 4 first shows the proportion of owner-occupied home equity owned by the top 10 and 1 per cent by housing wealth. Through the volatility of the GFC and into a round of house price appreciation thereafter, the top 10 per cent in the United Kingdom, Australia and the United States respectively consolidated and intensified their position, securing 39, 45 and 53 per cent of unmortgaged primary home equity. While the proportion accruing to the top 1 per cent almost doubled in the United Kingdom, it is notable that here, as in Australia, the figure only once exceeded 10 per cent. In the United States, in contrast, the proportion annexed by the top one per cent rose steadily to around 15 per cent.

This trend is reinforced by the ratios of mean to median values of unmortgaged home equity which are also shown in Table 4. The more the mean departs from the median, the greater the inequality in the distribution. As a benchmark, across the OECD as a whole, mean net wealth was just over two and a half times (2.6) higher than the median by the mid-2000s (Balestra & Tonkin, 2018). In Australia and the United Kingdom, primary home equity is less concentrated than this (in line with conventional expectations about the wide spread of housing wealth), though in Australia, since the GFC, there has been an upward trend to 1.7. The United States, in contrast, started from a high base (with mean housing wealth 2.3 times the median in 2001), which widened across every subsequent year, peaking at almost five in 2013, but still topping 3.6 in 2017, thus far exceeding the benchmark. This partly reflects the lesser indebtedness of the housing-asset-rich in the United States; more fundamentally, it may constitute a shift in the way housing wealth works as owner occupation contracts.

Table 4 Distribution of unmortgaged primary home and total residential property equity, 2001–2017

	AUS			USA			UK		
	Top 10% share	Top 1% share	Mean/ Median[a]	Top 10% share	Top 1% share	Mean/ Median[a]	Top 10% share	Top 1% share	Mean/ Median[a]
Primary home equity									
2001	39	10	1.49	46	11	2.28	30	5	1.58
2003	39	9	1.38	48	11	2.38	28	6	1.35
2005	39	8	1.31	50	12	2.58	29	6	1.20
2007	39	9	1.35	50	12	2.53	29	5	1.16
2009*	41	9	1.39	52	13	3.14	29	5	1.22
2011	37	8	1.44	53	14	4.93	.	.	
2013	39	8	1.51	53	15	4.95	40	14	1.53
2015	41	8	1.67	54	15	3.73	38	8	1.51
2017	45	9	1.74	53	14	3.62	39	9	1.55
Total residential property equity									
2001		.	.	56	22	2.85	36	8	1.66
2003	40	10	1.48	55	20	2.89	35	10	1.50
2005		.	.	58	21	3.05	34	8	1.31
2007	42	11	1.48	60	25	3.37	35	8	1.30
2009*		.	.	61	25	3.80	34	8	1.29
2011	42	11	1.43	61	20	5.30	.	.	.
2013		.	.	59	18	4.72	.	.	.
2015	43	11	1.60	60	20	4.17	.	.	.
2017		.	.	58	19	3.89	.	.	.

Source: Authors' estimates; HILDA 2001–2017, PSID 2001–2017, BHPS 2001–2008, UKHLS 2011–2017.
Note: Cross-sectional weighted sample of households (see supplemental material sections A4.2.1, A4.2.2.)
[a]The ratio of overall mean to median unmortgaged housing equity.
*2008 for the UK. From 2011 total property equity cannot be calculated for the UK.

Table 5 Inequality (G) in the distribution of unmortgaged housing wealth: Primary home and in all residential property, 2001–2017

Year	G: Primary home equity			G: Total property equity		
	AUS	USA	UK	AUS	USA	UK
2001	0.61	0.68	0.61	.	0.74	0.62
2003	0.60	0.69	0.57	0.60	0.73	0.59
2005	0.59	0.70	0.53	.	0.75	0.55
2007	0.60	0.70	0.53	0.61	0.76	0.55
2009	0.61	0.72	0.54	.	0.77	0.55
2011	0.61	0.75	.	0.60	0.78	.
2013	0.62	0.75	0.62	.	0.77	.
2015	0.63	0.74	0.61	0.63	0.77	.
2017	0.64	0.73	0.62	0.63	0.76	.

Source: Authors' estimates; HILDA 2001–2017, PSID 2001–2017, BHPS 2001–2008, UKHLS 2011–2017.

Note: Cross-sectional weighted sample of households (see supplemental material sections A4.2.1, A4.2.2). From 2011 total property equity cannot be calculated for the UK.

These trends can be triangulated against the measure of inequality best able to capture shifts across the entire range of the distribution, the Gini coefficient (G). Ranging from zero to one, it measures the extent to which the distribution of housing wealth departs from G=0 (evenly distributed) and tends to G=1 (completely polarized). Trends in G are shown in Table 5, again for all households.

All the coefficients are very high: for Australia, the United Kingdom and the United States, respectively, at the end of the study period, G=.64, .62 and .73 for primary housing wealth. These measures are nearly double those for the concentration of incomes, where G=.33, .37 and .39 for each jurisdiction respectively, as measured by the OECD (https://data.oecd.org/inequality/income-inequality.htm). Between 2001 and 2017, moreover G increased in all three jurisdictions, markedly in the United States, and more marginally in the United Kingdom and Australia where an egalitarian tendency in the run up to the GFC subsequently reversed.

Both tables also show the distribution across all households of the value of home owners' entire unmortgaged housing wealth portfolio. In all three countries, by most measures, that wealth is more unequally distributed than primary home assets, reflecting the unequalizing effects of multiple property ownership (Kadi *et al.*, 2020). Arundel (2017), for example, shows for the United Kingdom, that nearly two-thirds of private landlords are contained within an income-rich top 20 per cent of housing wealth holders.

Overall, the panel surveys suggest that the distribution of residential property wealth (net of mortgage debt) among home-occupiers is more unequal now – and increasingly so – than it was 20 years ago. This is consistent with indicators from the Luxembourg Income Study assembled by Arundel and

Ronald (2021). These inequalities are set to be magnified by the growing importance of inherited housing wealth for the already-housing-asset rich, especially as fertility rates decline and fewer siblings secure larger shares of bigger estates (Bourquin *et al.*, 2020; Wolff, 2017). There is also the matter of imputed rent, which La Cava (2016) regards as a key driver in the long run rise in net capital income shares in the United States. Living rent-free in (or with no tax on imputed rental income from) owner-occupation means that the housing-asset rich are also, *de facto*, capital-income rich – part of a more general trend documented by Berman and Milanovic (2020).

It is true that housing wealth inequalities are systematically structured, and not only around the generational differences reported above. For example, renters locked out with no housing wealth at all are mainly young, and in later life there is vulnerability to equity stripping from last time sales (Horton, 2021), but the edges of ownership are precarious at any age following income shocks or biographical disruption (Wood *et al.*, 2017). Similarly, while changes over time in house price-to-income ratios underpin cohort differences in the potential to accumulate housing wealth, this interacts with labour market segmentation across the board to create disparities in after-housing income that affect debt repayment and the prospects of outright ownership (Wiesel *et al.*, 2021). These processes are gendered (Goldsmith-Pinkham & Shue, 2020), racialized (Rothstein, 2017); and amplified by spatial inequalities in housing markets (Arundel & Hochstenbach, 2020). Critically, however, these structured disparities in the possibility to roll income into housing wealth, accrue wealth through housing, and derive real or imputed income from residential capital underpin a shift documented by Adkins *et al.* (2020) from employment-centred to asset-driven economies, wherein housing (as much as labour) markets are the territory on which struggles over the distribution of income and wealth take place.

Conclusion: Residential capital and economic inequality

Capital is back: accumulating not on the platforms of agricultural land or industrial plant, but rather into residential property – housing and the territory it stands on. The difference between previous regimes of inequality and the one operating today is that, situated between the ongoing concentration of wealth and incomes, and any tendency to peak inequality, is the still-dispersed ownership of the world's largest capital asset – housing. From the ashes of the inegalitarian proprietarian ownership regimes of the nineteenth century (Piketty, 2020), owner-occupation emerged to form the one thing, above all, that has – so far – prevented the repolarization of wealth reclaiming its early twentieth-century zenith.

Owner-occupation thus features centrally in the story of economic inequality. It was a counter-balance through the (re)turn to inequality in the late twentieth century, expanding across the class structure as earned incomes stalled.

House price appreciation took off as welfare states rolled back, and cash strapped home-occupiers accumulated debts against property in order to make ends meet. All this, together with the ideological wrapper encasing owner-occupation, distracted attention from the disparities in income and wealth that the GFC exposed. What we have shown in this paper, however, is that across the twenty-first century, while historically unprecedented levels of wealth continued to accumulate into housing, those assets began to change hands.

The data presented are indicative; the changes they signal are recent and modest, albeit unevenly spread. Nevertheless, from representative cross-sectional and longitudinal national panel surveys spanning nearly two decades across three jurisdictions, three common facts stand out. First, owner-occupation is shrinking relative to other housing tenures, so that, for the first time in 50 years, a growing proportion of households – especially the young, but also those in older age – hold no property wealth at all. Second, notwithstanding the credit constraints that followed the GFC, mortgage debt has unfolded across the age range. This may provide leverage for the asset-rich, but it remains – in the shape of equity borrowing – a key source of funds for younger, poorer households with stagnant labour incomes. Finally, the distribution of any remaining unmortgaged home equity is highly skewed, and more uneven now than it was in 2001. So change is in the air adding a new chapter to the story of economic inequality in the long run.

That chapter – 'post-homeownership', or more properly post-owner-occupation – could from a housing services perspective offer, in theory at least, a welcome alternative to the financialised excesses of the housing *status quo*. In practice, however, and in terms of political economy, the scene seems set to amplify the present regime of inequality, as the *de facto* 'other' to owner-occupation – private renting – takes on the mantle of capital accumulation. Renting has always 'oiled the wheels' of tenure-divided housing systems and has of late been incentivized to that end. Initially, these measures favoured amateur landlords chasing capital gains, thereby enlarging a housing wealth divide flagged earlier (Ronald and Kadi, 2018). As the twenty-first century unfolds, however, with private land and property owners poised to annex the lion's share of the economy, individual landlords, like their owner-occupying predecessors, are being edged out by a new generation of institutional investors focussed on rental income as well as capital gain. These big-ticket organizations are shifting the focus of financialization from debts to assets (Wijburg *et al.*, 2018) while advancing a programme of housing-led rentierization (Ryan-Collins & Murray, 2020). This gained momentum from a fleeting post-GFC property slump, and thereafter began, albeit unevenly, to exploit what amounts to a rent-gap embedded in capital-gains-focussed ownership-centred housing systems (Christophers, 2021a).

Short-term speculators (private equity and hedge funds, raising capital from pension funds and insurance companies) came first, followed by a wave of real estate investment trusts and listed real estate companies investing 'patient capital' for the longer run. These large corporate landlords are steadily buying up extensive tracts of residential real estate including bulk-buy-to-let of multi-family dwellings (Fields, 2017), targeted acquisition of single-family homes (Fields, 2018) and purchase of land for 'build-to-rent' (Brill & Durant, 2021; Nethercote, 2020). Costs are managed and profits boosted by a growing array of post-GFC technological innovations ('PropTech') aiding search, appraisal and acquisition, as well as tenant vetting, property management and rent collection (Fields, 2019). Encouraged by governments, to a mixed reception from tenants, these increasingly-global corporate landlords are targeting the heartlands of owner-occupation, expanding from the United States and Canada, into Europe, the United Kingdom and the rest of the English-speaking world.

Unsurprisingly, it is a moot point whether, by taking residential property into their long-term investment portfolios, these professional corporates can do better than their 'amateur' counterparts in the delivery of housing services. They are unforgiving in the setting and extraction of rents, and the research literature is pessimistic (Walks & Soederberg, 2021). Even in the world of social investing, new styles of dispossession, some linked to the rise of *state* rentierism, have emerged (Beswick *et al.*, 2016; Lees & White, 2020; Penny, 2021; Rosenman, 2019).

Whatever else this latest financial turn represents, it exposes a cluster of large, consolidating 'permanent universal owners' in the world of property, analogous to those emerging in finance, where the mass migration of money into index funds, overseen by just three large asset managers, is eclipsing shareholder capitalism (Fichtner & Heemskerk, 2020). Any monopolistic tendency this represents may not yet have cascaded through the big three residential property-owning democracies profiled in this paper, but there is a drift towards the rentierization of everything that suggests it might (Christophers, 2020). In this vision for 'post-homeownership', the equity ebbing out of households' wealth portfolios is reshaping the landscape of inequality in ways reminiscent of Piketty's (2020) nineteenth century 'proprietory ownership' societies, wherein most households rented their homes and owned (nearly) nothing else.

These surely are the expropriating forces that Piketty had in mind when he talked about 'the conditions under which the concentration of property might return to pre-1914 levels'. The question that remains is how much momentum they will gather. The constraint is owner-occupation: still the majority tenure in a wide range of jurisdictions; still blocking any neoliberal 'end game' in the annexation of land and property. So, for all the sector might have failed to deliver as a housing service (as noted earlier), as 'the people's' asset it may yet have a role in anchoring the future. Here, there is much to consider, including the potential highlighted earlier for housing movements to turn the tide (see also Humphrey, 2020; Tattersall & Iveson, 2021). Whatever the catalyst, interrupting the ongoing concentration of residential property wealth will require some 'third way' between the financialized owner-occupied past and a progressively rentierized residential future. To that end, we conclude with a reflection on two possible points of departure – two nudges against inequality in the long run. One of them, taxation, is a practical act that offers the best chance of ameliorating the accumulation and concentration of residential capital; the other is about enlarging the housing imaginary sufficiently to mobilize what Ireland and Meng (2017) describe as 'an untapped range of institutional possibility' to reformat the future.

Piketty (2020) positions progressive taxation centrally in the latest articulation of his vision for participatory socialism. Although shifts in income tax were implicated in the 1980s turn to inequality, now that capital is back, wealth taxes are the more pressing agenda. Here, practically all commentators have their sights set on property and land taxes, which are irrational, regressive and long overdue for reform. The case is overwhelming: a more rational progressive system of wealth taxation, geared to corporates as well as households, is entirely viable and could be transformational for housing systems (Advani *et al.*, 2020).

The question is how to advance that agenda. Here, Piketty's idea of *temporary* ownership is of both material and ideological interest. He argues that private wealth is always a product of shared resources: it accumulates through public infrastructures, draws on a social history of ideas, and so on. So it should only be 'temporarily' owned, and a fraction of it routinely redistributed via progressive taxation. Buy-in to this logic could help rebalance the use value of residential property against its investment potential, raising funds to reinvest into the housing stock in ways that simply do not occur at the moment. Treating housing as a resource that is temporarily possessed could also change the feel and experience of home-occupation, underlining the shared responsibility of those who use the housing stock today, their predecessors, their successors, and the social democratic institutions which fund and manage it. Energized by the effective deployment of tax revenues, the practice of home stewardship could in time displace the ideology of ownership as a cultural norm. This is where an enlarged housing imaginary becomes important.

Piketty (2015a) himself worried about putting too much emphasis on progressive capital taxation and paying 'too little attention to a number of institutional evolutions that could prove equally important' (p. 646). Our own analysis was triggered by a high degree of institutional convergence in the housing systems of three key jurisdictions, particularly the tenure binary which is deeply entrenched and demonstrably convenient for capitalism. Yet, while there is a strong case for tenure-neutrality on matters of housing costs, quality, condition and security (Christophers, 2021b), this is just one element in an untapped range of institutional possibility that Ireland and Meng (2017) position as a resource for post-capitalist times-to-come. Post-homeownership in practice may be less than ideal, but the future need not be so singular. Following Grosz (1993), for example, binary housing systems could be dissolved into 'a thousand tiny tenures' – myriad malleable structures, some already present as ideas and experiments, whose institutional diversity itself resists the *status quo*. Recognizing, valorizing and harnessing that diversity could be one step towards infusing the structures of residential space with a new mix of entitlements, obligations, practices and values – a sense of stewardship, a collaborative spirit, an ethic of care, for example. Key, however, will be retaining for home-occupiers (and thus withholding from other interests, through taxation or other regulation) some individual, shared, or collective stake in the housing asset economy. This latter point is important, because the truth is that if owner-occupation is all that stands between civil society and the complete repolarization of property wealth, then awkward though it may be, that troubled platform is where the story of economic inequality in the long run will play out.

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