



Homeownership, the unemployed and financial hardship

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ABSTRACT

We follow 3,826 Australian unemployed persons, approximately half of whom are homeowners. We conduct a matching analysis and find that homeownership reduces both experienced and perceived financial hardship. Building on recent findings in the literature that the presence of financial hardship deteriorates job search quality (i.e., stressors like financial hardship lead to the adoption of haphazard rather than focused job search strategies), we introduce financial hardship as a novel channel through which homeownership affects labour market outcomes of the unemployed. In our matching analysis, we include historical labour market performance and personality traits linked to mobility preferences, to address endogeneity. We also confirm that homeownership reduces residential mobility and increases neighbourhood social capital but find no effect on reservation wages of the unemployed. Considering declining homeownership rates across the OECD in recent years, our findings are both timely and imperative to understand the effect of homeownership on labour market outcomes of the unemployed.

1. Introduction

Beyond the fulfilment of the oft culturally ingrained preference to own a home (Kelly et al., 2011; Sheppard et al., 2017), homeownership is found to cause improvements in subjective wellbeing (Zheng et al., 2020), mental health (Park et al., 2022), political participation and trust (Huber and Montag, 2020), neighbourhood engagement (Ghimire, 2021), and children's educational outcomes (Aarland et al., 2021).

Homeownership is also relevant for labour market outcomes of the unemployed, through effects on residential mobility (Lux and Sunega, 2012; Caliendo et al., 2015), the reservation wage (Meekes and Hassink, 2019; Yang, 2019) and neighbourhood social capital (Roskrugue et al., 2013; Leviten-Reid and Matthew, 2018). However, two recent studies reviewing the literature on the overall effect of homeownership on labour market outcomes of the unemployed, draw sobering conclusions. Ringo (2021, p. 127) concludes that “previous works in the literature have come to conflicting conclusions regarding home ownership’s effect on labor market outcomes”, while Yang (2019, p.1) finds that “on the empirical front ... only a small number of studies have examined the wage effects of home ownership, coming to no consensus thus far”. We argue that a non-comprehensive understanding of the channels through which homeownership affects labour market outcomes of the unemployed may

contribute to the inconclusiveness of the literature and focus on one missing channel: financial hardship.

It is increasingly evident from an emerging body of literature that financial hardship adversely affects job search quality and unemployment duration (Herkenhoff et al., 2017; Herkenhoff and Ohanian, 2019; Gerards and Welters, 2020, 2022a). Homeownership, through positive home equity, may shield the unemployed from financial hardship. However, the effect of homeownership on financial hardship in the context of labour market outcomes of the unemployed has not yet been studied. We contribute by exploring this relationship between homeownership and financial hardship, and by updating the evidence on the known relations between homeownership and residential mobility, reservation wage and neighbourhood social capital of the unemployed.

These contributions are both timely and imperative to shape labour market policy, as reductions in affordability - such as those witnessed in most OECD countries in the last decade - have put homeownership rates under pressure (OECD, 2021), which calls for a better understanding of the effects of homeownership on the labour market.

This article focuses on Australia. We do so for three reasons. First, as Fig. 1 shows, real house prices in Australia more than doubled since the turn of the century, which is the fourth largest increase in the OECD (OECD, 2021). Since household income did not grow proportionally, the

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house-price-to-income ratio rose by nearly 50% in the same period. Furthermore, Australia currently has the highest household-debt-to-GDP ratio in the OECD (Van Hoenselaar et al., 2021), indicative of an environment conducive to financial hardship. Fig. 1 also shows that the Australian homeownership rate declined by 5% in the last two decades and is predicted to decline further given historically low homeownership rates among younger cohorts (Burke et al., 2020; OECD, 2021).

Second, the effect of homeownership on labour market outcomes of the unemployed is relatively under researched in Australia. We are only aware of one—two decades old—micro-study. Flatau et al. (2003) explore whether homeowners face longer unemployment duration (or lower reemployment probabilities) but find no support in the data. Since there is hardly any micro-level research relating the Australian housing market to labour market outcomes of unemployed people,¹ we not only explore the relationship between homeownership and financial hardship among the unemployed, but also investigate whether findings from the international literature that homeownership affects residential mobility, reservation wages and neighbourhood social capital extend to the Australian context.

Third, to establish a causal relationship between homeownership and the outcome variables under consideration we need access to rich data, as the hypothesized relationships may be prone to endogeneity. The Australian Household, Income and Labour Dynamics in Australia (HILDA) data enable us to construct all the dependent, independent and control variables needed to apply Propensity Score Matching, a causal identification strategy successfully applied in using HILDA data in related contexts (e.g., Gerards and Welters, 2020, 2022a).

2. Background

In this section, we first outline how research on homeownership and unemployment started from the Oswald (1996) hypothesis and our variables of interest emanating from the concomitant micro-oriented research (Section 2.1). After that, we briefly discuss the literature on the relation between on the one hand homeownership, and on the other hand our variables of interest: residential mobility, reservation wage, neighbourhood social capital and financial hardship of the unemployed

(Sections 2.2 – 2.5).

2.1. Homeownership and unemployment

Oswald (1996) posits a positive relationship between homeownership rates and unemployment rates at a regional level. He hypothesizes that homeownership spatially constrains the unemployed in their pursuit of employment, i.e., homeowners prefer local employment to avoid the fixed transaction costs of selling their dwelling (and obtaining a new place to live elsewhere). The resultant lower residential mobility hinders their job search, potentially explaining the positive relationship between regional homeownership and unemployment rates. In subsequent papers, Oswald (1997, 1999) extends the range of explanations for the positive relationship between homeownership and unemployment rates to include macro-level effects. For example, if homeownership reduces residential mobility, homeownership may increase regional attachment, which may increase homeowners' involvement in local decision making, potentially objecting to, and slowing down local development. High homeownership rates may therefore stall economic development and consequently increase unemployment rates.

Oswald's thesis ignited a burst of empirical studies exploring the relationship between homeownership and unemployment both at the micro and macro level. All studies, regardless the unit of analysis, must address endogeneity concerns to draw a causal relationship from homeownership rates to unemployment rates. The literature has identified at least two reasons why the relationship may be endogenous. To acquire a home, the buyer must have sufficient financial resources to fund the purchase, which likely requires the buyer to have a secure labour market position. Hence, outcomes in the labour market may drive outcomes in the housing market. Also, homeowners may have an innate preference for low residential mobility, hence why they favour residential stability (homeownership) rather than residential volatility (renting). Following this hypothesis, people with low mobility preferences self-select into homeownership, i.e., homeownership need not necessarily cause low residential mobility.

Macro studies that successfully address endogeneity concerns generally find support for the Oswald hypothesis in various institutional

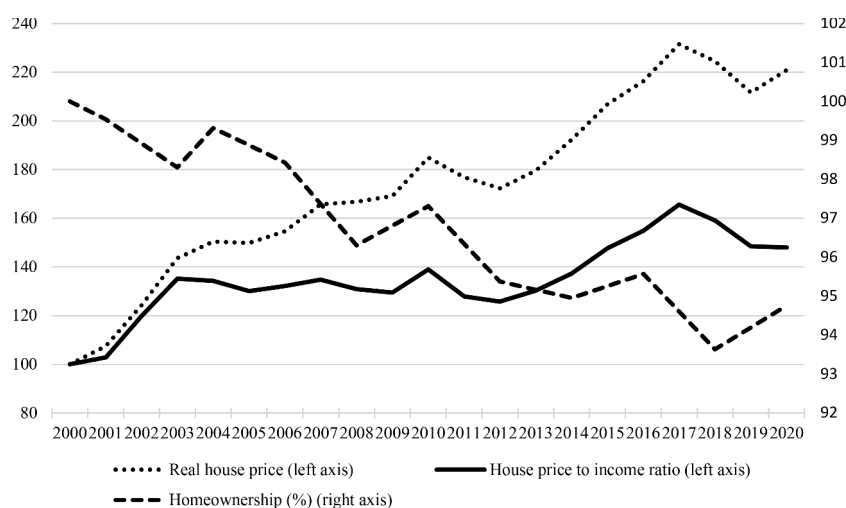


Fig. 1. Selected developments in the Australian housing market (2000 = 100). Source: ABS (2022) and OECD (2022)

¹ Whelan and Parkinson (2017) conduct an analysis using Australian longitudinal data ranging from 2001 to 2014. However, they acknowledge their analysis does not control for the possibility that labour market outcomes drive outcomes in the housing market (i.e., reverse causality).

settings, including Belgian (Isebaert et al., 2015), Australian (Nguyen and Nilsson, 2014) and German housing and labour markets (Lerbs, 2011; Wolf and Caruana-Galizia, 2015). Micro-level studies explore the drivers of the relationship between homeownership and unemployment, starting from the Oswald hypothesis that homeownership reduces residential mobility and consequently raises unemployment duration.

Generally, micro studies confirm that homeownership reduces residential mobility, but reject that homeownership raises unemployment duration (Flatau et al., 2003; Munch et al., 2006; Battu et al., 2008; Caliendo et al., 2015; Vuuren, 2017; Taskin and Yaman, 2019; Yang, 2019).

Micro studies' attempts to explain why homeownership does not increase unemployment duration despite its adverse effect on residential mobility generally begin by splitting the labour market into two parts. Vacancies in the local part of the labour market do not require a residential move; vacancies in the non-local part of the labour market do. These studies then assume that homeowners are more likely to restrict their job search to the local labour market, which should adversely affect their overall job search outcome (Guler and Taskin, 2018), unless they have more favourable job prospects in the local labour market than renters. The literature hypothesizes three arguments why the latter might be the case. First, since homeowners prefer employment in the local labour market, they may lower their local reservation wage to achieve the spatially preferred employment outcome. Empirical evidence indeed confirms that homeownership reduces post-unemployment wages (Meekes and Hassink, 2019; Yang, 2019; Brown and Matsa, 2020). Second, if homeowners are more attached to the local labour market, they may have developed better neighbourhood social capital than renters. Homeowners may exploit the social capital advantage to secure local employment more quickly than renters. Roskrugue et al. (2013) confirm that homeowners have better developed social capital. Third, employers may prefer to recruit local homeowners, because they are less likely to quit, producing a more stable employment relation. Munch et al. (2008) indeed find that homeownership raises (local) job stability.

2.2. Homeownership and residential mobility

Articles that study the effect of homeownership on an unemployed person's residential mobility generally use ex-post measures. That is, they explore whether homeownership affects the location of employment (if found). For example, Munch et al. (2006) find that homeowners have a lower propensity to move for job-related reasons. Battu et al. (2008) show that homeowners have a lower transition into employment requiring a distant move. Caliendo et al. (2015) also find that unemployed homeowners are less likely to move. Meekes and Hassink (2019) in contrast, find no effect of homeownership on the probability of changing home.

However, the mobility argument is an ex-ante argument: homeownership reduces the intention of the unemployed person to move. Importantly, the ex-ante intention and the ex-post outcome need not necessarily align. For example, if employers are looking for employment stability (Munch et al., 2008), they may be less willing to recruit an applicant who must move and leave behind their social network (homeowners have larger social networks than renters—Roskrugue et al., 2013) to fill the vacancy, as they are perhaps more likely to return (leading to job separation). It is therefore more precise to look at ex-ante measures of mobility intention. Caliendo et al. (2015) find that unemployed homeowners apply for fewer jobs that require moving, whilst Lux and Sunega (2012) find that homeowners have lower willingness to change residence for employment reasons than renters.

2.3. Homeownership and the reservation wage

Homeownership encourages unemployed persons looking for work to favour local employment which does not require a move. To boost their competitiveness in the labour market, an unemployed homeowner may lower their reservation wage. Meekes and Hassink (2019) and Yang (2019) study post-unemployment wages of unemployed jobseekers and find that homeowners report lower post-unemployment wages than renters. Caliendo et al. (2015) find the reverse: homeowners achieve higher hourly wages, but no effect on monthly wages, because

homeowners find employment with fewer hours post unemployment. Caliendo et al. (2015) also look at reported reservation wages (available for the unemployed who do not find employment immediately), which is an ex-ante measure. They find no effect of homeownership on reported reservation wages. Brown and Matsa (2020) find that homeowners (particularly those with negative home equity) broaden their job search to include lower-level positions, which is an ex-ante measure of (lower) reservation wages.

As in the case of mobility, the literature discussed above has used ex-ante and ex-post measures of reservation wages to test the effect of homeownership on reservation wages. However, the same reservations to using ex-post measures apply as when studying the effects of homeownership on residential mobility. For example, if homeowners have better social capital, then having access to higher paying employment through a superior social network may contaminate any effects (on post-unemployment wages) of a willingness to accept lower wages to remain local. For this reason, we will be using ex-ante measures of reservation wage in this study (see Section 3).

2.4. Homeownership and neighbourhood social capital

Given significant transaction costs of a house sale, it is plausible that homeownership and duration of residence are positively related. Longer intended duration of residence and the importance of the long-term value of the property, encourage the homeowner to connect with the local neighbourhood and get involved in the local decision-making process (Boehm and Schlottmann, 1999; Di Pasquale and Glaeser, 1999). The resultant social capital may give homeowners a competitive advantage over renters in the local labour market, where they can use their neighbourhood social capital to identify job opportunities.

Roskrugue et al. (2013) confirm that homeowners have higher levels of social capital, i.e., they are more likely to participate in local activities and think more positively about their local neighbourhood, which the authors link to more neighbourhood engagement. Leviten-Reid and Matthew (2018) also find evidence in support of homeowners having better developed bonding and bridging social capital than renters. Feselmeyer and Seah (2018) explore the motivations of homeowners to invest in social capital, finding that homeowners only invest in social capital if it generates private rather than social benefits.

2.5. Homeownership, financial hardship and unemployment

It is quite feasible that financial hardship is related to homeownership. That is, positive home equity provides a financial resource that households can draw on in financially testing times. However, research into a relationship between homeownership and financial hardship is underdeveloped. Particularly studies that explore this relationship while addressing endogeneity concerns are scarce. We are aware of two studies. Manturuk et al. (2012) investigate whether homeownership affects two measures of financial hardship: experienced hardship and perceptions of hardship. They use matching analysis and instrumental variable analysis to address endogeneity and find for American low and middle-income earners that homeownership protects against perceptions of hardship, not experienced hardship. Deidda (2015) explores whether homeownership affects experienced financial hardship for income earners in general. She uses switching regressions to account for endogeneity and finds for five Western European countries (France, Germany, Italy, Spain and the UK) that homeownership protects households against the experience of financial hardship.

Neither of these two studies focus on the unemployed; nor are there any studies that introduce financial hardship into the Oswald debate explaining why unemployed homeowners, despite their lower residential mobility, have no inferior labour market outcomes compared to renters. However, there is emerging evidence that financial hardship adversely affects labour market outcomes of the unemployed. This emerging evidence is part of a recent body of literature highlighting the

effects of stressors on an unemployed person's job search effectiveness. Koen et al. (2016) show that experienced autonomy in the job search process of the unemployed (i.e., lack of stressors such as mandatory reemployment counselling) improves their labour market outcomes. Similarly, Gerards and Welters (2022b) show that the unemployed subjected to benefit eligibility requirements experience worse labour market outcomes. Herkenhoff et al. (2017) study the effect of credit constraints (an indicator of financial hardship) on employment outcomes and find that when credit limits tighten the unemployed search for work less thoroughly and they more quickly accept low quality employment. Herkenhoff and Ohanian (2019) show that foreclosure delay (an implicit credit line) improves job match quality of the unemployed looking for work. Using direct measures of experienced financial hardship, Gerards and Welters (2020) show that hardship adversely affects job match quality (lower job satisfaction and higher separation intention), which in a subsequent article they relate to the adverse effect of financial hardship on the quality of job search (Gerards and Welters, 2022a).

The absence of studies that incorporate financial hardship into the Oswald debate, combined with the emerging evidence that financial hardship adversely affects labour market outcomes of the unemployed, motivates our decision to explore the relationship between homeownership and financial hardship—specifically for the unemployed. We expect that unemployed homeowners and particularly those with positive home equity will experience lower hardship than renters, all else equal.

3. Data, estimation strategy and variable definitions

3.1. Data

We exploit information from the first nineteen waves of the Household, Income and Labour Dynamics in Australia (HILDA) data, spanning 2001 to 2019. We omit the most recent 2020 and 2021 waves, because of the interfering effects of Covid19 on the Australian housing and labour markets. From its start in 2001, the HILDA survey followed 7682 households (interviewing each adult household member) annually, adding another 2153 households from wave 11 onwards. The HILDA survey is part of the Cross-National Equivalent File, demonstrating its robustness and comparability to for example the German Socio-Economic Panel (G-SOEP), United Kingdom Households: a Longitudinal Study (UKHLS) and US's Panel Study of Income Dynamics (PSID).

All longitudinal surveys suffer from attrition and non-response, however, Watson and Wooden (2012) find that re-interview rates in the HILDA survey are relatively high (94%), suggesting attrition is relatively low. Watson and Wooden (2009) demonstrate that non-response is largely random. More recently, Gerards and Welters (2020, 2022a, 2022b) each conducted attrition sensitivity analyses on HILDA data and concur with Wooden and Watson (2007), concluding no systematic attrition bias.

Respondents provide individual and household-related information through telephone interviews and self-completion questionnaires (Summerfield et al., 2020). The resultant panel data set allows a comprehensive analysis of labour and housing market dynamics, including the myriad of individual, household and regional circumstances that influence labour and housing market decisions.

Our analysis focuses on respondents who are homeowners (outright or mortgagors with *non*-negative home equity) and renters in the private market. We exclude homeowners with negative home equity from the analysis, who experience additional lock-in effects beyond the fixed transaction cost of selling their current and obtaining a new dwelling. Since house prices have increased steadily over the study period (see Fig. 1), this group of homeowners is small (only 2% of unemployed homeowners in the HILDA data experience negative home equity). We also exclude respondents who rent social housing and pay below-market value rent and renters who occupy a dwelling rent-free. Both groups of

renters face significant costs if they were to leave their current dwelling (and would for example have to rely on the private rental market), which locks them into their current dwelling. They are therefore, much like homeowners, more likely to have lower residential mobility, higher neighbourhood social capital and lower reservation wages than private market renters (Morescalchi, 2016).²

Furthermore, to reduce the risk of sample selection, we only include unemployed persons in our analysis, whose entire uncompleted spell of unemployment is observable in the data.

Finally, we focus on respondents who, in a particular wave, report being unemployed, looking for work, and between 15 and 65 years of age and who are present in the data in the preceding and subsequent wave. Our sample comprises 3826 unemployed respondents.

3.2. Estimation strategy

To study the causal effect of homeownership on labour market related outcome variables (residential mobility, reservation wages, neighbourhood social capital and financial hardship), our estimation strategy must account for selection effects. That is, personal or circumstantial differences may drive both the homeownership decision and the outcome variables. The background literature review identified two avenues through which selection may arise. People with low mobility preferences or with superior labour market performance may self-select into homeownership, which may drive differences between renters and homeowners in terms of outcome variables that are unrelated to homeownership itself.

Researchers have applied various identification strategies, including instrumental variable techniques (Flatau et al., 2003; Van Leuvensteijn and Koning, 2004; Baert et al., 2014; Morescalchi, 2016; Taskin and Yaman, 2019; Yang, 2019), matching techniques (Roskrug et al., 2013; Caliendo et al., 2015; Meekes and Hassink, 2019), difference-in-difference approaches (Meekes and Hassink, 2019), quasi experimental set-ups (Meekes and Hassink, 2019) and approaches exploiting multiple spells of unemployment per person, with varying homeownership statuses (Munch et al., 2006; Battu et al., 2008) to establish a causal relationship between homeownership and labour market related outcomes.

We adopt propensity score matching (PSM) as our identification strategy—one of the more popular approaches in this area of research. Through the implementation of a targeted set of matching variables, our PSM approach addresses (a) potential endogeneity and (b) the joint determination of homeownership and the outcome variables. Employing a rich targeted set of control variables, the PSM first estimates the propensity to be a homeowner and subsequently the effect of homeownership on our outcome variables of interest. The consequent main PSM results are presented in Sections 4.1 and 4.2. Section 4.3 details two additional analyses (the first focuses on balancing on omitted observables and the second on a difference-in-difference analysis) that provide evidence that our main PSM analysis is robust to unobserved heterogeneity. Elaborate sensitivity analyses and correction for multiple hypothesis testing shown in Section 4.4 further establish the robustness of our main PSM results.

3.3. Independent variable

Homeownership is a dummy variable, where respondents who report to own the home in which they live (outright owner or mortgagor) are

² There is no need to exclude social and rent-free renters from the analysis to test the effect of homeownership on financial hardship, where the argument primarily runs through positive home equity (which social and rent-free renters, like private market renters, do not have). However, for reasons of consistency, we exclude social and rent-free renters throughout all our analyses. Including them does not change the financial hardship analysis in any meaningful way.

classified ‘one’; if they pay rent for the home in which they live, they are classified ‘zero’. Since homeownership is the focal variable in our analysis, we denote the year in which we observe homeownership status for the unemployed respondent year t .

Conceptually, homeownership is the preferred independent variable to test effects on residential mobility, reservation wages and neighbourhood social capital. However, to test the effects on experienced / perceived financial hardship, we should split our sample into a part which comprises unemployed homeowners with positive home equity and a part that comprises unemployed homeowners with negative home equity and renters. Since we have excluded homeowners with negative home equity from the analysis, our homeownership dummy variable is suitable to test all dependent variables. Table 1 shows that 50.6% of our respondents own their home, the majority of whom as a mortgagor. Nationwide, homeownership declined from 73% in 2001 to 69% in 2019 (ABS, 2022) which is a homeownership rate well above our sample’s rate. That is notwithstanding the exclusion of social and rent-free renters. However, bear in mind that we focus on the unemployed, who are likely to have a lower incidence of homeownership than the general population. Consequently, compared to the general population, more respondents in our sample rent the home, in which they live.

3.4. Dependent variables

3.4.1. Residential mobility

In this study we use two mobility measures. First, we use the unemployed person’s reported likelihood to move in the next twelve months at year t (an ex-ante measure), measured using a five-point scale ranging from very unlikely (1) to very likely (5). Second, exploiting the longitudinal structure of the data, we capture work-motivated residential mobility in year $t + 1$, to establish whether respondents have moved for work-related reasons in the twelve months after identifying their homeownership status in year t (an ex-post measure).

3.4.2. Reservation wage

We focus on the unemployed person’s reported gross hourly reservation wage at time t , which is an ex-ante measure.

3.4.3. Neighbourhood social capital

We capture participation in local activities at year t exploiting a binary question in the survey asking respondents whether they are “currently an active member of a sporting, hobby or community-based club or association?” (Atalay and Staneva, 2020; Crawley, 2021). To capture the respondent’s sense of their neighbourhood we follow Miranti and Evans (2019) to include the respondent’s satisfaction (on a scale from zero to ten) with ‘feeling part of their local community’ at year t .

3.4.4. Financial hardship

We follow Manturuk et al. (2012) and distinguish experienced financial hardship from perceptions of financial hardship. For experienced financial hardship we rely on existing literature in the fields of economics and psychiatry that has developed a financial hardship measure using the HILDA data (Bray, 2001; Breunig and Cobb-Clark, 2006; Kiely et al., 2015).

A respondent experiences financial hardship in year t , if they have confirmed during the year t -survey that any of the following four

Table 1
Incidence of homeownership in our sample of unemployed (2001–2019).

$N = 3826$	Frequency	% of total sample
Owner	1936	50.6%
- Outright	830	21.7%
- Mortgagor	1106	28.9%
Non-owner	1890	49.4%
- Paying rent (private market)	1890	49.4%

statements applied between the start of the year and the time of the interview (typically in October), because of a shortage of money:

- (i) Pawned or sold something
- (ii) Went without meals
- (iii) Was unable to heat home
- (iv) Asked for help from welfare / community organizations

The variable to measure experienced hardship in year t is therefore binary (zero if none of the four statements apply; one if at least one of them applies). Prior to successfully applying this hardship variable in an economic context, Gerards and Welters (2020; 2022a) have conducted construct validity tests finding that the four items indeed load onto one factor.

To gauge a respondent’s perceived financial hardship in year t we follow Singh et al. (2021) and Tahir et al. (2021) and exploit a question in the survey asking respondents “Given your current needs and financial responsibilities, would you say that you and your family are ... prosperous / very comfortable / comfortable / just getting along / poor / very poor”. We create a binary variable from the answers to this survey question, classifying the answers ‘poor’ and ‘very poor’ affirmative to perceptions of financial hardship (one), other answers not (zero).

Table 2 contains descriptive statistics for our outcome variables split by the respondents’ housing status. The table confirms many of the predictions that arise from the literature. In year t , unemployed homeowners report lower ex-ante residential mobility intentions (likelihood to move in the next 12 months) than non-homeowners. In year $t + 1$, they also report lower ex-post residential mobility (completed a work-motivated residential move in the preceding 12 months). Unemployed homeowners are more likely active members of community clubs and feel more part of their local community than non-homeowners—evidence of higher neighbourhood social capital. Unemployed homeowners also report both less experienced and perceived financial hardship than non-homeowners. Finally, and contrary to theoretical predictions, unemployed homeowners report higher reservation wages than non-homeowners. Of course, these are merely bivariate results, which require corroboration in the multivariate PSM analysis.

3.5. Control variables

To ascertain the effect of homeownership (H) on outcome i (O_i), ideally, we focus on a group of homeownership unemployed respondents ($H = 1$) and compare their outcome, $O_i^{H=1} | H = 1$, to the counterfactual outcome, $O_i^{H=0} | H = 1$ (i.e., had they not owned the house in which they live). The difference in the expected value of both terms is the average treatment effect on the treated (ATT). However, since we do not observe the counterfactual, we cannot calculate the ATT.

We do observe the outcome for non-homeowners, $O_i^{H=0} | H = 0$, which

Table 2
(Differences in) means dependent variables by housing status (two-sided t -tests) (2001–2019).

$N = 3826$	Homeowner	Non-homeowner
Residential mobility		
- Likelihood to move in next 12 months	2.02	*** 2.99
- Work-motivated residential move	0.01	*** 0.05
Reservation wage		
- Lowest acceptable gross hourly wage	17.17	*** 14.27
Neighbourhood social capital		
- Active member community club	0.33	*** 0.23
- Feeling part of their local community	6.25	*** 5.71
Financial hardship		
- Experienced financial hardship	0.19	*** 0.41
- Perceived financial hardship	0.08	*** 0.19

Notes: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

we can validly compare to $O_i^{H=1}|H = 1$, if O_i and H have no shared determinants, i.e., are independent. If they do share determinants, we can achieve conditional independence, if we match homeowners ($H = 1$) to non-homeowners ($H = 0$) on the variables that are joint determinants of homeownership and outcome i , and that way still produce an unbiased estimate of the ATT.

The analysis must therefore address potential joint determination of homeownership status and the outcome variables. Informed by the housing market and labour market literature discussed above and exploiting the richness of the data set, we have compiled an expansive list of control variables (see Table 3).

We control for a broad set of personal characteristics of the unemployed respondents, measured at year t : age, educational attainment, sex, indigenous status, unemployment duration, conditions attached to unemployment benefit eligibility,³ perceptions about their general health,⁴ and perceptions about their social support.⁵

We also control for unemployment benefit eligibility in years t and $t - 1$ to capture the effects of unemployment benefit dependence. Additionally, we control for a broad set of household characteristics at year t : household composition, household income, metropolitan residence,⁶ and household net savings. To account for recent changes in household composition and household income, we use information from year $t - 1$, to include change in household composition and change in household income between year t and year $t - 1$.

Our analysis must also specifically control for potential endogeneity, which may enter the analysis because (1) persons with low mobility preferences may self-select into homeownership or (2) persons with weak labour market performance in the past (which likely correlates with current labour market performance) may lack the financial resources to acquire a home.

Apart from the personal and household characteristics that may pick up mobility preferences and past labour market performance, we specifically include four personality traits from McRea and Costa (2008)'s five factor model of personality, to address latent mobility preferences. The four we include are openness, extroversion, agreeableness and emotional stability, based on Jokela's (2021) demonstration that these four link to residential mobility preferences (and that conscientiousness does not). To account for past labour market performance, we specifically include three controls. We include a (dummy) variable measuring whether 'at least one parent was employed when the respondent was 14 (1 if yes)', which may capture intergenerational disadvantage and therefore a potential indication of early career performance (Cobb-Clark, 2010; OECD, 2010). Second, we include a variable capturing the reason for the most recent job separation (if applicable) that led to the current uncompleted spell of unemployment. This variable measures who initiated the job separation (employer or employee), which is valuable to understand past labour market performance. Third, we include a variable 'time in unemployment as share of time since completing fulltime education' in the analysis as an explicit control for past labour market performance.

Since our analysis comprises two decades, we must also control for (institutional) changes in the housing and labour market that may affect outcomes in these two markets. In the first stage of the propensity score matching analysis, we establish the propensity to be a homeowner. We need to control for (institutional) changes in the housing market that impact that propensity. We include two specific and one general

³ In the Australian labour market policy context, access to unemployment benefits may be conditional on meeting activity requirements under the 'mutual obligations' framework (Gerards and Welters, 2022b).

⁴ We use the validated short-form construct for general health (Ware et al., 2007).

⁵ We use the validated construct 'index of social support' (Flood, 2005).

⁶ We define metropolitan residence as respondents who reside in the major statistical regions of Sydney, Melbourne, Brisbane, Adelaide or Perth.

Table 3
(Differences in) means dependent variables by housing status (two-sided t -tests) (2001–2019).

$N = 3826$	Homeowner	Non-homeowner
<i>Unemployment history</i>		
Time in unemployment as a share of time since completing full-time education	0.17	*** 0.26
Time (months) currently in unemployment	7.31	** 8.76
Unemployment benefit recipient at time 't-1' and 't'		
Both at 't-1' and 't' (sustained dependence)	0.07	*** 0.14
Only at 't-1', not at 't' (recently became ineligible)	0.01	* 0.02
Not at 't-1', only at 't' (recently became eligible)	0.20	*** 0.32
Neither at 't-1' nor at 't' (sustained independence)	0.72	*** 0.52
'Mutual obligations' requirement (1 if yes)	0.31	*** 0.59
Reason for latest job separation		
Never employed	0.06	0.05
End-of-contract	0.16	0.16
Laid-off	0.30	*** 0.25
Quit	0.43	** 0.48
Other	0.05	0.06
<i>Financial position</i>		
Gross weekly household income	1685	*** 877
Change in household income (income 't' / income 't-1')		
10% or more reduction	0.35	0.38
less than 10% swing either way	0.27	* 0.24
10% or more increase	0.38	0.38
Household net savings	25,918	*** 6663
<i>Family background</i>		
At least one parent employed when respondent was 14 (1 if yes)	0.96	*** 0.89
Household composition		
Couple without dependent children	0.31	*** 0.21
Couple with dependent children	0.43	*** 0.26
Single with dependent children	0.06	*** 0.14
Single without dependent children	0.06	** 0.04
Single	0.08	*** 0.25
Single with non-related adults	0.05	*** 0.10
Household composition change between 't-1' and 't'		
No change	0.93	*** 0.85
Couple to single	0.03	*** 0.08
Single to couple	0.04	*** 0.07
<i>Personal background</i>		
Age (years)	38.31	*** 32.06
Educational attainment		
Year 12 or below	0.45	*** 0.58
Certificate III or IV	0.24	0.24
Advanced diploma	0.09	*** 0.06
Bachelor degree or higher	0.21	*** 0.12
Sex (1 if male)	0.50	0.49
Indigenous (1 if yes)	0.02	*** 0.08
General health (from the SF36)	65.64	* 63.97
Index of social support	11.51	*** 9.42
<i>Personality traits</i>		
Openness to experience	4.41	4.43
Extroversion	4.34	4.33
Agreeableness	5.30	5.27
Emotional stability	4.99	*** 4.76
<i>Labour market environment</i>		
Residing in major metropolitan area (1 if yes)	0.60	*** 0.52
Regional unemployment rate	5.29	5.35
Labour force participation rate	64.96	65.00
Underutilisation rate	13.03	13.10
Casualization rate	24.33	24.34
Trade union density	18.27	* 18.03
Net replacement rate (in unemployment)	40.88	* 40.66
Vacancy rate	1.47	1.48
<i>Housing market environment</i>		
House price to income ratio	140.05	* 141.00
State level homeownership rate	67.92	*** 67.36

(continued on next page)

Table 3 (continued)

N = 3826	Homeowner		Non-homeowner
Standard variable mortgage interest rate	6.31		6.25
First Home Owner Grant supplement (1 if yes)	0.36	***	0.43
Survey year	2011.94	*	2012.34

Notes: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

variable. First, we include the house price to income ratio as depicted in Fig. 1. The considerable increase in this ratio, will have adversely impacted the ability of renters to transit to homeownership over the course of the two decades. Second, we include a dummy variable for supplemental support that federal and state governments introduced during and after the 2008 financial crisis to the existing First Home Owner Grant (FHOG) support scheme. The federal government increased the FHOG between October 2008 and December 2010 to further facilitate homeownership (and support the construction industry during the crisis). The Queensland, New South Wales and Western Australia state governments provided additional support to supplement the federal FHOG in the aftermath of the crisis as well. In the years that federal and or state-level supplemental support to the FHOG existed, the dummy variable takes on the value of one, otherwise zero. We also include a year dummy in the analysis to control for any other institutional changes in the housing market.

As we are estimating the effect of homeownership on various labour market related outcomes, we also need to control for (institutional) changes in the labour market that may affect these outcomes. We include seven variables that capture labour market conditions. The regional unemployment rate is measured at the level of major statistical regions, of which there are 14 in Australia. The labour force participation rate, underutilisation rate, casualisation rate, union density, net replacement rate and the vacancy rate are measured at the national level. The year dummy should pick up other institutional changes to the labour market.

The set of control variables is a mixture of time-varying and seven time-invariant ('fixed characteristics') variables. The inclusion of the latter ('time in unemployment as a share of time since completing full-time education', 'reason for latest job separation', 'at least one parent employed when respondent was 14 (1 if yes)' and personality traits 'openness to experience', 'extroversion', 'agreeableness', and 'emotional stability') is part of our strategy to account for unobserved heterogeneity between unemployed homeowners and non-homeowners (more on this strategy in Section 4.3).

Reviewing Table 3, we note, not surprisingly, considerable differences between unemployed homeowners and non-homeowners. The variables we include in the analysis to account for historical labour market performance (a first source of endogeneity) suggest the endogeneity concern is warranted in our data. Unemployed homeowners have spent lower shares of time in unemployment since completing full-time education than non-homeowners. The most recent job separation is more likely employer-driven (laid-off) than employee-driven (quit) for unemployed homeowners compared to non-homeowners. At age 14, the unemployed homeowners are also more likely to have had (at least) one parent in employment than non-homeowners. The personality traits that we include to account for mobility preferences (a second source of endogeneity) suggest that the concern of endogeneity driven by mobility preferences is partially warranted. We note that non-homeowners have lower emotional stability, which Jokela (2021) links to a higher probability of moving due to neighbourhood, housing, and family reasons.

Further, we note that homeowners are less reliant on unemployment benefit support and (subsequently) less likely subject to benefit eligibility requirements. Their current uncompleted spell of unemployment is also shorter. Unemployed homeowners also have better and more stable household income and higher household net savings. The

homeowners in our sample are also more likely to live in a couple household (with and without dependent children) than non-homeowners, who are more likely to be single. Also, we note that household composition of homeowners is more stable than that of non-homeowners.

Turning to personal characteristics of respondents, we observe that homeowners in our sample are older, more highly educated and less likely Indigenous than non-homeowners. Homeowners report higher levels of perceived mental health and higher levels of perceived social support. Finally, we observe that homeowners are more likely to reside in metropolitan Australia and in states with higher homeownership rates than non-homeowners.⁷

As the next section of our article will show, the matching analysis that we apply, will account for these differences between unemployed homeowners and non-homeowners.

4. Results

4.1. Results and quality of the propensity score matching procedure

Table A1 in the supplementary materials provides the propensity score estimates to be a homeowner. This multivariate analysis confirms various bivariate effects that we saw in Table 3. However, there are also some differences, particularly around the role of past household income. The multivariate analysis confirms that current household income is positively related to homeownership (as are net savings), but it also shows that higher household income in the previous period increases current homeownership. An asymmetric relationship between household income and homeownership may explain this finding, i.e., higher income raises the financial ability to achieve homeownership, but a (subsequent) drop in household income need not necessitate surrendering homeownership. This explanation is consistent with the positive home-equity enjoyed by nearly all homeowners in our sample, potentially buffering against (temporary) drops in household income.

Since the PSM matches homeowners to non-homeowners with similar propensity scores, we require solid overlap between the propensity score distributions of homeowners and non-homeowners. Fig. A1 in the supplementary materials shows sufficient overlap, which enables matching homeowners to non-homeowners with similar propensity scores. However, differences in the tails of the distributions exist, so we exclude homeowners from the analysis who have propensity scores higher (lower) than the highest (lowest) score of any non-homeowner (i.e., we impose common support). Also, we adopt the Epanechnikov kernel (0.06 bandwidth), which is shown to perform well with relatively small sample sizes (Huber et al., 2013).

Table 4 presents detailed matching quality indicators. Because we use a consistent set of control variables and thus a consistent sample across all dependent variables that we ultimately estimate, the process of estimating the propensity of homeownership and subsequent matching of homeowners to non-homeowners with similar propensity scores is the same regardless of the dependent variable. Post matching, there are no variables in the model left with statistically significant differences in means at 10% and only one with absolute standardized bias of 5% or higher (extroversion at 5.2%). The maximum bias of any variable after matching is lower than the maximum bias of any variable before matching. The mean and median standardized biases post matching are below the 3% – 5% threshold that Caliendo and Kopeinig (2008) recommend. The pre and post matching p -value of the joint

⁷ We note that homeowners are less likely to reside in an area where a First Home Owner Grant supplement applies. This is chiefly the case, because the three states and territories (New South Wales, Queensland and the Northern Territory) that issued supplements have low homeownership rates. This effect will disappear in the multivariate analysis because we control for the state level homeownership rate.

Table 4
Matching quality indicators.

Matching quality indicators	Before matching	After matching
Number of variables with significant difference in means at up to 10% ^a	36	0
Number of variables with absolute standardized bias		
< 1%	2	9
1% - 3%	6	24
3% - 5%	1	13
≥ 5%	38	1
Maximum standardized bias	66.0	5.2
Mean standardized bias	16.5	2.4
Median standardized bias	10.0	2.3
P-value of joint sign. test	0.000	0.514
Pseudo R-squared	0.236	0.009
Number of observations outside common support	–	19
Total number of variables	47	47

Notes: ^a Tested using *t*-test.

significance test and the pseudo-R² provide further evidence of high matching quality.

Given the extensive list of control variables that we apply, the inclusion of specific controls for potential endogeneity, and the high matching quality achieved, we believe we uphold conditional independence and hence the findings of the analysis can be treated as causal.

4.2. Main estimation results

Table 5 contains the findings of the PSM analysis. We find that homeownership reduces residential mobility ex-ante (likeliness to move in the next twelve months) as well as ex-post (work-motivated residential move) for the unemployed, which is in line with the existing literature in various countries (Battu et al., 2008; Munch et al., 2008; Lux and Sunega, 2012; Caliendo et al., 2015). The bivariate analysis in Table 2 suggested that unemployed homeowners have higher reservation wages than unemployed non-homeowners, which runs contrary to the theoretical argument. The (multivariate) PSM analysis produces no difference between homeowners and non-homeowners in terms of reservation wages, which highlights the importance of the PSM analysis. Our finding is in line with findings for Germany (Caliendo et al., 2015). Further, we find that unemployed homeowners have higher levels of neighbourhood social capital, which confirms findings from previous research in New Zealand and Canada (Roskrugue et al., 2013; Leviten-Reid and Matthew, 2018). Both actual engagement (active member community club) and perceived inclusion (feeling part of their local community) are higher for unemployed homeowners than for non-homeowners. Finally, and importantly, we confirm the effect of homeownership on financial hardship. Homeownership reduces both

Table 5
Main results: Matching estimates of housing status (treatment is homeowner) on the dependent variables.

	ATT	p-value	se	N	n treated	n untreated	Off support	Mean Bias	Median Bias
Residential mobility									
Likeliness to move in next 12 months	-0.948***	0.000	0.071	3826	1917	1890	19	2.4	2.3
Work-motivated residential move in the past 12 months	-0.044***	0.000	0.011	3826	1917	1890	19	2.4	2.3
Reservation wage									
Lowest acceptable gross hourly wage	-0.411	0.564	0.713	3826	1917	1890	19	2.4	2.3
Neighbourhood social capital									
Active member community club	0.069**	0.003	0.023	3826	1917	1890	19	2.4	2.3
Feeling part of their local community	0.482***	0.000	0.114	3826	1917	1890	19	2.4	2.3
Financial hardship									
Experienced financial hardship	-0.081***	0.000	0.019	3826	1917	1890	19	2.4	2.3
Perceived financial hardship	-0.067***	0.000	0.017	3826	1917	1890	19	2.4	2.3

Notes: Coefficients are average treatment effects on the treated. We use the Epanechnikov kernel, common support, bandwidth 0.06, robust standard errors (499 bootstraps) clustered on the individual. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

experienced and perceived financial hardship of the unemployed.

Thus far, we have compared homeowners (with positive home equity) to non-homeowners. Whilst that is an appropriate division to test whether positive home equity shields households from financial hardship, it does treat homeowners as a homogeneous group. It is conceivable though that regular mortgage repayments cause financial hardship in the same fashion as regular rent payments do for renters. Along the same line, Rouwendal and Nijkamp (2010) argue, assuming decreasing marginal utility of consumption, that the utility of earning additional income is higher for mortgagors (who must allocate more of their income to housing cost and therefore less towards utility enhancing consumptive expenditure) than for outright owners, with consequences for job search behaviour (which may affect residential mobility intentions and reservation wages). Morescalchi (2016) indeed finds that mortgagors exhibit more intense job search than outright owners.

Splitting the group of homeowners into outright owners and mortgagors may therefore be relevant to explore whether mortgagors perhaps exhibit behaviour more aligned with renters than outright owners do. Tables A2 (mortgagors versus renters) and A3 (outright owners versus renters) in the supplementary materials contain the results but produce no evidence to support the split. Mortgagors are different from renters in similar ways as outright owners differ from renters.

4.3. Additional analyses for unobserved heterogeneity

Besides including fixed-characteristics ('time-invariant') control variables in the analysis, we perform two additional analyses to reassure that our main analysis is robust to unobserved heterogeneity: (a) balancing on omitted observables and (b) a difference-in-difference (DID) analysis.

4.3.1. Balancing on omitted observables

For this additional analysis, we use Table A1 to define a core set of independent variables (all independent variables which are statistically significant (at 5%) in the first stage of the main PSM analysis). From these 13 core independent variables, we then select four, which relate to separate domains of potential unobserved heterogeneity, and re-run the PSM first stage but purposely exclude these four to simulate as if they were unobserved. These four are 'unemployment benefit recipient', 'at least one parent employed when respondent was 14 (1 if yes)', 'index of social support', and 'state level homeownership rate' and they related to potential unobserved heterogeneity as briefly explained below.

Access to unemployment benefits in Australia is typically reserved for those out of employment who remain below asset and income thresholds (all three measured in our analysis). However, access to some government income support packages (e.g., veteran payments for either the unemployed person or their partner) precludes access to unemployment benefits, which is unobserved in our analysis (but may affect

labour market behaviour). The independent variable ‘unemployment benefit recipient’ picks up this type of unobserved heterogeneity. The independent variable ‘at least one parent employed when respondent was 14 (1 if yes)’ picks up unobserved historical background features of a respondent. The independent variable ‘index of social support’ picks up unobserved personal traits of a respondent, whilst the independent variable ‘state level homeownership rate’ picks up unobserved spatial differences in the environment in which respondents make housing-related choices.

Not including these four independent variables in this additional PSM analysis, will cause unobserved heterogeneity, unless this PSM analysis balances homeowners and non-homeowners on these four variables in absence of their inclusion. If this balancing indeed occurs, we take it as an indication that the main PSM analysis we report in Table 5 also balances homeowners and non-homeowners on other truly unobserved independent variables.

Consequently, we run stage one of the PSM analysis without the above four core independent variables (but include all other core and all non-core independent variables) to establish propensity scores for all respondents. We explore balancing on the four purposely omitted core independent variables on the propensity score range 0.25 to 0.75 (approximately plus / minus one standard deviation from the mean) and employ 0.1 propensity score calipers.

Table 6 shows the results. The ‘whole sample’ column shows that in absence of propensity score balancing, mean differences between homeowners and non-homeowners for all four core independent variables are statistically significant at $p < 0.001$ (except one which is significant at $p < 0.01$). After establishing propensity scores in the additional PSM analysis, within which we purposely omitted these four core independent variables, mean differences between homeowners and non-homeowners with respect to these four omitted core independent variables converge universally. Only two of 35 mean differences remain statistically different.

The findings in Table 6 confirm that the rich set of control variables in our main PSM analysis enables balancing on unobserved independent variables, i.e., controls for unobserved heterogeneity.

4.3.2. Difference-in-difference (DID) analysis

For our second additional analysis, we conduct a DID analysis, with a particular focus on the parallel trends assumption. We select respondents who (a) were present in four consecutive waves, (b) did not change housing status during those four consecutive waves, and (c) were employed in the first two waves and unemployed in the following two waves. This minimum specification for a DID analysis reduces the sample to 100 respondents.

The DID analysis explores whether the change in employment status (from employment to unemployment) affects homeowners differently than non-homeowners with respect to experienced hardship. A full DID analysis will reveal three aspects. It will reveal whether (1) experienced hardship of homeowners and non-homeowners evolves in parallel before the onset of unemployment (i.e., the parallel trends assumption), (2) the onset of unemployment affects experienced hardship of

homeowners and non-homeowners differently, and (3) experienced hardship of homeowners and non-homeowners evolves in parallel when the spell of unemployment lengthens.

Meeting the parallel trends assumption serves as a robustness check for unobserved heterogeneity. That is, if unobserved heterogeneity between homeowners and non-homeowners exists, it is likely that pre (job loss) trends in experienced hardship are not parallel for homeowners and non-homeowners. The second and third aspects of the DID analysis are complementary to our main PSM analysis, i.e., whilst the PSM analysis shows that unemployed homeowners are less likely to experience hardship than unemployed non-homeowners, it does not show whether job loss causes this difference, nor whether the difference in experienced hardship changes with the duration of the unemployment spell. Aspects two and three of the DID analysis address these questions, respectively.

Table 7 contains the results of the DID analysis with experienced financial hardship as the dependent variable. Since experienced hardship is a binary variable, we specify a probit model. However, since such a specification assumes individual effects are random, we also specify a linear model with fixed effects. We accept the parallel trends assumption for both the random and fixed-effects models (first column), i.e., find no evidence of unobserved heterogeneity between homeowners and non-homeowners pre job loss. We find evidence that job loss increases experienced hardship (fixed-effects model), however, do not find that this effect is different for homeowners and non-homeowners (second column). Finally, the length of the uncompleted spell of unemployment reduces experienced hardship over time (random-effects model), perhaps because of expenditure realignment, but does not affect the difference in experienced hardship between homeowners and non-homeowners (third column).

4.4. Sensitivity analyses and correction for multiple hypothesis testing

Apart from our main results from the PSM analysis reported in Table 5 - using the Epanechnikov kernel, 0.06 bandwidth and common support - we performed sensitivity analyses by testing a variety of different estimation strategies on all our dependent variables. Table A4 in the supplementary materials shows the results using different bandwidths, matching algorithms and trimming strategies. Our results are robust to these different strategies.

Because we test seven hypotheses on the same sample, it is recommended that we correct the p -values in Table 5 for the Family Wise Error Rate of hypothesis tests, also known as multiple hypothesis testing (e.g., Romano and Wolf, 2005, Clarke et al., 2019). Table A5 in the supplementary materials shows the corrected p -values. Except the p -value for being an active member in a community club, all the corrected p -values remain (highly) significant. Hence, we continue to accept that home-owning unemployed have lower residential mobility ex-ante and ex-post, have higher levels of neighbourhood social capital in terms of feeling part of their local community, and are less likely to experience and perceive financial hardship.

Table 6

Statistically significant differences in means for four omitted core independent variables by housing status (two-sided t -tests) (2001–2019).

Omitted core independent variables	Propensity score range					
	Whole sample	0.25–0.35	0.35–0.45	0.45–0.55	0.55–0.65	0.65–0.75
Unemployment benefit recipient at time ‘t-1’ and ‘t’	***	–	–	–	–	–
Both at ‘t-1’ and ‘t’ (sustained dependence)	***	–	–	–	–	–
Only at ‘t-1’, not at ‘t’ (recently became ineligible)	**	–	–	–	–	*
Not at ‘t-1’, only at ‘t’ (recently became eligible)	***	–	–	–	–	–
Neither at ‘t-1’ nor at ‘t’ (sustained independence)	***	–	–	–	–	–
At least one parent employed when respondent was 14 (1 if yes)	***	–	**	–	–	–
Index of social support	***	–	–	–	–	–
State level homeownership rate	***	–	–	–	–	–

Notes: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

Table 7
Difference-in-difference analysis in experienced hardship for homeowners and non-homeowners following job loss.

Independent variables †	Pre job loss		Job loss		Post job loss	
	Probit (RE)	OLS (FE)	Probit (RE)	OLS (FE)	Probit (RE)	OLS (FE)
Homeownership (1 if yes)	0.018		−0.549		−1.249	
Time	0.234	0.089			−1.225*	−0.138
Treatment (job loss)			0.497	0.132*		
Homeownership X time	−0.276	−0.103			1.167	0.132
Homeownership X treatment			0.253	−0.066		
N (respondents)	100	100	100	100	100	100
N (observations)	200	200	400	400	200	200
Wald chi ²	42.18*		48.72**		18.51	
F-test		0.96		2.13*		1.43

Notes: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, † The random effects models include 12 of the 13 core independent variables as discussed earlier in Section 4.3 (since 'unemployment benefit recipient' is irrelevant for employed respondents, this independent variable is excluded), the fixed effects models include the same independent variables excluding fixed-characteristics variables 'reason for latest job separation', 'At least one parent employed when respondent was 14 (1 if yes)', 'age', 'Indigenous status' and 'extroversion'.

5. Discussion

Financial hardship is increasingly recognised in the literature as an impediment to job search quality of the unemployed (Herkenhoff et al., 2017; Herkenhoff and Ohanian, 2019; Gerards and Welters, 2020, 2022a). In this article, we hypothesize that homeownership shields the unemployed from financial hardship. If so, our research confirms a novel channel through which homeownership affects outcomes relevant to the labour market for the unemployed, in addition to the known residential mobility, neighbourhood social capital and the reservation wage channels.

To test our hypothesis, this article studies 3826 unemployed Australians, of whom 1936 are homeowners and 1890 are renters in the private market. We conduct a matching analysis in which we match homeowners to non-homeowners using a comprehensive set of variables measured prior to and at the time of measuring financial hardship to obtain a like-for-like comparison. Importantly, the richness of the dataset enables the inclusion of personality traits (focusing on those linked to mobility preferences) and historical labour market performance to overcome potential endogeneity, which often plagues studies in this field of research. Furthermore, we include seven variables capturing time-invariant fixed characteristics in the analysis to account for unobserved heterogeneity between homeowners and non-homeowners and demonstrate that the matching analysis likely balances on remaining unobservables. A subsequent DID-analysis produces no evidence of (remaining) unobserved heterogeneity.

Since there is no recent analysis of the effect of homeownership on outcomes relevant to the labour market in the Australian context, we first explored the effect of homeownership on residential mobility, neighbourhood social capital and the reservation wage. Our findings in the Australian context broadly corroborate findings in the international literature. We find that unemployed homeowners have both lower ex-ante (likeliness to move in the next 12 months) and ex-post residential mobility (completion of a work-motivated residential move in the next 12 months) than renters. These findings align with findings for the Czech Republic (Lux and Sunega, 2012), Denmark (Munch et al., 2006), Germany (Caliendo et al., 2015) and the UK (Battu et al., 2008). We find no effect of homeownership on an unemployed person's reservation wage, which aligns with findings for Germany (Caliendo et al., 2015). We find a positive relationship between homeownership and neighbourhood social capital. That is, homeowners are more likely to participate in and feel part of the local community than renters, which aligns with findings for New Zealand (Roskrugue et al., 2013) and Canada (Leviton-Reid and Matthew, 2018).

We specified measures of experienced and perceived financial hardship and find that unemployed homeowners report lower financial hardship (both experienced and perceived) than unemployed renters, which accords with findings for lower and middle-income earners

(Manturuk et al., 2012) and income earners in general (Deidda, 2015).

Our findings have both academic and policy relevance. We add financial hardship as a channel through which homeownership affects labour market outcomes of the unemployed. This is important for researchers who explore the relationship between homeownership and labour market outcomes. So far, the argument has been that homeownership reduces residential mobility, but lower mobility does not necessarily lead to poorer labour market outcomes for homeowners, because homeowners set lower reservation wages and have better neighbourhood social capital. We find that homeowners are also less likely to experience financial hardship, which is an additional advantage on the labour market (Herkenhoff and Ohanian, 2019; Gerards and Welters, 2022a). We also showed that these findings hold for both outright owners and for mortgagors. However, we treated mortgagors as a homogenous group. It is conceivable that mortgagors with relatively high mortgage repayments and relatively low levels of positive home equity exhibit similar behaviour to renters—an avenue for future research.

Adding a channel through which homeownership affects labour market outcomes, also heightens the importance to use ex-ante measures of labour market outcomes. Researchers who for example use post-unemployment wages (an ex-post measure) to test the effect of homeownership on reservation wages (Caliendo et al., 2015; Meekes and Hassink, 2019; Yang, 2019), should bear in mind that homeownership also affects post-unemployment wages through the neighbourhood social capital and the financial hardship channel. It is therefore more precise of using ex-ante measures of labour market outcomes to identify a particular channel effect of homeownership on labour market outcomes.

Homeownership (in stable housing markets) is one of the few effective ways that low-income households can use to accumulate wealth (Turner and Luea, 2009; Wainer and Zabel, 2020), which may shield them from financial hardship. However, recent reductions in affordability have put downward pressure on homeownership rates in many OECD countries (OECD, 2021), narrowing the pathway of low-income households to wealth accumulation. Literature linking financial hardship to job search quality combined with our finding that homeownership shields the unemployed from financial hardship, suggest the effects of declining homeownership rates may extend to the labour market. If policymakers consider interventions to support homeownership, it is important they consider these wider effects. Specifically for the unemployed, our findings suggest that if access to unemployment benefits is asset tested, the principal home should be exempted from the asset test to ensure that the unemployed do not need to cash out their hardship-shielding home equity before becoming eligible for benefits.

6. Conclusions

This study demonstrates, using Australian longitudinal data, that homeownership reduces the likelihood that unemployed persons experience financial hardship during their job search. We find this effect for both experienced and perceived measures of financial hardship. Building on an emerging body of literature that links financial hardship to reductions in job search quality, homeownership may improve labour market outcomes of the unemployed through its effect on financial hardship. The effect of homeownership on labour market outcomes through financial hardship is new to the body of literature that explores the relationship between homeownership and labour market outcomes. Furthermore, we confirm that homeownership reduces residential mobility (both ex-ante and ex-post measures) and raises neighbourhood social capital. We find no effect of homeownership on the reservation wage of the unemployed.

Importantly, in our analysis we control for historical labour market performance and mobility preferences (through the inclusion of related personality traits) to address potential endogeneity on the relationship between homeownership and labour market outcomes.

Our study shows that declining homeownership rates, as recently witnessed in many OECD countries, have wide-reaching consequences. Policymakers should incorporate these consequences if considering interventions to halt homeownership rate declines.

CRedit authorship contribution statement

Riccardo Welters: Conceptualization, Data curation, Methodology, Software, Formal analysis, Writing – original draft, Writing – review & editing, Investigation, Visualization, Supervision. **Ruud Gerards:** Conceptualization, Methodology, Software, Formal analysis, Writing – original draft, Writing – review & editing, Investigation. **Kyran Mellor:** Investigation, Writing – original draft.

Declarations of competing interest

None.

Data availability

This article uses unit record data from the Household, Income and Labour Dynamics in Australia (HILDA) survey. Data from the HILDA Survey is available to researchers living in Australia or overseas.

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Supplementary materials

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