

More Mortgages, More Homes? The Effect of Housing Financialization on Homeownership in Historical Perspective

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Abstract

Recent research has emphasized the negative effects of finance on macroeconomic performance and even cautioned of a “finance curse.” As one of the main drivers of financial sector growth, mortgages have traditionally been hailed as increasing the number of homeowners in a country. This article uses long-run panel data for seventeen countries between 1920 (1950) and 2013 to show that the effect of the “great mortgaging” on homeownership rates is not universally positive. Increasing mortgage debt appears to be neither necessary nor sufficient for higher homeownership levels. There were periods of rising homeownership levels without much increase in mortgages before 1980, thanks to government programs, purchasing power increases, and less inflated house prices. There have also been mortgage increases without homeownership growth, but with house price bubbles thereafter. The liberalization of financial markets might after all be a poor substitute for more traditional housing policies.

Keywords

financialization, homeownership, mortgage debt

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Some housing researchers speak of a new urban or new housing question.¹ Following the Global Financial Crisis (GFC) of 2008, many countries' households were encumbered with high volumes of mortgage debt, high housing prices and affordability problems, and stagnating or falling homeownership rates. Young members of this generation are often worse off than their parents in the housing sector despite the large inheritance wave.² Much of this has to do with housing prices and correlated rents that have reached levels that even real estate optimists would not have predicted thirty years ago and that even a financial crisis could only partially depress.³ At the same time, recent homeownership rates have been stagnating, if not falling for the first time in decades. This seems all the more surprising as almost all political parties have been defending homeownership and the liberalization and extension of financial markets in the mortgage sector was meant to support this goal. This article asks whether the "great mortgaging"⁴ across the last fifty to a hundred years has really produced the property-owning democracies so many conservative liberals and even some social democrats envisioned, or whether it has merely inflated house prices and exacerbated unaffordability.

Before the 1970s, capital markets in the housing sector were often shielded from competition, both national and international, by governmental regulation of interest rates and special circuits in housing finance.⁵ Afterward, commercial banks began to dominate housing finance, mortgage bonds were more easily traded across geographical boundaries, and competition in mortgage lending increased in most Western countries.⁶ Stimulated by the Basel I Accord, mortgages, rather than traditional business loans, became a major activity for banks. One of the central political motivations for the financial deregulation since the 1980s was to make financial markets and the private sector do what had been considered a public policy during the postwar era: to provide decent and affordable housing to all citizens, but also to provide some kind of general welfare through housing at times when the privatization of pensions started in many countries.⁷ Housing and mortgage markets were one, if not *the* central policy area for financial liberalization because aggregate mortgage credit has been the main driver behind the expansion of overall private credit markets over the last decades,⁸ whereas before the 1970s and 1980s, housing was seen as an important social policy field for most governments. The promise that financial markets could take over this governmental function was also linked to the political idea of making homeownership accessible to broad strata of the population that had previously been public or private tenants.

This article takes an empirical look at the question whether the rise of mortgages and financial markets lived up to the political idea of increasing homeownership in a range of OECD countries. Although finance has traditionally been credited with many positive functions vis-à-vis economic growth and development, the overreaching of financial markets as social policy instruments has been cited, since the GFC, as a cause of financial instability and even political radicalism.⁹ Thus, increasing household debt seems to be a good predictor for the major recessions of the last hundred or more years.¹⁰ "Too much finance" or even a "finance curse"¹¹ has recently been found to hamper economic growth,¹² slow investment in physical assets,¹³ or produce more volatile growth patterns.¹⁴ Debt thus seems to be associated with some macroeconomic vices; but does mortgage debt bring along the benefits of more homeownership?

Using an unbalanced panel data set on seventeen countries starting in 1950 (1920), this article argues that the extension of mortgage credit to households has not always led to higher homeownership rates. Many countries show a trajectory of rising homeownership rates without a proportional increase in debt, followed by a shorter period of mortgage and homeownership extension that then results in rising debts and prices but stagnating levels of homeownership. With financial crises, debt levels can rise or stagnate even though homeownership levels fall. Mortgage-indebtedness is thus neither necessary nor sufficient for homeownership increases. It is not necessary because higher wages, government programs, and affordable houses are alternative means to increase homeownership. It is not sufficient because at high levels of previous homeownership and high house prices, more mortgage debt serves to inflate asset prices, making additional increments in homeownership ever more difficult.

These findings mainly concern historically higher-income countries and are surprising in that context. In other contexts, which the discussion section will briefly mention, mortgage debt is not a necessary condition for the creation of high homeownership rates. Higher homeownership rates are often found in countries whose financial systems are poorly developed. Worldwide there is a negative cross-sectional correlation between mortgage indebtedness and homeownership. Comparing similarly developed nations controls at least somewhat for the forms of informal ownership of low-value and low-quality housing found in lower-income countries. But among mature industrial countries also, the “varieties of residential capitalism” contain the family-finance-based group of Southern European high-homeownership countries that exhibit low levels of mortgage indebtedness, to which we could add the postsocialist countries.¹⁵ In the cross-section of the seventeen countries under study here, this comparative logic is also the driver behind a negative relationship between homeownership and debt: across countries, higher mortgage debt to GDP levels are associated negatively with lower homeownership rates.¹⁶ This perspective, however, is dominantly cross-sectional, whereas the article will be more interested in longitudinal developments.

The article is organized as follows. After reviewing the literature on explanations for homeownership variation and financialization therein, I present the aggregate panel data and assess their limits. Following the descriptive results, I present the main regressions on homeownership rates and their first differences, including robustness tests. In the discussion, I offer several explanations for the main finding, mentioning means and trajectories to higher homeownership historically alternative to private mortgage indebtedness. The conclusion points to political implications, limits of the study, and further research.

Literature Review

Two threads of literature are addressed. The first explains homeownership rate variation; the second uses financial variables to explain economic phenomena and homeownership rates in particular. To explain homeownership variation, four explanatory models can be distinguished.¹⁷ The consumer choice model explains homeownership

increases by stronger individual ownership preferences or changed parameters such as a more attractive price-to-rent ratio. Supply-driven explanations, in turn, start from production-related factors such as innovation in the construction industry, but also consider the availability of cheap credit such as lower interest rates or more accessible mortgage credit. The public policy model cites variables such as state ideology and policy in favor of homeownership,¹⁸ but also general welfare variables, the idea being that larger welfare states correlate with less homeownership and welfare-state retrenchment with the rise in homeownership.¹⁹ Finally, the so-called system model considers homeownership as depending on general factors of economic development, such as GDP growth or levels of urbanization. Following the GFC, higher rates of income inequality have also been seen as one factor behind the extension of subprime loans to future homeowners.²⁰ Empirical research has mostly been cross-sectional, on the national or regional level, and variables for all four explanatory models have been found significant in different contexts (see Appendix for details). The findings are in general much driven by data availability: thus, there is much support for basic demographic and economic variables influencing homeownership levels, disputed findings about the welfare-homeownership link, and only scant evidence for housing policies' effects on homeownership.

Only in some of the studies have financial variables been included to support the claim that financial liberalization—lower equity or loan-to-value requirements and an extension of mortgage credit to more people—increased homeownership rates. A more recent literature, however, often under the term “financialization,” has made the influence of growing financial markets, growing household debt, or growing financial profits on housing (and other phenomena)²¹ a main theme.²² This literature, based in large part on case studies of developments in the 1990s and 2000s, has looked more closely on how mortgage market liberalization in the 1970s and 1980s increased debts and house prices in the United Kingdom,²³ the United States,²⁴ or the Netherlands.²⁵ It is often critical of financialization and considers it to be the source of growing inequalities, the financial crisis, and the ensuing Great Recession. It suggests that higher indebtedness before the crisis in the United States—similar to what occurred before the Great Depression of the 1930s²⁶—has led to rising foreclosures and falling homeownership rates.²⁷ Continental European cases show that an indirect influence of the growing importance of finance on homeownership is the pressure they can exert on the traditional alternative of nonprofit housing organizations. Once dependent on financial markets and investors' profit aims instead of government loans, they are often incited to sell their units at profits or to residualize them in the light of postcrisis budget cuts²⁸—thus, by making homeownership alternatives such as public renting less attractive, financialization can also have an indirect effect on homeownership.

The second thread of a more economic literature that I address uses financial variables to explain general economic phenomena. An important feature of this research is the ability to split financial credit into business and mortgage loans, or productive and unproductive loans, where the latter increase only asset prices but not economic output. Although the development of finance has traditionally been seen as an important precondition for the rise of capitalism, economic growth, and development in

general,²⁹ the shift of finance from corporations to households has led to a body of research that emphasizes finance's undesired effects. The extension of finance to private households since about 1990 has been shown to decrease income growth,³⁰ to increase income inequality by concentrating income growth,³¹ to increase trade imbalances by inflating consumption,³² to increase macroeconomic instability,³³ and to deepen recessions due to credit fallouts and asset-price shocks.³⁴ Homeownership is often thought of as a moderating mechanism, smoothing income inequalities,³⁵ as housing wealth is generally distributed more equally than wealth in other assets.³⁶ The homeownership rate alone, however, hides possible redistribution effects due to unequally growing house prices.³⁷

In general, the literature explaining homeownership is rich in institutionally dense case studies, on the one hand, and cross-sectional data sets on the other. Larger country samples and particularly the long-view perspective, however, are absent, with the exception of spot comparisons of the Great Depression and Recession. The finance-centered literature has for the most part left homeownership outside the equation as both a dependent and independent variable. This article seeks to fill these gaps by taking a long-run view on many country cases to find out how finance affected homeownership.

Data

The combined data of homeownership rates and mortgage debt make an unbalanced panel of seventeen countries with between 51 and 105 years, adding up to 1,248 country-years. The dependent variable, homeownership rates, is taken mainly from either national censuses or survey data in more recent years,³⁸ which start in general after 1945, or around 1920 for Anglo-Saxon countries and Norway. I linearly interpolated (but never extrapolated) homeownership rates for the missing years, particularly in between the early housing censuses, where at best quinquennial, or at worst decennial, data are available. Linear interpolation can be justified by the gradual behavior of homeownership rates, which can also be read off the post-1970s data points often based on annual household surveys. For robustness, however, I also use panels with quinquennial or decennial average data. The homeownership-rate definition, particularly of earlier times, is not standardized; thus minor cross-country differences should not be overinterpreted. However, the within-country perspective is more of interest here. On the side of financial data and for the long-run perspective, I rely on the Macrohistory Database,³⁹ which contains nominal house prices⁴⁰ (base = 1990) and mortgage loan data for seventeen countries since 1870.⁴¹ The latter refer to the sum of aggregated mortgage loans on banks' balance sheets. These data allow for the highest number of country-years.

The data have obvious shortcomings. First, none of the variables is measured as annual flow data, so that for each year the (change in) outstanding mortgages or (change in) cumulative homeownership rates can be used, but not the number of new mortgages or new homeowners. No distinction can thus be made between an extension of mortgages due to more mortgagors or to more mortgage volume per mortgagor, available to individual level cross-sections.⁴² Using first differences is only a partial

remedy to this problem, but aggregate data on new—instead of outstanding—mortgages or new homeowners are not available for a similar sample. Second, all data are aggregate numbers and do not contain any information about the underlying individual decision to buy or to rent. They also hide the often considerable regional differences.⁴³ More recent individual household surveys, once standardized, can shed much more light on mechanisms driving these aggregates.

As additional homeownership *policy* variables, I draw on codings of party manifesto content for nineteen democracies since 1945.⁴⁴ Southern Europe before the 1970s and Japan are missing. For each election, a party's manifesto was coded 1 if it mentioned a preference for owner-occupation, state support for homeowners, or the preferred sale of public housing units. It was coded zero if the party did not prefer homeownership *or* if it did not propose any housing policy at all. As homeownership is supported by conservative parties throughout all countries, I construct a dummy variable for political homeownership support in case the dominant left-wing party (assigned to the "social democratic family" by the manifesto project) defended homeownership. This measure, which I interpolate throughout the complete legislative period following an election, is meant to approximate how widespread homeownership support was across the political spectrum.

The dependent variable "homeownership rates" is a proportion, which takes on a sigmoidal shape with no values at the extremes. I use ordinary least squares (OLS) estimates nonetheless as almost all values fall into the 30–80 percentage point range with a density peak around 60. As the main independent variable I use the mortgage loans per GDP. As the further variables, I expect GDP per capita to have a positive within-country impact on homeownership, though cross-sectional evidence shows a negative effect.⁴⁵ Generally, if the country becomes richer and if wages increase on average, there is more room for homeownership. As this does not regard the distribution of income, I include inequality measures approximated by the share of top 10 percent income from the World Wealth and Income Database (Finland and Belgium are missing).⁴⁶ Whereas I expect a negative impact of income inequality due to lower housing affordability,⁴⁷ some researchers consider homeownership to be the private asset-based welfare of last resort and thus to be positively related to inequality. To test the trade-off hypothesis about social expenditure and homeownership, I therefore include government expenditure per GDP, expecting a negative effect, as hypothesized for country cross-sections.⁴⁸ I expect population to have a negative impact as more potential young homeowners increases the demand pressure. I further expect interest rates and house prices to have depressing effects on homeownership, as they make buying less affordable. On the other hand, they could also lure people into excessive buying behavior in boom times, allowing for more equity withdrawal.⁴⁹ I expect inflation to have a positive effect as it makes housing investment and indebtedness more attractive in comparison to less inflation resistant asset classes. To see whether the effect of mortgage debt is contextually dependent on the housing cycle, I include an interaction of house prices and time dummies with mortgage debt per GDP. Finally, I use the party-manifesto-based variable to operationalize the political support for homeownership policies.

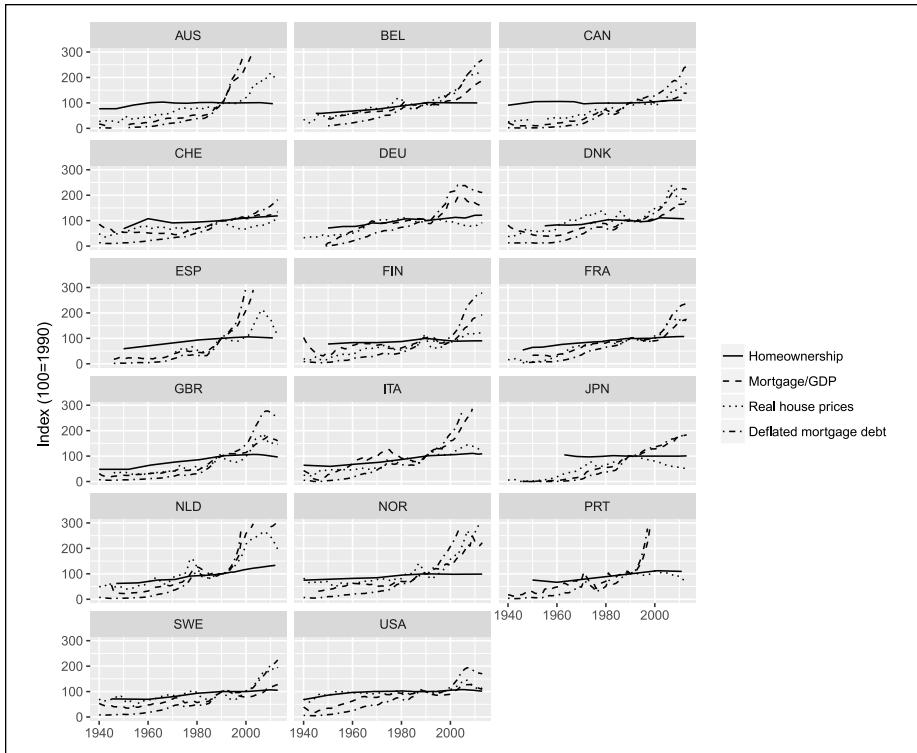


Figure 1. Indices for Homeownership Rates, Real House Prices, Real Mortgage Debt, and Mortgage Debt per GDP, Base 1990.

Source: Computed from Macrohistory Database (<http://www.macrohistory.net/data>); Kohl, *Homeownership, Renting, and Society*.

Results

The development of homeownership, house prices, and mortgage debt across the seventeen countries and all years (base 1990) is depicted in Figure 1.

Many countries had relatively high initial levels of homeownership without considerable prior growth in mortgage indebtedness, followed by an explosion of mortgage debt with no equivalent effect on the homeownership-rate side. With the exception of Japan and Portugal, there is a positive strong correlation, due to common trending, between homeownership and mortgage debt overall. This coevolution is even stronger for house prices and mortgage debt, which display similar cycles. Mortgage debt can be measured in absolute deflated volume or in relation to GDP and both curves tend to coevolve with the exception of the post-1990 period, when the growth of mortgage volume even exceeded the GDP growth. A closer look into the binary relationship between mortgage loans to GDP and homeownership for the seventeen countries is to draw all time-points on a scatterplot. As

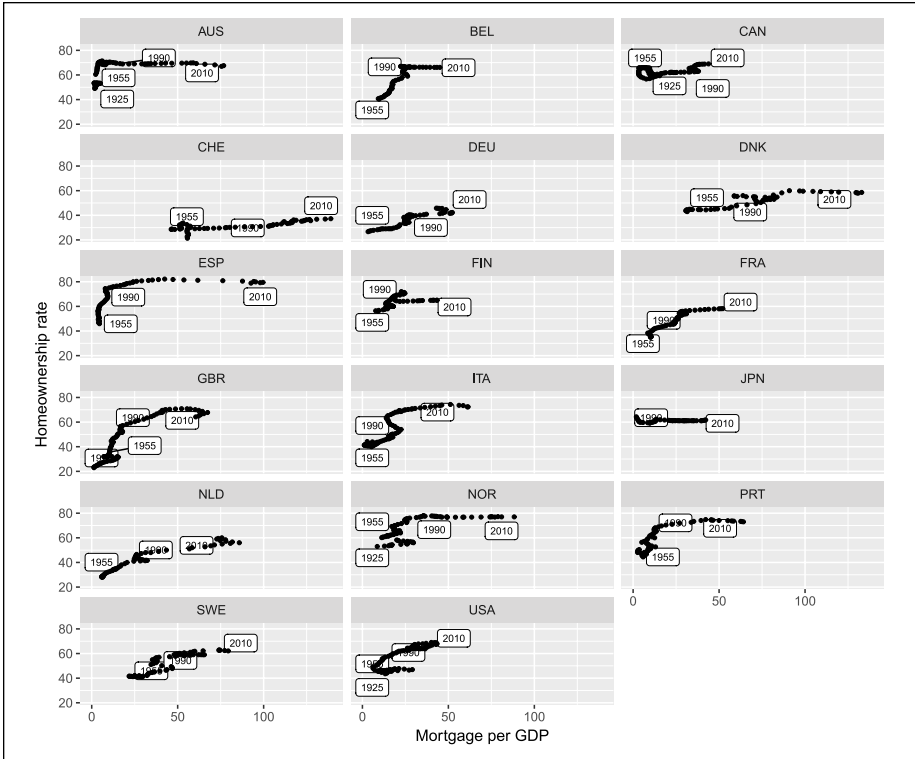


Figure 2. Homeownership and Mortgage Debt per GDP, Countries over Time.
 Source: Computed from Macrohistory Database; Kohl, *Homeownership, Renting, and Society*.

both measures grow only gradually, the points of each country, partially labeled in Figure 2, can be easily read as a trail through time.

It becomes apparent that there were long periods of homeownership increases without corresponding increases in mortgage debt in many countries (as revealed by relatively vertical movements of country trails). Spain and Australia are two extreme examples of that tendency. There were also periods in which mortgage increases led to rapid increases in homeownership rates, most visible in the case of the Netherlands, the United States, and the United Kingdom. These periods are often followed by phases when mortgage-to-GDP ratios skyrocketed and homeownership stagnated (horizontal movements). This pattern sums up the last fifty years of Japan’s homeownership history, but also characterizes most countries starting in the 1990s, particularly Norway, Australia, Spain, and Sweden. Finally, there are some fewer periods in which homeownership rates increase with debt decreasing and some periods in which homeownership decreases but debt increases. To discount for the common trends, Figure 3 shows the decennial growth of both variables, with labels reflecting the respective previous decade. The additional forty-five-degree line stands for a perfectly proportional

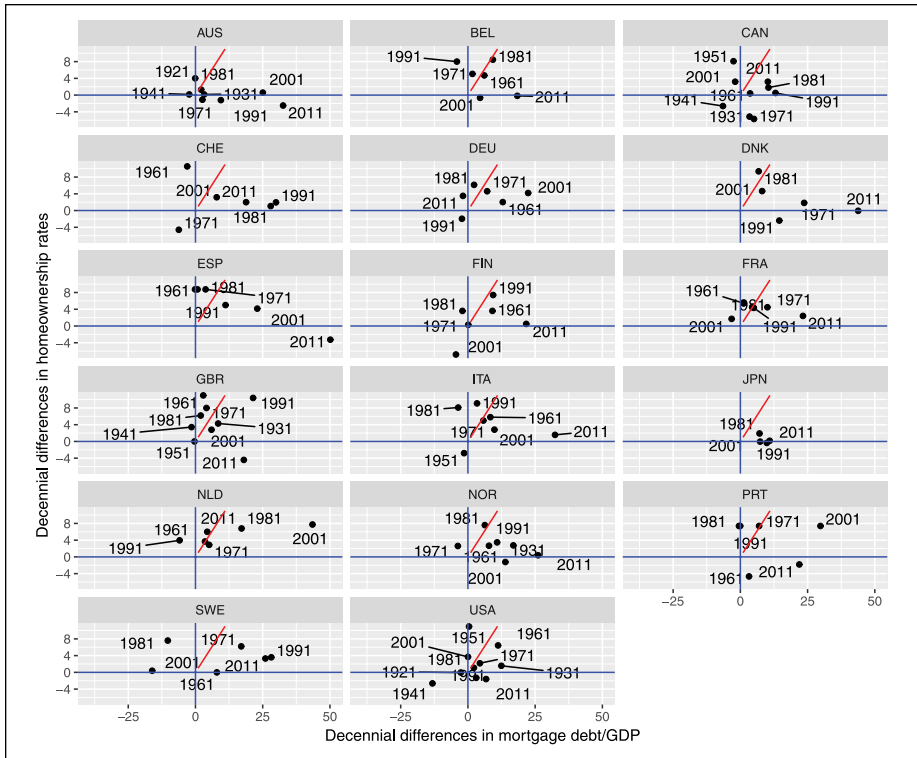


Figure 3. Decennial Growth of Homeownership and Mortgages per GDP.

Note: Year numbers refer to averages of preceding decade.

Source: Computed from Macrohistory Database; Kohl, *Homeownership, Renting, and Society*.

growth of homeownership and mortgage indebtedness over a decade. The deviation from this line to the lower right describes cases of proportionally low homeownership growth given the high growth of debt. By contrast, the upper-left area regards cases of proportionally high homeownership growth given the low growth of debt. The south-east thus reflects cases where additional growth of debt was not sufficient to generate higher homeownership growth, while the north-west shows cases where debt growth was not necessary for more homeownership.

In the majority of countries, recent decades, particularly the 2000s, were marked by a growth of mortgages per GDP not paralleled by a growth of homeownership, which either grew much less than before or even declined. The picture would look even more extreme if mortgage debt were not controlled for GDP growth, because the two diverged in the more recent period. In the pre-1970s, by contrast, many countries increased their homeownership to an extent not paralleled by the growth of mortgage indebtedness.

To go beyond bivariate findings, I will use the homeownership level and the first differences from the preceding figures as dependent variables in two sets of multivariate

models: first, fixed-effects models on the homeownership rate and, second, a model on the first-differenced homeownership rate. The time series of all countries—Japan being the exception—are nonstationary, as Dickey-Fuller tests reveal, and affected by strong serial correlation. In a first set of models on the homeownership levels, I will therefore include a time variable to tackle the underlying time trends. I will, moreover, use either lagged homeownership variables or standard errors that correct for autocorrelation (and heteroscedasticity).

Regarding the question of inverse causality, mortgages are first in time; homeownership follows and contributes, by definition, to a higher homeownership rate in the moment of purchase, no matter how high the mortgage burden is. The mortgage also enters the banks' or agencies balance sheet immediately. Therefore, I expect the debt effect to impact immediately, with one lag at most. I also expect debt to drive homeownership and not homeownership to drive debt in the short run. A Granger causality test on the differenced time series thus does not show that homeownership Granger-causes mortgages.

In principle, however, it is possible that higher homeownership rates have a feedback loop on mortgage debt in the long run. One such mechanism is indirect, through prices: once the mortgage–house price spiral is triggered through more homeowners, higher homeownership can require higher mortgages in later periods. Another mechanism concerns mortgage equity withdrawal (MEW), whereby homeowners reduce housing equity through last-time sale, trading down, over- or remortgaging, or equity-release schemes—simple remortgaging and last-time sales often being dominant.⁵⁰ Homeownership is evidently a precondition for all types of withdrawal, so that, in the long run, higher homeownership rates allow for more withdrawals and higher mortgage indebtedness.

As disaggregated-flow time-series data of mortgages are missing, data availability does not allow for the inclusion of this long-run feedback-loop in the analysis (but see the discussion below). The lack may not be too distorting, though, for three reasons. First, the MEW phenomenon has been very period-specific. Between 1970 and 2000, OECD data show that net equity withdrawal was negative in relation to households' disposable income, with the exception of the United Kingdom and Norway in the 1980s.⁵¹ In the 2000s, in turn, the phenomenon received more widespread attention as net equity withdrawal rates increased considerably with increasing house prices. Second, MEW has been country-specific. According to the IMF mortgage market index in 2008, MEW has been legal in only nine of the countries examined, excluding some credit-boom countries. Finally, country-case research on the phenomenon points to the close association of price cycles and MEW: higher house prices allow for higher withdrawal. As part of the analysis below, the house price indices will thus partly cover the mortgage increases coming from MEW.

Table 1 shows the first series of models, the ones on homeownership *levels*. It starts out with a simple pooled cross-sectional model of mortgage debt per GDP on homeownership, which shows no significant effect. This finding is due to the fact that the strong over-time correlation in most countries is completely offset by the mostly negative cross-country correlation between debt and homeownership.

Table I. Regression on Homeownership Rate.

	Homeownership Levels						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Mortgage / GDP	0.0138 (0.0152)	-0.265*** (0.0163)	0.0457** (0.0147)	0.0686*** (0.0193)	-0.000735 (0.000803)	-0.0224 (0.0235)	-0.0224 (0.0857)
1900s * Mortgage (ref. 1980s)				0.734*** (0.133)			
1910s * Mortgage				0.586*** (0.108)			
1920s * Mortgage				0.166** (0.0526)			
1930s * Mortgage				-0.0161 (0.0611)			
1940s * Mortgage				0.0350 (0.0364)			
1950s * Mortgage				0.0791*** (0.0238)			
1960s * Mortgage				0.0186 (0.0184)			
1970s * Mortgage				0.0265 (0.0149)			
1990 * Mortgage				-0.0311** (0.0116)			
2000s * Mortgage				-0.0613*** (0.0118)			
Time trend				0.355*** (0.0123)	0.00139 (0.00255)		
Lag1 ownership					1.801*** (0.0169)		
Lag2 ownership					-0.809*** (0.0168)		
Population						-0.000018* (0.000008)	-0.000018 (0.000021)
Interest rate						0.000112 (0.000374)	0.000112 (0.000885)
GDP per capita						-0.0705** (0.0270)	-0.0705 (0.119)
CPI						0.111*** (0.0116)	0.111* (0.0386)
State expenditure						0.108*** (0.0269)	0.108 (0.0736)
House prices						0.0411*** (0.0102)	0.0411 (0.0379)
House prices * Mortgages						-0.000106 (0.000139)	-0.000106 (0.000579)
Constant	54.44*** (0.581)	68.93*** (0.983)	59.66*** (0.595)	-648.6*** (23.99)	-2.207 (5.050)	50.54*** (2.072)	50.54*** (6.107)
N	1248	1244	1244	1244	1216	1171	1171
Fixed effects	No	Decade	Decade / country	Decade / country	Decade / country	Decade / country	Decade / country
Rob. err.	No	No	No	No	No	No	Yes
R ²	0.001	0.373	0.742	0.746	0.999	0.781	0.781

Note: Decade variables range from, e.g., 1993 to 2013.

Source: See text.

*p < .05, **p < .01, ***p < .001.

Particularly between 1950 and 2000, the more indebted countries like Switzerland and Denmark had the lowest homeownership rates, while historically the Anglo-Saxon and Southern European countries had lower debt and higher homeownership. These opposing cross-sectional and cross-time effects are also revealed by the following two models: Model 2 introduces time fixed effects by decade to account for the slow homeownership trend (not shown). They lead to a negative effect of mortgages on homeownership. By contrast, Model 3 introduces additional country fixed effects, which tip the balance again in favor of a positive effect of mortgage debt on homeownership. In Model 4, I introduce a time trend to control for the common trending of both measures. In addition, I interact the decennial dummies with the mortgage levels to look for more time-specific effects. The 1980s, arguably the watershed of the mortgage extension, serve as reference period. The first observation is that the significant positive effect of mortgage levels on homeownership holds even beyond an exogenously given time trend, but is moderated by the historical context: relative to the postwar era, higher levels of mortgage debt had a negative effect on homeownership in more recent periods. An interaction of mortgage debt with countries, not shown here, reveals that Australia, Japan, Finland, and Canada were particular country settings in which, relative to the United States, mortgage debt had a decreasing effect on homeownership rates, whereas it had an increasing effect in the remaining countries.

Model 5 takes the strong autocorrelation of the homeownership rates into account. The inclusion of the first and second lag leads to an almost complete “absorption” of most significance and explanatory power into the substantively less important lag variable: it becomes highly significant; all other variables lose their significance; while the *R*-squared value tends toward 1. A similar consequence is produced by using panel errors that correct for serial correlation. Substantively, this points to the strong path dependence in homeownership rates: the best predictor of this year’s homeownership is last year’s homeownership. Technically, however, this finding is due to the only gradual changes in the dependent variable and has been reported for similar regressions on government budgets or state debt.⁵² To see something other than just the lag effect, I follow Achen in excluding the lag variable and biting the bullet of inefficient estimators for Model 6, in which I introduce further explanatory variables. Following the expectations from the literature, population has a negative and inflation (CPI) a positive effect on homeownership, while the interaction of house prices and mortgage debt is negative, though insignificant. Contrary to expectations, GDP has a negative effect and—speaking against the public welfare–private homeownership trade-off—public expenditure share has a positive effect. The remaining effect of mortgage debt on homeownership is negative. The inclusion of panel robust standard errors in the final model reduces the significance level of this and other dependent variables considerably.

Because many of these time series are themselves nonstationary, and in order to reduce the serial correlation, I estimate an OLS regression using first differences. In a first model, displayed in Table 2, the first-differenced mortgage variable is without effect on homeownership differences, using country fixed effects and panel robust standard errors. Interacting countries and decennial dummies with the mortgage debt

Table 2. Fixed Effects Regression on Homeownership First Differences.

	(1)	(2)	(3)	(4)	(5)	(6)
Mortgages / GDP	-0.00824 (0.0130)	0.00657 (0.0276)	0.00351 (0.0111)	0.00120 (0.00863)	0.00689 (0.00746)	0.0110 (0.00776)
1900s * Mortgage (ref. 1980s)		-0.0634 (0.0664)				
1910s * Mortgage		0.00150 (0.0413)				
1920s * Mortgage		0.000927 (0.0368)				
1930s * Mortgage		-0.0339 (0.0360)				
1940s * Mortgage		0.120 (0.0699)				
1950s * Mortgage		-0.102 (0.0518)				
1960s * Mortgage		0.0745 [*] (0.0338)				
1970s * Mortgage		-0.0192 (0.0364)				
1990s * Mortgage		0.0319 (0.0396)				
2000s * Mortgage		-0.0209 (0.0297)				
Interest rate			0.000581 ^{***} (0.0000662)	0.000340 ^{***} (0.0000839)	0.00375 (0.00279)	0.00573 (0.00759)
Lag interest rate				0.000487 ^{***} (0.0000278)		
GDP p.c.			0.00687 (0.00911)	-0.00210 (0.00959)	0.00704 (0.0108)	0.0126 (0.0117)
Lag GDP p.c.				0.0185 ^{**} (0.00553)		
CPI			0.00594 (0.0161)	0.00450 (0.0131)	0.0163 (0.0108)	-0.00150 (0.0116)
Lag CPI				-0.00435 (0.0139)		
State expenditure			0.00843 (0.00453)	0.00248 (0.00353)		
Lag state exp.				0.00611 (0.00297)		
Population			-0.0000146 (0.0000255)	-0.0000125 (0.0000233)		
Lag population				0.00000148 (0.0000168)		
House prices			0.00685 [*] (0.00260)	0.00712 [*] (0.00257)	0.00795 ^{**} (0.00247)	0.00312 (0.00266)
House price * Mortgages			-0.000386 (0.000735)	-0.000479 (0.000703)	-0.000553 (0.000572)	-0.000671 (0.000553)
Lag mortgages				0.00407 (0.00848)		
Home-policy					0.0877 [*] (0.0344)	

(continued)

Table 2. (continued)

	(1)	(2)	(3)	(4)	(5)	(6)
Top 10 percent share						-.736 (1.397)
Constant	0.282*** (0.0103)	0.283** (0.0781)	0.238* (0.105)	0.242* (0.113)	0.408*** (0.0431)	0.437*** (0.0515)
N	1229	1226	1151	1136	960	689
Fixed effects	Country	Country / Decade	Country / Decade	Country / Decade	Country / Decade	Country / Decade
Rob. errors	Yes	Yes	Yes	Yes	Yes	Yes
R ²	0.001	0.142	0.153	0.162	0.154	0.157

Note: Decade variables range from, e.g., 1993 to 2013. Independent variables are differenced.

Source: See text.

* $p < .05$, ** $p < .01$, *** $p < .001$.

variable produces similar results as above: relative to the postwar era, the more recent past saw mortgage debt depressing homeownership rates rather than increasing them; Canada, Japan, Norway, Spain, and Belgium were countries where mortgage debt either had a negative or no significant effect on homeownership (not shown). Model 3 introduces additional explanatory variables. Higher house prices and interest rates show positive effect on homeownership rates, which could only be explained by the dynamics of housing booms with more people trying to play the housing market and existing homeowners withdrawing more equity. This interpretation could be supported by the negative interaction term of house prices and mortgage debt. Mortgage debt itself remains without significant effect on homeownership differences. The addition of the first lag of these variables hardly produces any change. Again the addition of the first lag of homeownership's first differences has a strong and absorbing effect on all other variables (not shown). The legacy of homeownership is thus the strongest technical predictor, even if substantively less interesting. Last, Models 5 and 6 need to be read separately, because each introduces a variable—homeownership support among the dominant left-wing party and the interpolated income share of the top 10 percent, respectively—that reduces the sample in different ways, indicated above. Left-wing parties' support for homeownership has a positive significant effect on homeownership differences, whereas income share increases of the top 10 percent is negatively associated with homeownership increases. The lower number of cases and the conservative panel robust standard errors reduce the significance levels of these effects.

To corroborate these results, I undertook several robustness checks. First, I conducted the same analyses using five- and ten-year averages of all variables. Some, particularly homeownership rates, have been linearly interpolated, and it could be argued that the similar growth across several adjacent years evens out the possible impact of slightly different increases of mortgage debt. The substantive finding, however, remains the same with this modification, albeit with generally lower significance levels due to the lower number of cases.

A second robustness check concerns the question of reverse causality; one could argue that higher homeownership levels also drive higher mortgage levels, as more

people will need mortgages to maintain a given homeownership rate (supposing that individual homeowners have more mortgage requirements than private rental landlords). When estimating the simple time and country fixed-effects model, homeownership has indeed a significant positive influence on mortgage levels, but it does not go beyond common trending. When a trend variable is added, the homeownership effect is completely absorbed. Nor do the first and second lags of homeownership have a significant effect.

A third robustness check involves an instrumental variable approach, because it could be argued that mortgage debt is an endogenous part of the housing system, so that its exogenous effect is not isolated. It is, however, difficult to identify a good instrumental variable, as most variables—house prices, for instance—correlate also with mortgage debt, but are not independent of homeownership. The common solution, followed here, is to use the first lag of mortgage debt in a two-stage instrumental variable estimation. It autocorrelates strongly with mortgage debt, as the first-stage equation estimation with country and period fixed effects as well as a time trend shows. At the same time, it can be argued that the current homeownership rate is largely dependent on the current and not the previous debt level. The second-stage equation also does not produce any significant effect of the instrumented mortgage variable.

A fourth robustness check divides the data into different time periods to investigate the potential time specificities of the effect of mortgage debt on homeownership. For this purpose, I subsampled the data into three different time periods—post-WWII to 1970, the period between 1970 and 1990, and the period since. The sample of countries before 1950 is too narrow. Otherwise, the periodization corresponds roughly to the one found in housing studies: a postwar reconstruction period is followed by declining construction markets until the long house-price boom started around 1990.⁵³ I estimated Models 1 to 3 from Table 2. In almost all model specifications and time periods, the differenced mortgage-debt variable remains insignificant. Interactions with subperiods within the time periods reveal again a certain variance over time—the 1960s for example being more favorable, the 2000s less favorable for the mortgage-homeownership link. But overall, no high significance levels are reached, possibly because of the lower case number per time period.

Discussion

Throughout many models and specifications, the effect of rising mortgage debt on homeownership seems to be rather weak and dependent on specific contexts. How can we make sense of this counterintuitive finding? A first explanation has to do with the slow transition of a state-organized capital market for housing and homeownership to a banking-organized one with postwar housing and capital shortages fading out. The mortgage variable above measures only mortgages on banks' balance sheets and not those issued and intermediated by state agencies to households directly. These figures are difficult to measure, let alone in long time series, but selective country statistics show that France had on average about a 50 percent (up to 80 percent) state share in

housing finance in the 1950s and 1960s, Germany between 25 and 47 percent in the 1950s,⁵⁴ and Italy 26 percent in 1952.⁵⁵ A survey of European housing construction in the 1950s found that free public grants to homeowners made up between 10 to 21 percent of their initial capital costs.⁵⁶ But even in Anglo-Saxon countries, with their different history of state intervention in housing, postwar programs—veteran programs among them—amount to more than 20 percent of newly constructed units in postwar Australia,⁵⁷ and between 20 and 70 percent in interwar New Zealand.⁵⁸ In the United States, government agencies held loans directly, although parallel mortgage securitization policies helped to insure and promote bank-distributed mortgages.

Government housing intervention can be mediated through mortgages to homeowners, but can also consist of many other tax- or public-debt-financed programs that subsidize homeowners. These programs often arose before WWI as part of a country's first housing laws, but were particularly pronounced in the post-WWII era. Some states constructed owner-occupied housing themselves or used nonprofit housing associations, such as the Belgian *Société nationale du logement*, or supported cooperative societies, such as in Norway or Sweden; rent-to-buy schemes existed in Southern European countries where tenants paid rents to public bodies until they transitioned to homeownership.⁵⁹ In countries with early and large welfare states, governments were also able to tap into social insurance funds to extend financial aid to either nonprofit or state housing builders or to individual potential homeowners, another finance circuit not covered by private mortgage bank statistics.

Government activity helps to explain why homeownership increases occurred without private-bank mortgages before the 1970s, but informally distributed mortgages can explain homeownership increases before and even alongside government mortgages. Mortgages are not an invention of twentieth-century banks; people have had to take out mortgages throughout history, via family, ethnic, or religious local networks and sometimes via interregional networks organized by notaries or lawyers, which systems, as far as quantifiable, could reach sizes relative to GDP comparable to twentieth-century economies.⁶⁰ Estimates for France in 1899 attribute 83 percent of all loans to the traditional notary networks,⁶¹ 40 percent in Belgium in 1939.⁶² If nonregistered interpersonal mortgages are included, an estimated 90 percent of mortgages were interpersonal around 1900 in Canadian cities,⁶³ and as many as one-third of mortgages in post-WWII Switzerland.⁶⁴ When mortgage *banks* emerged in the nineteenth century—as specialized bond-based mortgage banks or building societies or as general savings banks⁶⁵—their market often constituted only a minority. In other words, the bank-centered measures downplay the increases of mortgages that happened particularly during the earlier nonbanking periods of homeownership increases.

The discussion above points to the fact that mortgage credit by banks is not a necessary condition for more homeownership; historically there have been other sources of mortgage credit, namely, the state and non-bank-mediated private loans. Banks' mortgage credit has not always been necessary for other reasons: on the one hand, the combination of solid wages and high savings lessened reliance on mortgages for house construction or acquisition. One crucial difference governments have made is whether mortgage indebtedness or contractual housing savings are incentivized through the tax

system. Countries in which the former has been the case, such as historically the United States and more recently the Netherlands, have usually shown strong increases in mortgage debt, whereas private indebtedness levels in countries with a tradition of contractual housing saving subsidies, such as in Germany, showed rather moderate development of household debt.⁶⁶

Some countries have had a historical homeownership tradition of self-building. Self-building therefore is reported not only as a crisis measure in almost all interwar countries, but also as common practice in countries with a tradition of wooden single-family houses, such as Finland, the United States, Norway, and Canada.⁶⁷ Self-building allowed for a reduction in labor costs, often combined with strongly subsidized building material.

Homeownership increased also through the conversion of existing housing units without more mortgages and without new construction of owner-occupied units. Such conversion moments occurred during the war and postwar years, when pent-up savings and housing demand met landlords' willingness to sell in the light of rent restrictions.⁶⁸ Though seldom empirically shown,⁶⁹ rent controls, coinciding with large homeownership increases in many countries between 1914 and 1960, incited many landlords to sell their private rental units to sitting tenants. Another conversion moment was the fall of communism, when thanks to savings and low-cost housing gifts from states, homeownership rates increased radically without encompassing mortgage debt increase.⁷⁰

The data above mostly exclude Eastern European countries; but if they were included, they might give further support to the idea that homeownership gains can be had without mortgage debt increases. What the sale of *private* rental units to tenants was in Southern Europe, the massive sale or giveaway of *public* rental units to tenants was in Eastern Europe. The transformation of post-Soviet countries to high-homeownership societies occurred before their economies and mortgage markets started to become financialized.⁷¹ During the 2000s then, the Eastern European countries witnessed a very rapid increase of their mortgage debts to GDP. As European Mortgage Federation data show,⁷² in 2002 mortgage debt to GDP was between 1 and 10 percent in Eastern European countries and then rose by factors between 1.2 in Bulgaria and more than fifteen in Slovenia until 2010. As these countries had already high homeownership levels at the start of this period, the resulting additional homeownership increases, if there were increases, were disproportionately low, but house-price and mortgage-debt bubbles occurred in many countries.

One factor inhibiting the high-homeownership countries to further increase the number of homeowners could lie in the MEW phenomenon described above. With MEW tied to house prices, the existing homeowner "insiders" can make use of their growing housing wealth to crowd out homeownership "outsiders" by remortgaging their properties. Possibly, part of this equity withdrawal favors family members trying to enter the markets and can thus have a homeownership-increasing effect. More often, however, housing equity is reinvested in the existing houses or in new houses bought to let or to resell, or is even used for consumption. MEW is itself rather endogenous and rather occurs in countries that already have an established mortgage market and

much accumulated mortgage debt.⁷³ MEW is only one of several regulatory enabling conditions for credit-encouraging mortgage markets that have been found to explain higher debt levels⁷⁴ while not increasing homeownership.

In high-homeownership societies, it becomes difficult to extend homeownership to more people: a 1 percent increase in mortgage credit will produce a stronger homeownership increase at a low homeownership level than at a high one. When financial markets became liberalized, many countries already had a majority of owner-occupied households. Bringing the remaining, lower-income households into homeownership was arguably more difficult. In times of lower growth, simply maintaining the high existing rates was already difficult enough. Counterfactually, one could speculate that without the post-1970s' financialization, homeownership rates might even have fallen, as no other political instrument could have produced similar effects for high-homeownership countries. Studies on the effects of financial development on growth suggest that there are possibly threshold functions at work and that there is a "too much" of finance for economies.⁷⁵

The extension of mortgage finance might also be insufficient to create more homeownership, because mortgages can be used simply to finance rental apartments, Switzerland being a case in point. High mortgage-indebtedness can thus go along with very low homeownership rates for certain cross-sections.⁷⁶ Part of the puzzling finding is reducible to the fact that mortgage debt is always also debt of landlords of private rental units, and the aggregate measures are thus tenure-neutral. The strong mortgage increases in Imperial Germany prior to WWI, for instance, were driven by private landlords' overindebtedness.⁷⁷ Another explanation for the negative cross-sectional explanation is that homeownership *rates* inform only about the spread, not the absolute housing *wealth* or wealth distribution through homeownership.⁷⁸

A final interpretation of the results could point to the fact that the mortgage volumes—the independent variable above—do not imply a democratized access to mortgage credit and to homeownership. House prices could simply drive the housing wealth and mortgage sizes of the wealthy mortgage holders without any lower-income households becoming owner-occupiers. In other words, mortgage depth (outstanding mortgages to GDP) might not be the universal generator of homeownership, but mortgage penetration (percentage of adults with mortgages) might be. Measuring mortgage penetration is a more recent phenomenon, as it requires household survey data. The OECD Affordable Housing Database and the World Bank have both created cross-sectional reports of most countries worldwide, starting in the 2000s and 2011, respectively.⁷⁹ In the limits of what this cross-sectional evidence can support, there is a strong correlation of 0.86 between mortgage depth and penetration,⁸⁰ implying a strong association between mortgage access and the resulting mortgage levels.

There is a similarly high correlation of 0.85 between bank-mediated mortgage penetration and the penetration of all loans for home purchase, including informal ones.⁸¹ Plotting the penetration of housing loans with the average homeownership rates in the 2000s in Figure 4, one finds an overall negative association between the two: that is, more financialized housing systems—whether formally or informally

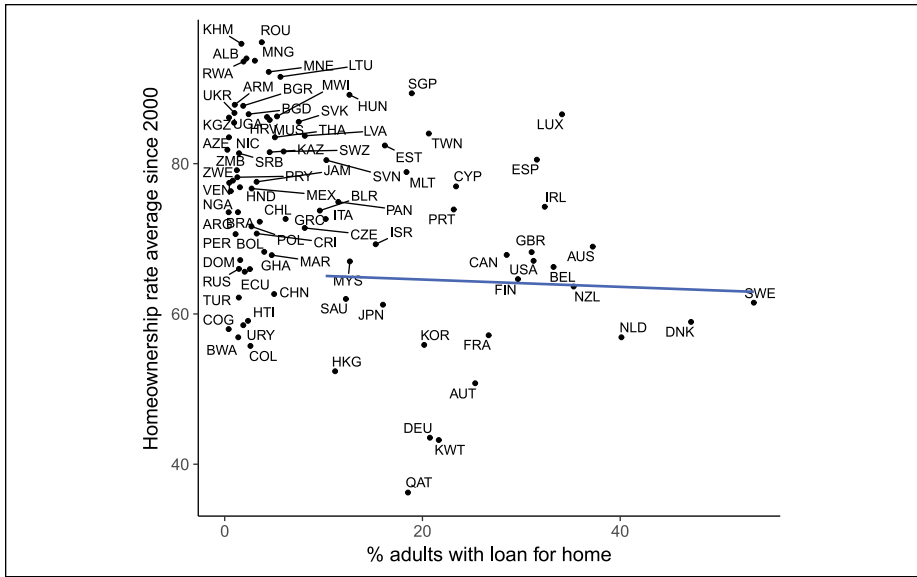


Figure 4. Homeownership Rates and Democratization of Home Mortgages.

Note: Regression line only for OECD countries.

Source: Kohl, *Homeownership, Renting, and Society*; Global Fundex Database (<http://www.worldbank.org/en/programs/globalfundex>).

financialized—display lower homeownership rates. For the narrower selection of OECD countries examined here, in turn, the association is zero. Countries with high participation rates in the mortgage market—and not just higher mortgage volumes—do not necessarily have higher homeownership rates.

For the European Union area in particular, Eurostat offers two mortgage penetration variables, the percentage of mortgaged homeowners and the percentage of mortgaged homeowners with less than 60 percent of median equalized income. In particular, the latter measures the degree to which mortgages are extended to households who might not be driving overall mortgage volumes but for whom homeownership would have been out of reach without mortgage finance. Both measures show significant negative correlations with Eurostat’s homeownership rate for the period between 2002 and 2015. These bivariate results are particularly driven by the high-homeownership countries in Southern and Eastern Europe, which despite recent financialization show less democratized access to mortgages than other European countries. For some countries, such as Norway or Iceland, by contrast, there seems indeed to be an association between homeownership and low-income households’ access to mortgages. Preliminarily at least, the lacking association of homeownership with mortgage penetration is cross-sectionally similar to the one with mortgage volumes. However, whether these results hold causally and in a multivariate context needs to be answered with more micro-level data.

Conclusion

The general implication of this article is that the extension of mortgage markets and more mortgage indebtedness in OECD countries is neither a necessary nor a sufficient condition for more homeownership. It has not been necessary because before the "great mortgaging" started, there was a period of often several decades during which homeownership rates increased with only moderate, if any, increases of mortgage debt to GDP. It is not sufficient because ever more mortgage debt, combined with high house prices, can make homeownership less and less accessible for many new entrants in the market, while the resulting house price bubbles and bursts can even lower homeownership rates, leaving the debt burden largely intact. If policymakers aim for homeownership increases, they might consider using alternative instruments, such as more government-sponsored construction or increases of purchasing power instead of mortgaging potential. However, introducing new measures using public budgets in times of austerity, and attempting to circumvent the current dominance of financial markets, make these options difficult politically.

The findings above have to be seen in the light of the data restrictions. The data do not allow us to distinguish between the number of people who have mortgages and the amount of mortgages they hold. They also do not allow us to make statements about the housing wealth of homeowners. Thus, even if rising mortgage debt did not spread homeownership to more people, it could have contributed to spreading housing wealth better among those owning their homes. Some studies about the income dependence of house price gains cast doubt on this hypothesis.⁸² The story about the access to homeownership is, however, interesting in itself as the homeownership *rate* was a central policy goal and indicator for many conservative politicians in the past.

For the existing literature on homeownership explanations, this study also presents some findings worthy of further exploration. Throughout many model specifications inflation has had a positive effect on homeownership, suggesting that periods or countries with soft currency regimes were rather likely to produce more homeowners. The often cited trade-off between homeownership and public welfare has been found to be less supported: public expenditure had either no effect or even a positive effect on homeownership, whereas rising inequality was negatively associated with homeownership. Whether homeownership support was widespread even among the left-wing parties in parliament seems to matter for later homeownership levels.

Finally, the story about the rise and impact of mortgage debt could be extended to consumer debt (for durables, student loans, etc.) more broadly in further studies, as there is a correlation between the extension of mortgage and consumer debt. Consumer debt to disposable income has risen to 50 percent in many OECD countries⁸³ and might only fuel a temporary consumption boom that, in many cases, will be followed by tightening budgets.

Appendix

Table A1. Studies Explaining Homeownership Variation.

Study	Area	Main Data Source	Significant Coefficients
Arundel and Doling ⁸⁴	EU	2013	Young low income, mortgage debt, youth unemployment
Lerbs and Oberst ⁸⁵	GER	Mikrozensus 2006	Price-to-rent ratio, price-to-income ratio, percentage ages 15–25, 50–65, immigrants, household size, urbanization, unemployment rate, East German dummy, recent house price change
Andrews and Caldera Sánchez ⁸⁶	EU	OECD 2000s	Household size, higher LTVs and debt tax relief, low down payments, household age, education, income, absence of rent control
Lauridsen, Nannerup, and Skak ⁸⁷	DEN	Municipalities 1999–2004	House prices (also neighboring municipalities), income, population density, urbanization, age composition, civil status composition, financial ability
Atterhög ⁸⁸	OECD (13)	OECD	GDP, inflation, government support, property value development
Gwin and Ong ⁸⁹	UN	UN-Habitat 1993–98	GDP per capita, household consumption, credit provided to private sector, stocks traded as percentage of GDP, age dependency ratio, illiteracy, percentage population over 65, rule of law
Fisher and Jaffe ⁹⁰	UN	106 UN countries 1980–99	Population composition, German legal origin, tropical climate, ethnical diversity, GDP
Behring, Helbrecht, and Goldrian ⁹¹	GER	<i>Länder</i> 1990s	Urbanization, land prices, housing subsidies, West German dummy, working spouses, income, Catholics, foreigners
Coulson ⁹²	US	Current Population Survey 1998	House price/rent ratio, vacancy rates, suburb location, density, immigrant ratio
Angel ⁹³	UN	UN Habitat 1990s	Mortgage credit, low construction costs, government subsidies, relative costs compared to renting, lower social expenditure, long-term inflation

(continued)

Table A1. (continued)

Study	Area	Main Data Source	Significant Coefficients
Struyk ⁹⁴	US	Census 1970 SMAs	Mean income, percentage of units in single-unit structures and built before 1940, size of market, percentage of white households, household composition, age structure
Schmidt ⁹⁵	OECD	OECD countries 1970–84	Total (social) expenditure, proportion of socialist MPs
Eilbott and Binkowski ⁹⁶	US	Census SMAs 1970s	Age and household structure, household income, house values

Source: Author's data.

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