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Too much mortgage debt? The effect of housing financialization on housing supply and residential capital formation

Sebastian Kohl (iD) *

 Department of Sociology, Max Planck Institute for the Study of Societies, Köln, Germany

*Correspondence: kohl@mpifg.de

Abstract

This article argues that the explosion of mortgage finance has not led to a proportional expansion of housing supply across 17 countries in a historical perspective (1913–2016). Based on a collection of housing construction data, it shows that the co-cyclical behavior of construction, prices and mortgage credit has been followed by a decoupling of house-price mortgage spirals from the underlying stagnating or declining construction activity since the 1980s. Mortgage debt is nonlinearly associated with new construction: positive up to a threshold, negative thereafter. The article argues that the increasing use of housing as an asset, or housing financialization, can explain why mortgages grow without construction, i.e. through privatization of state housing and supply restrictions as a result of rentier strategies of housing-market insiders and private developers. Private mortgage markets have thus been a less reliable policy alternative to traditional state-led housing construction policies. The article confirms for housing what has previously been found for growth or capital formation: beyond a certain threshold, there is a curse of too much finance.

Key words: financialization, housing, construction, capital formation

JEL classification: R31 Housing Supply and Markets G21 Banks, Depository Institutions, Micro Finance Institutions, Mortgages N20 General, International, or Comparative

Introduction

Many countries have been debating housing shortages while simultaneously witnessing high levels of mortgage debt, house prices and rents. This combination has led urban scholars to speak of the comeback of the 'housing question' (Aalbers, 2016) or the 'new urban question' (Merrifield, 2014), as housing affordability has become a widespread problem, with notable

shortages of affordable housing particularly in metropolitan areas. It seems puzzling that, contrary to economic theory, the stimulus of higher prices and the demand shock of mortgage credit expansion has been coexisting with housing supply shortages even in the long run. In a more historical perspective, the reappearance of housing shortage debates seems all the more puzzling because global mortgage indebtedness has reached unprecedented levels today, even overtaking business loans (Jordà *et al.*, 2016). One of the factors behind this mortgage explosion was the deliberate deregulation of mortgage markets in most countries from the 1980s, which was meant to shift housing construction to private markets after massive state intervention had successfully eliminated the post-war housing shortage (Harloe, 1995). Half a century and a great recession later, however, mortgage debt keeps accumulating, while debates about shortages are back.

This article uses original long-run data to investigate the historical relationship between housing production and mortgage credit in 17 countries across a century (1913–2016).[1] It reveals a decoupling of housing finance (prices, mortgages) and real housing supply indicators (new construction, building costs, residential capital formation) since the 1970s. While more mortgages generally increase building activity up to a certain point, the unique explosion of private mortgage credit since the 1970s is associated not with a proportional expansion in new construction but rather with house price inflation and construction-depressing effects. The relation between mortgage debt and construction (investment) is approximated by an inverted U-shaped curve in most countries, Southern Europe being partly an exception. While the increase in mortgage availability is associated with more construction in the pre-1975 old industrial countries, and still is in today's emerging economies, it has dampened new construction, investments in housing and residential capital formation in the post-1975 old industrial countries, particularly in combination with rising house prices and particularly in countries that experienced mortgage booms. In a pooled cross-section including emerging economies, the association is positive for emerging and negative for old industrial countries. A distributed lag model on new construction in old industrial countries confirms the bivariate association in a multivariate context: controlling for economic and demographic background variables, lagged mortgage growth affects new construction positively, but negatively through a quadratic term. The extension of private mortgage credit—or what has been called the unacknowledged policy regime of 'privatized Keynesianism' (Crouch, 2009)—has thus not fully lived up to the promise of taking over the role of state-led housing policies when the post-war reconstruction boom was over. This finding thus complements previous research which found that it had also failed to achieve the homeownership dream for all (Kohl, 2018*a*).

The article further explores *why* more mortgages have not led to more housing investment beyond a certain point. It proposes that the increasing financialization of housing provision through nonfinancial firms, the state and private households has led to constellations of mortgage growth without additional construction, such as the privatization of state housing and the supply restrictions caused by rentier strategies of housing-market insiders and private developers. The increasing focus of nonfinancial firms, households and the state on housing as an investment asset and the entry of financial firms into the housing market have led to spiraling house prices and mortgages, but little new construction. Depending on how important these different actors have been in countries' housing provision, financialization

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1   The panel is unbalanced. The average starting year is 1913.

has taken on varied forms, but with a common trend cutting across the different varieties of residential capitalism (Schwartz and Seabrooke, 2008).

The article thus contributes by presenting a long-run dataset on residential construction activity. The descriptive trends alone reveal a tendency towards a decoupling of housing finance from real construction activity. One central analytical contribution is the finding of a nonlinear long-run association between mortgage credit and construction: mortgage growth is positively associated with construction, but only up to a certain country-specific threshold. The article explains this phenomenon with reference to the growing literature on financialization of housing that is increasingly critical of the socially problematic consequences of 'too much finance,' among them evictions, unaffordability or segregation. It contributes to this literature by taking actual housing production much more seriously than existing works in the field.[2] The article's political implication is that too much mortgage debt is even associated with problems in the very subject matter it is made for: new construction and residential capital formation. Housing shortages are therefore unlikely to be overcome by simply offering more mortgages to more potential homeowners or landlords.

In the following, I first survey the existing literature that explains housing construction and deals with the 'financialization of housing.' I then present the new long-run construction data. In the results section, I present the descriptive trends of housing construction and mortgage development to then investigate in a multivariate time series regression whether the latter impacts the former. The discussion hypothesizes qualitatively why more mortgages do not lead to more housing. I conclude by pointing to the social consequences of the main finding.

Existing literature

For this article, two kinds of literatures are particularly relevant. First, there is a long-standing literature in economics about what drives new construction and new housing investment. This literature reaches back more than a century to when scholars of the business cycle in particular started wondering about the relationship between building and business cycles (Schumpeter, 1939). The second thread of literature—addressed more by political scientists or financial geographers recently—concerns the effects of financialization on societies and the economy.

Given the widely acknowledged centrality of housing investment to the general business cycle (Leamer, 2007), the literature explaining housing supply is rather scarce and inconclusive (DiPasquale, 1999; Vermeulen and Rouwendal, 2007). Generally, studies explaining new construction (in single- or multi-family buildings) or new residential investment (or repair investment) in cities or metropolitan areas find a positive house-price elasticity that can range between 0 and 6 depending on the country and on the short- or long-run (Malpezzi and Maclennan, 2001). But prices alone do not suffice to explain variation in construction. Usually, additional factors such as demography (population size, growth and structure),

2   Jim Kemeny's (1992) seminal works are quite silent on the importance of housing construction, as are the special issues in the political economy of housing (Schwartz and Seabrooke 2008; Johnston and Kurzer 2020). This paper therefore goes back to the works of Barlow and Duncan (1994) to bring the varieties of housing production back in.

inflation and the time it takes to sell are also found to play a role. In a study of four German cities during the pre-postwar urbanization wave, for instance, the number of marriages was found to be nearly the single most important predictor of new supply (Wellenreuther, 1989). Surprisingly, construction costs are often found to be insignificant or indeterminate in direction (Caldera and Johansson, 2013). Supply of sufficient land for construction, in contrast, has been found to impact on the supply elasticity in construction (Glaeser *et al.*, 2008).

Mortgage market conditions themselves are hardly mentioned in this literature, which is likely due to the fact that many studies use regional US data, and urban or regional mortgage data are difficult to come by. In the standard urban economics model (DiPasquale and Wheaton, 1996), an extension of mortgage debt is tantamount to a demand shock that shifts the demand curve upward. Housing supply can be more or less elastic; the less elastic the supply, the stronger the house price increase *in the short run* and the higher the risk of a bubble (Glaeser *et al.*, 2008). *In the long run*, however, once supply finally reacts, the demand shock creates more supply and the market returns to equilibrium (Saiz, 2019). In the few cases where interest rates, credit constraints or savings deposits are mentioned (Poterba, 1984; DiPasquale and Wheaton, 1994), they point in the expected direction: more permissive mortgage conditions and capital injections are a demand stimulus for housing supply. Urban economists would thus generally expect the growth of finance to be associated with higher levels of construction activity in the long run.

While *finance* has not played a major role in explaining construction, housing *construction* has not played a major role in the financialization literature (Van der Zwan, 2014). The interplay between finance and the real economy has traditionally been investigated in the light of the positive role of finance for economic development (Goldsmith, 1969). The more recent literature grouped under the term 'financialization' has taken a rather critical stance towards the influence of growing financial markets, growing household debt or growing financial profits in the economy (Debelle, 2004). Thus, critics of 'too much finance' have pointed to its negative effects on productivity and growth (Cecchetti and Kharroubi, 2012; Tomaskovic-Devey *et al.*, 2015), on physical capital formation and hence on growth (Stockhammer, 2004), and its deepening effects on inequality (Bezemer and Samarina, 2016).

An application of the financialization literature to housing phenomena is of more recent date (Aalbers, 2008). Based mainly on case studies of developments in the 1990s and 2000s, this growing literature has focused more closely on how mortgage market liberalization in the 1970s and 1980s increased debts and house prices in the UK (Monnery, 2011; Meen *et al.*, 2016), the USA (Mian and Sufi, 2009) or the Netherlands (Aalbers, 2004). This largely critical literature points to the problems of replacing the traditional welfare state with the so-called asset-based welfare, i.e. mortgage-financed homeownership (Watson, 2009; Montgomerie and Büdenbender, 2015). It considers housing financialization as being at the root of growing inequalities, the financial crisis and the ensuing Great Recession. It further suggests that higher indebtedness before the crisis in the USA—similarly to occurrences before the Great Depression of the 1930s (Brocker and Hanes, 2012)—has led to rising foreclosures and falling homeownership rates (Mian and Sufi, 2016). In a special report, even the UN (2017) warned about the entry of real-estate investment trusts or asset managers like Blackstone into urban markets and the broader negative consequences of

financialization for housing as a human right, such as rising rent prices, evictions, renovictions and gentrification.

Financialization of housing is not uniform across countries and can itself refer to variegated phenomena, as Aalbers (2017) describes; it does not only refer simply to rising mortgage volumes and house prices per se but to the growing predominance of financial considerations in the provision of housing by non-financial firms in the housing market (*financialization of and within non-financial firms*), by the state (*financialization of the state*) and by private households (*financialization of households*). A growing literature has shown, for instance, how financial firms can become the most important players in construction markets (Romainville, 2017), how private developers have taken over the provision process from public institutions (Topalov, 1974; Pollard, 2009; Aalbers, 2016), albeit not everywhere (van Loon, 2016), and how private households and their homes were increasingly governed by exchange-value rather than by use-value considerations (Alexandri and Janoschka, 2018). Overall, there have been few works in this housing financialization literature that deal explicitly with the supply side and housing construction, though there are notable exceptions (Sanfelici and Halbert, 2016; Romainville, 2017). This paper is intended to fill the gap left by the two strands of literature.

Data: new construction activity data and control variables

There is no established international database for construction activity, let alone for a long-run view, to operationalize the dependent variable—housing output—in terms of volume or monetary variables. The volume variables can be measured in square or cubic meters, housing or building units; the monetary value is measured as the investment directed to the housing sector. Both are available for the existing housing stock or for the annual flow of new construction (and the conversions, extensions, maintenance, etc.). For the present purposes, I use annual new construction and its monetary equivalent, the housing investment share in overall capital formation. Construction statistics are mostly collected from national statistical offices' historical yearbooks.[3] The investment data is taken from the OECD capital formation statistics from harmonized national accounts. The latter excludes the investment in existing assets and in repair or maintenance but includes improvements (extensions, modernizations) as they are considered to increase capital formation.

The former, new construction volumes, is available as permits, starts and completions, though with unequal country coverage. The advantage of housing starts (and permits) as a measure is that they are the most sensitive to reveal macroeconomic impacts on initiated construction activity. The obvious shortcoming is that not all housing starts end in completions and capital formation due to construction-loan problems, bad calculations or speculation. Completions, in turn, have the disadvantage that they lag one or two years behind starts. On the positive side, however, they report what really has been constructed and resulted in physical capital formation, and their coverage across countries is highest. For these reasons and based on my interest in the actual result of mortgage credit expansion on construction, I opt for completions as the measure of new construction volume. To control for demography from the start, I divide completions by the current population, which yields a commonly used variable in the range of 2–15 completed units per 1000 inhabitants. In

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3   Data and documentation are available on the author's website.

cases of missing completion data due to countries not having surveyed them at all (Belgium) or only at certain points in time (USA), I approximate completions through housing starts and permits.[4]

On the side of explanatory variables, I rely on the Macrohistory dataset for long-run series on mortgage debt of the 17 OECD countries at the core of this analysis (Knoll *et al.*, 2017; Jordà *et al.*, 2017a).[5] In addition I also use the Bank of International Settlements household debt per GDP data to compare a sample of a dozen additional countries including emerging economies. As mortgage variable I use the ratio of mortgage debt per nominal GDP, which correlates with the deflated mortgage volume time series but has the advantage of not being nominally denoted. It also correlates with the less well-covered OECD measure of household debt per disposable income.

As far as other control variables are concerned, I use Mitchell's historical statistics in combination with the OECD for demographic information of crude marriage rates (Mitchell, 2005). For urbanization I take the Cross National Time Series (CNTS) data on the growth rate of the per capita population of cities with more than 100 000 inhabitants up to 1960 (Banks and Wilson, 2013) and combine this rate with the urbanization growth rate from the World Bank data after 1960. I use this same combination of sources for the share of elderly population (65 years and over), linearly interpolating between Census benchmark years. The CNTS also provides long-run data on cement use per capita. I rely on the most recent Maddison Project data for population and GDP development (Bolt *et al.*, 2018), with population growth covering both fertility and net migration. From the Macrohistory data, I use (real) long-term interest rates and house prices, which I supplement with additional data.[6] Building cost index data from Knoll *et al.* (2015) are also completed from different sources.[7] For homeownership rates, I use linearly interpolated benchmarks starting in the 1950s, and sometimes the 1920s (Kohl, 2017, vers. 1.1).

Results: Financial decoupling and a nonlinear relationship

Figure 1 presents the evolution of house prices and outstanding debt per GDP to depict the financial side of housing. Simultaneously, it shows two indices for construction activity—completions by population and the share of residential capital formation—to represent the 'real' side of the construction economy. Taking 1975—approximately the end of the post-war reconstruction boom—as the base for all indices, the post-1975 period reveals a great disconnect between the take-off of house-price-cum-mortgage-credit spirals and the indices

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4   My rule of approximation is as follows: If available, I use the first lag of housing starts multiplied by the country-specific median ratio of housing completions and starts in my sample, excluding the war and post-war years. If starts are also not available, I use the first lag of permits again multiplied by the country-specific median ratio of housing completions and permits. This is to make sure that the *levels* of completions are approximated, as the over-time *trends* are similar. Both lagged permits and lagged housing starts correlate at $r > 0.98$ with completions for the available data.

5   The countries are Australia, Belgium, Canada, Switzerland, Germany [West], Denmark, Spain, Finland, France, Italy, Japan, Netherlands, Norway, Portugal, Sweden, UK and the USA.

6   For Italy and Germany: (Blumenroth, 1975; Cannari *et al.*, 2016); for Portugal and Spain: (Amaral, 2018).

7   Portugal and Spain: (Amaral, 2018); Italy: (Cannari *et al.*, 2016), chainlinked Eurostat data were used for the time from 2012 to 2016.
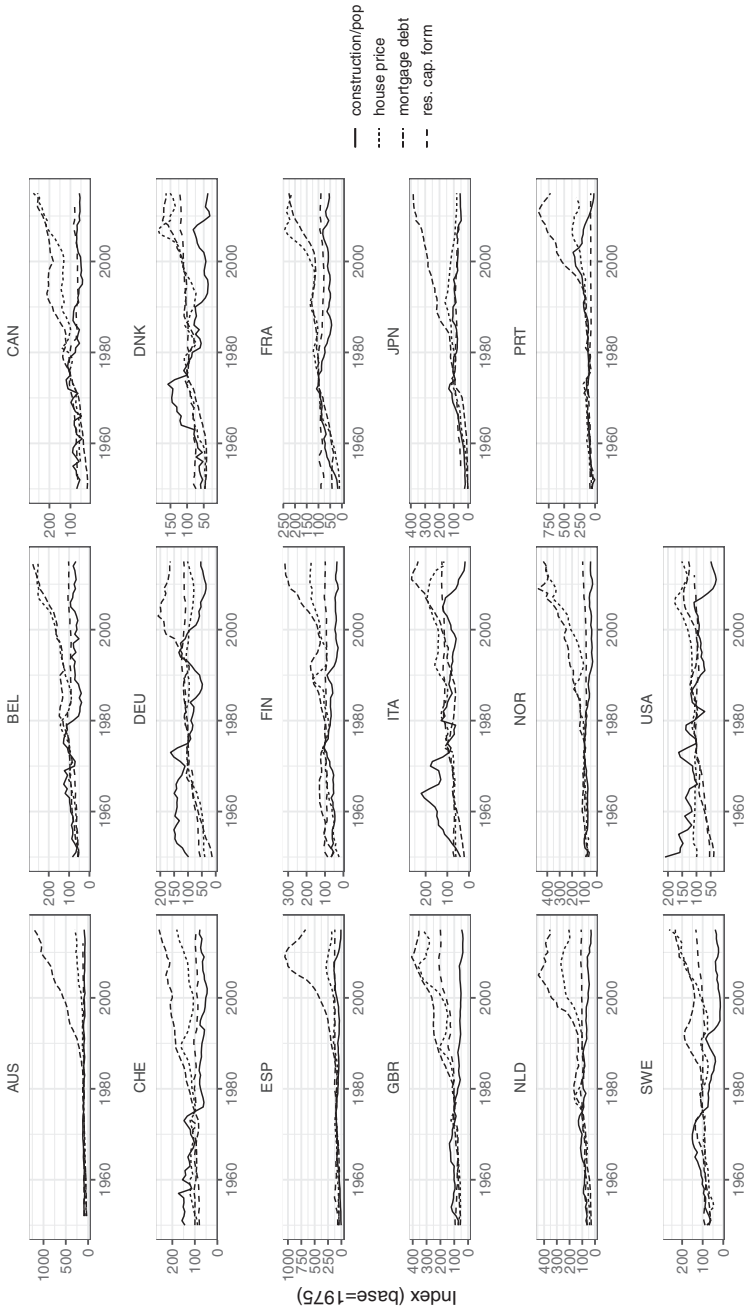
Figure 1. Housing construction, residential capital formation, house prices and mortgage indices (base = 1975).

of the real construction economy in many countries, particularly Australia, the UK, Norway, Sweden and the Netherlands (note the country-specific scales). In comparison to the previous experiences of the twentieth century, the scale of the mortgage-cum-house-price increase was unprecedented. In other countries, notably the USA, construction became less decoupled. Japan, with its unique house-price deflation since the 1990s, also reveals a different development, as does Germany, one of the few countries with recently declining mortgage-debt levels. Southern European countries are different because many saw another building cycle, the boom and bust of the 2000s that accompanied the mortgage boom. Yet, the decoupling of all price-based from unit-based measures is even visible in these cases.

The distinction between the 'real' and the 'financialized' side of housing can also be approximated by other measures than those shown here. The 'real' side could alternatively be represented by building costs, employment in the construction sector or cement production per capita. For the financial side, imputed land prices from Knoll *et al.* (2015) or the construction investment per GDP could be used. The resulting picture resembles that in Figure 1: as land prices make up, on average, more than 80% of the house price increase (Knoll *et al.*, 2015), with building cost increases being the remainder, they take off almost as sharply as the house price index. As residential investment is also used for acquiring land, this measure sees a take-off as well. The building cost index—which usually reflects both material and labor costs—increases only moderately over the long run. This implies that the price increases shown are not necessarily due to considerable quality increases. The same holds true for the main components of the material construction input such as cement production per capita and employment in construction: in countries where a construction boom accompanies a mortgage boom—in the so-called PIIGSS countries in the European periphery—these measures also show cyclical increases, but within the realm of traditional building cycle amplitude.

By many different measures, then, there has been a decoupling of the financial from the 'real' side in housing construction, but is there an association between them? The bivariate Figure 2 displays the levels of mortgage debt per GDP on both *X*-axes and two different proxies for the construction activity on the *Y*-axis. On the left-hand side is the unit-based measure of completed houses per 1000 inhabitants starting in the early twentieth century. On the right is the value-based residential share in overall capital formation starting in 1960. The relationship is not a positive linear association between higher levels of mortgage indebtedness and new construction (investment). Rather, all countries show nonlinearities. In many, an inverse U-shape best describes the relationship between mortgages and construction within countries (approximated by the nonlinear Loess curve): up to a certain threshold of mortgage indebtedness per GDP, a positive effect of higher mortgage indebtedness levels on house construction or residential capital formation can be observed. Beyond this threshold, however, the effect becomes negative. In many countries, this threshold separates the pre-1975 from the post-1975 period, as revealed by the color of the points, with a very few exceptional periods such as interwar Finland or the USA. In other countries, there is almost no further relationship between the higher mortgage indebtedness levels and construction.

In most countries, the relationship can be captured by a quadratic equation which allows the threshold to be quantified, with Norway at 11%, Germany 15%, Japan 21%, Belgium 26%, USA 26%, Canada 28%, Italy 28%, Australia 29%, UK 30%, France 31%, Portugal
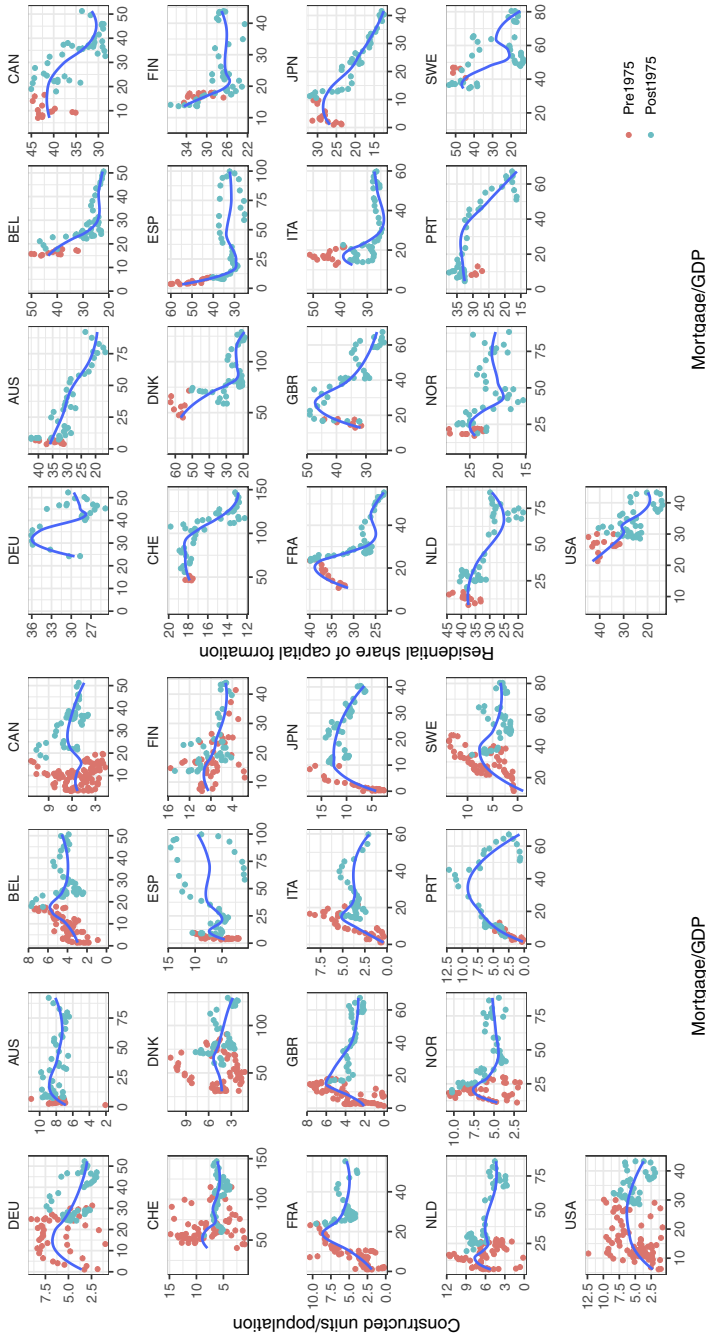
Figure 2. Mortgage debt and construction output (left) or residential capital formation (right).

35%, Switzerland 40%, Sweden 43% and Denmark 66%. The different thresholds broadly reflect the level of mortgage indebtedness the countries' banking systems allowed for over the long time horizon. The Finnish, Australian and Dutch trajectories stand out because they lack a clear maximum and either show an outright negative relationship or none at all, with mortgage debt growing at stagnating construction levels. Few countries have a positive cubic term, let alone a significant one, but Spain is the one case that defies the overall logic, starting a construction boom despite levels of >50% per GDP mortgage indebtedness.

The turn to a generally negative within-country association of the old industrial economies can also be found in cross-country perspective of available five-year averages since 1990, as shown in Figure 3. Here the old industrial countries have accumulated the highest levels of outstanding mortgage debt per GDP without this being positively associated with more construction activity per population. In the much less indebted emerging economies, particularly Turkey, Russia, China, Korea and some Eastern European countries—but not in Singapore and Hong Kong—the initial mortgage financialization of the economy is still associated with higher construction levels, hence a positive regression line slope.

Thus, with country nuances, increases in mortgage finance since the 1980s have not been associated with proportional increases in physical capital formation of either new housing units or improvements to existing ones, but rather have been accompanied by inflated asset prices. While in some countries there have also been moderately rising building costs, more expensive house building is hardly the factor driving up mortgages and prices (see also Knoll et al., 2017). Nor is the decoupling of housing finance and prices from real construction activity simply reducible to population stagnation or decline in Western countries, as the construction data are relative to population. They are also not a simple volume effect, as the curve for residential investment, which is measured as a proportion of monetary values, points in a similarly downward direction for the post-1980 period.
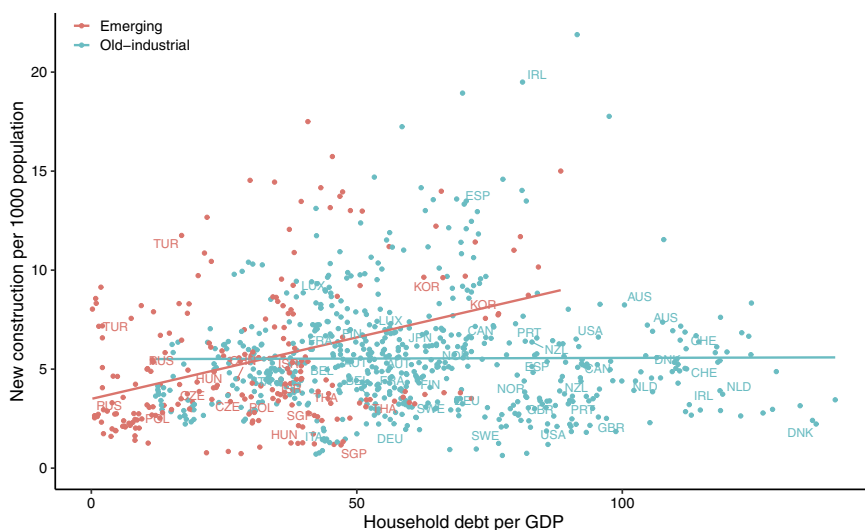

Figure 3. Debt and construction in emerging versus old industrial countries.

But this is still only the bivariate picture. To investigate the effect of mortgage expansion on new construction with more controls, I turn to time series regressions, following specifications that are commonly used in urban and real-estate economics to estimate housing supply elasticities (Poterba, 1984; Mayer and Somerville, 2000) but adapted here for the national economy. As the dependent variable I use housing completions by population, not permits or starts, for reasons of coverage, but primarily in order to measure the resulting formation of real residential stock, not just speculative projections. It is stationary (non-significant Phillips-Perron unit root tests, controlling for autocorrelation), but the nature of building cycles produces a strong serial correlation. I therefore use a generalized least squares regression, which can come at the cost of biased estimators but avoids the problems of adding the first lag of the dependent variable, i.e. absorption of magnitude and significance of more substantial variables (Plümper *et al.*, 2005). I present the first-lag regression for robustness—confirming the strength of the serial correlation—in the Appendix Table A1.

As the main explanatory variable, I use mortgage credit per GDP as first differenced lag variable, since it is not the levels but the additional mortgage debt that should explain new construction.[8] As the timing of the mortgage effect is not straightforward, I examined the lag structure and opted for one lag of this and all other independent variables. Lags of higher order are not significant in the general model. An inspection of this differenced independent and the dependent variable again reveals a nonlinear relationship. For this reason, I include the squared term of the main independent variable. Higher powers of this variable are not significant in the general models.

As additional controls I use economic variables (GDP, interest rates, building costs, house prices) and demographic variables (population growth, marriages per population, urbanization share, share of elderly population). I use first differences of all variables (the 'flow' of marriages excepted) to convert the variables to flow data, similar to the dependent variable,[9] and to avoid nonstationarity in most of these variables. I lag the independent variables by one period, as their effects on eventual completions or the decision to invest will most probably not occur in the same year.[10] To control for particularities of countries' construction history—Japan, for instance, has a much lower building age and thus a higher turnover in stock—I use country fixed effects. To control for particularities of the building cycle that most countries underwent over the last century, I control for time fixed effects. Moreover, a null hypothesis that all time fixed effects are equal to zero can be rejected, suggesting that time fixed effects are needed.

Column 1 in Table 1 shows the basic model including both mortgage debt and its quadratic term. It confirms a nonlinear relationship: at a zero change in mortgages and ignoring the slope, there is a positive construction effect of a mortgage expansion, but with each additional percentage-point increase of mortgage debt per GDP, construction goes down. This

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8   Strictly speaking, the increase in outstanding mortgage debt cannot measure the flow of new mortgages, only the net change, but it is the best available measure.

9   Housing stock data themselves are notoriously imprecise as they are completely surveyed (or estimated) at every housing census. The inter-census years are estimated using demolitions, new constructions and depreciation data. At the last German census, for instance, there were about 500 000 units more than estimated, in 1987 even one million fewer.

10 The substantive results are the same when using two lags.

Table 1. Generalized least squares regression on new construction per population

	(1)	(2)	(3)	(4)	(5)
Mortgage debt	0.0256*	0.0441**	0.0297*	0.0298*	0.0665***
	(0.0121)	(0.0139)	(0.0124)	(0.0139)	(0.0193)
Mortgage debt^2	−0.00453***	−0.00523***	−0.00444***	−0.00458***	−0.00134
	(0.00119)	(0.00134)	(0.00119)	(0.00137)	(0.00235)
GDP		0.000227*	0.000184*	0.000135	0.000261*
		(0.0000898)	(0.0000853)	(0.0000925)	(0.000103)
Interest rate		−0.0636**	−0.0603*	−0.0543*	−0.0513*
		(0.0244)	(0.0239)	(0.0252)	(0.0255)
Building cost		−0.000134			
		(0.00520)			
House prices			0.0143***	0.0146***	0.0123**
			(0.00373)	(0.00395)	(0.00443)
Population				0.000112	0.000230
				(0.000132)	(0.000150)
Marriage rate				0.251***	0.208**
				(0.0620)	(0.0746)
Urbanization				0.100**	0.175***
				(0.0368)	(0.0435)
% 65 plus				0.0342	0.282
				(0.146)	(0.403)
Homeownership* mortgages					−0.0239
					(0.0224)
Constant	6.119***	6.090***	6.015***	4.146**	3.431*
	(1.566)	(1.515)	(1.592)	(1.568)	(1.478)
N	1656	1381	1561	1464	1188
Fixed effects	Country/year	Country/year	Country/year	Country/year	Country/year

Note Standard errors in parentheses.
*$p < 0.05$;
**$p < 0.01$;
***$p < 0.001$. All nonflow independent variables are first differences and lagged by one period.

overall pattern holds throughout models 2 and 3, which introduce different economic controls (for reasons of different data coverages): the stimulus of higher previous house prices leads to more construction, whereas economic growth is positively associated with new construction, long-term interest rates negatively.[11] Building costs—as in previous studies (DiPasquale, 1999)—remain without significant effect. The addition of demographic variables shows the importance of urban growth for new construction and the significance of marriage rates, less so of population growth or the old-age ratio. The last model has a limited sample excluding the interwar periods in many countries to test whether the interaction of homeownership with mortgage debt acts negatively on construction, which holds only at low significance.

11 This result shown is for nominal interest rates which might be more relevant for how real actors form expectations. Real interest rates also have a negative, though insignificant coefficient.
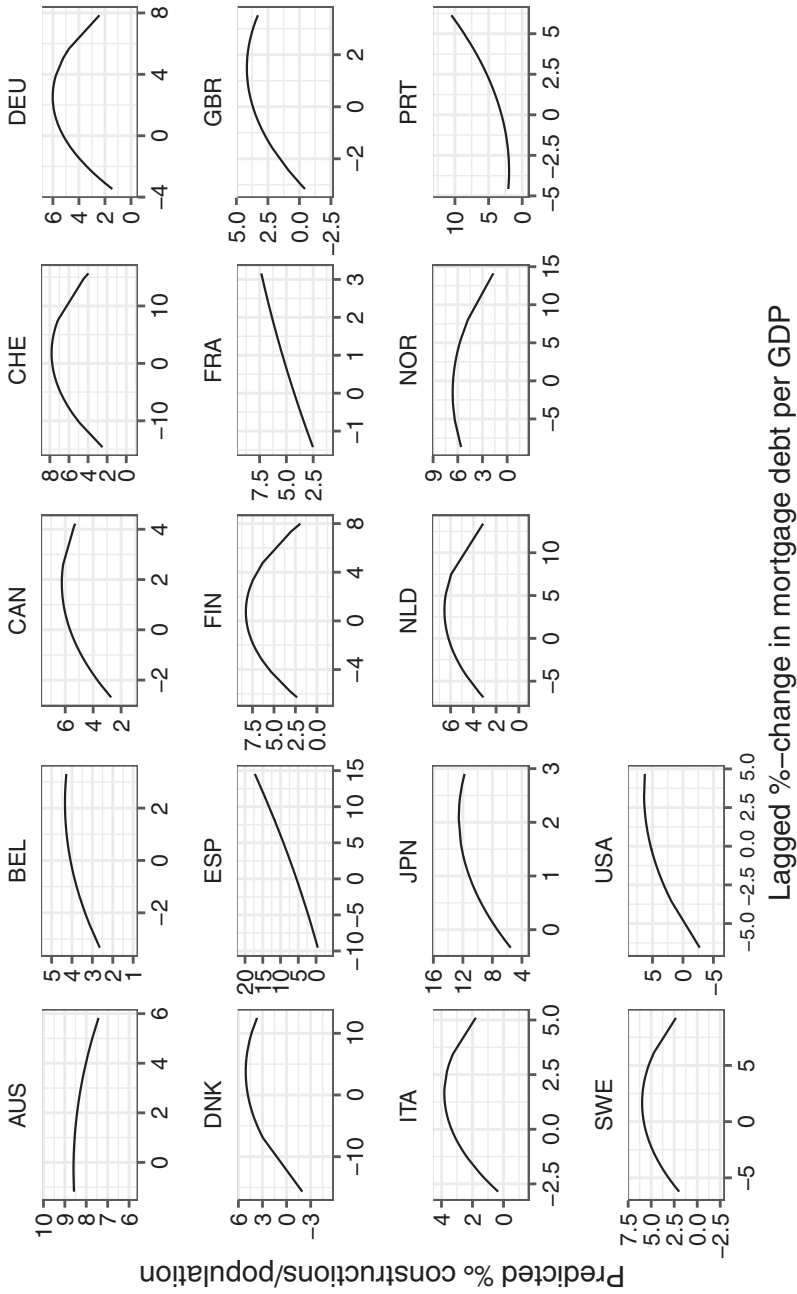
Figure 4. Marginal effects of changes in lagged debt on construction dependent on change-of-debt levels.

Table 1 only presents the average effects across all countries, while the above Figures 1 and 2 revealed some country heterogeneity. For this reason, I run country-specific regressions of the basic specification, with Figure 4 displaying the marginal effects of a prior increase of mortgage debt on new construction conditional on the level of the prior mortgage-debt increases. Most countries show the inverted-U relationship: in recession periods of declining mortgage shares, a reduction of this decline, i.e. through new mortgage issuing, can raise construction output in the next period. When net mortgage increases turn positive up to a country-specific maximum of 1–3 percentage-point increases, this positive effect on construction is maintained, turning negative beyond this threshold. In some countries—many English-speaking ones where housing supply is traditionally more elastic—there is rather a flattening-out or a leveling of marginal effects, whereas a subgroup of Southern European countries do not follow this logic at all but witness simultaneous mortgage and construction booms.

The above findings are robust under different specifications (see Appendix Table A1 and Table A2): further corrections for cross-sectional dependence leave the results intact, as does a Prais–Winsten correction of standard errors or the inclusion of an autocorrelation term. They also hold when using high mortgage *levels* in interaction with additional mortgage *growth*: in countries with high levels of indebtedness, additional mortgage issuing has a construction-depressing effect. The results also hold when changes of the lag structure are tested, for instance using two lags of independent variables or replacing the level of new construction by the first differences. Under most specifications—though not those including house prices—the substantive effects also hold when using deflated dollar-converted mortgage volume data from the Macrohistory data although these conversions themselves can, of course, bear new sources of error. One could also object that yearly data are too noisy due to the many special effects completions are subject to during construction cycles. I therefore took 5- or 10-year averages of all data and reproduced similar results, although the lower number of cases reduces overall significance levels. Finally, I sliced the data into different subsamples by time period, again finding similar substantive results at lower significance levels.

The results support a parabolic relationship between mortgage debt and residential construction. While the effect of mortgages on construction is generally positive, it turned negative once mortgage debt grew by too much or reached too high levels. One could argue, of course, that in the financialized countries, it was not necessarily the *new* construction and not even *new* capital formation (which includes value-increasing extensions to existing buildings), but the rising repair and maintenance works which became necessary once the post-war reconstruction boom had provided every family with a home. By the 1980s, the first maintenance cycle simply took its toll, as the post-war units started to depreciate. In this view, even given stagnating building costs, the amount of investment going into maintenance simply increased without, however, improving the residential capital substantially.

In principle, the control for autocorrelation and the long time period going historically beyond just one large construction cycle should counter this objection. Capital formation data also account for both depreciation and value-increasing extensions of existing buildings. But it is indeed true that in the 1980s, housing investments in existing stock began to overtake investments in new construction in some Western countries; it could even exceed 50% and reach top levels of 80% in some countries. It is difficult to estimate these numbers, as they are not as clearly surveyed by permit systems as new construction is.

Most countries, however, have estimates of their maintenance share, and Euroconstruct has been collecting these data for many European countries since the 1990s.[12] While it is true that the overall share of investment in existing stock increased in certain countries during this period, it also stagnated in some countries and even declined in others, as Figure 5 shows. The increases also do not necessarily go along with the respective strong increases in mortgages.

It is therefore difficult to maintain that the observed decoupling of nonproductive housing investment and real construction activity is simply reducible to an explosion in the amount and cost of maintenance because the explosion did not occur to the same extent.

## Discussion: more mortgages, fewer homes?

Why then have rising prices and the availability of (more accessible) mortgages not led to proportionate rises in construction and real residential investment beyond a certain point? Construction markets have many nationally specific, even locally peculiar, features, which have to be taken into account, but my hypothesis is that processes of financialization are the important common factor behind these trends, even though there are 'variegations' depending on countries and the financializing sector, i.e. nonfinancial firms, the state or private households (Aalbers, 2017). To the extent that these sectors and their mix in the housing production system have been treating housing increasingly as a financial asset, mortgages were rather used for speculative purposes, driving up the prices of existing homes and becoming decoupled from construction. In short, financialization of housing helps to explain why mortgages can grow without new construction, but the mechanisms depend on how housing is produced in the respective countries.

Housing production from urban land through building can generally be organized by state actors (municipalities, nonprofit associations, public building companies), private developers or private households. Barlow and Duncan (1994) made the important observation about the 1980–1990s that countries differed as to which of these three sectors dominated in the housing-production system, with universal welfare-state countries like Sweden relying primarily on public promotion, corporate welfare states like Germany using public, but also much self-provision by private households, and liberal welfare states mainly using private developers. Rudimentary welfare states in Southern Europe either used private developers as in the case of Spain or informal self-provision as in the case of Greece. Post-1980, both the mixture of providing sectors and, particularly, the actor orientation within each sector changed toward more financialization and less construction, but this production–regime distinction helps to explain why financialization was 'variegated' and countries underwent different processes despite similar outcomes.

Financialization of the state: less public housing, more mortgages, less construction

In the sphere of state provision, *financialization of the state* could take on different forms: state provision was cut back either through the sale of public-housing portfolios or of housing companies to the private corporate sector and individual units to private households.

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12 I thank the ifo-Institute for providing me with the Euroconstruct data.
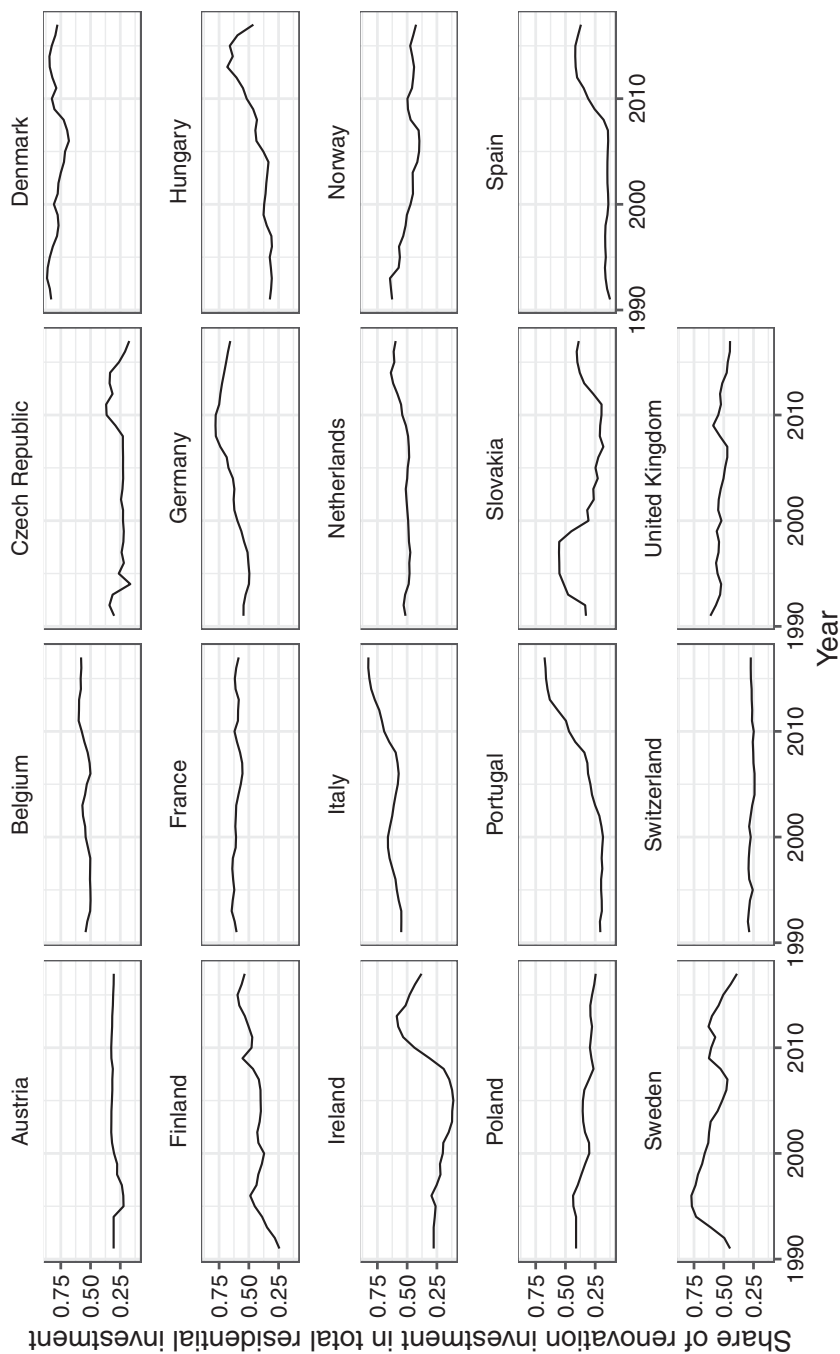
**Figure 5.** Share of investment in existing housing stock.

Source: Euroconstruct.

Whatever its form, the one-time sale substantially increased private mortgage debt without adding any new units, and continuing private new construction was increasingly financed with private mortgage debt rather than public debt or tax money, but it never reached the levels of the post-war state construction sector.

The demise of the social housing sector and its associations particularly in the European countries with a strong public-provision sector left a void in new construction because these associations had been a disproportionately important construction sector for new housing units, both in the private and the social stock (Anderson and Kurzer, 2019). Public housing associations had established collaborations with local authorities for the provision of land for construction and the necessary local infrastructure, with state investment banks for short-term construction loans, and with state agencies for subsidized mortgages. Their know-how also made them crucial government instruments for manipulating the new housing supply. With their retreat, shortages particularly in their primary market segment, urban rentals, began to emerge (Christophers, 2013).

Figure 6 traces the development of private (versus state-subsidized or nonprofit) housing units in new construction and shows how most states and nonprofit builders had retreated by the 2000s, leaving a highly privatized construction regime (Aalbers *et al.*, 2017). In Scandinavia, the Netherlands or the UK, the private construction share was never as low as in Soviet Russia, but it was considerably higher than in liberal housing regimes like Belgium or Switzerland or in rudimentary welfare countries such as Portugal, where the state never engaged in public promotion to a considerable extent. This measure—which is difficult to compare across countries—does not necessarily suggest that states retreated from housing altogether. Particularly, housing regimes operating through housing finance and the 'hidden welfare state' (Howard, 1997) like the USA could even have increasing global housing expenditures, even though their public housing sector has been drying out. But it does show that states retreated from the housing *construction* sphere in countries which had intervened heavily after the world wars and again in later housing crises. They often left behind an
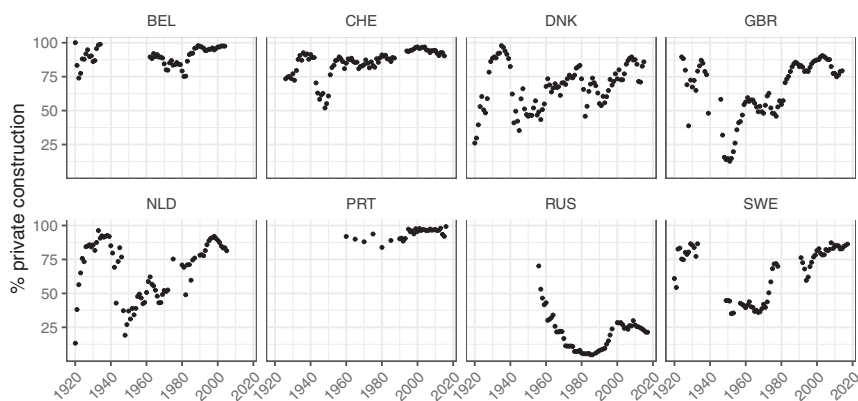
Figure 6. Share of private housing construction.
Source: See footnote 3.

uncompetitive private construction sector without the capacity or corporate organization to respond to large demand shocks. Of course, this primarily concerns those countries whose post-war housing policy was built around a public or nonprofit construction sector, where a time of low private mortgage indebtedness and high public construction gradually came to an end.

With the demise of this housing segment, states thus lost an important supply-side policy instrument, which they overcompensated for with even more active demand-side policies, incentivizing more mortgage debt or driving up prices with housing allowances. This shift in policy orientation from supply-side to demand-side measures is the housing story of the broader move to neoliberal governance (Rolnik, 2013). In English-speaking countries, parties on both the left and the right were led to offer more and more mortgage subsidies to future homeowners (Schelkle, 2012), a tendency that can also be traced in party manifestos in most other OECD countries (Kohl, 2018*b*). The extension of homeownership through private mortgage credit became the default policy stance of large parties, both on the right and the left (with the exception of German-speaking countries). Driven not necessarily by party ideology but by party competition and the median homeowner-voter, they offered ever more generous mortgage terms to becoming homeowners, partly because this was the most convenient instrument for national politicians, and partly because it was the only instrument left in welfare states where housing provision had been dismantled (Kohl, 2018*b*).

One reason why this expansion of homeownership had no significant effect on construction is that homeownership programs of the post-1970s supported nonbuilding homeowners. Privatization policies such as Thatcher's 'right to buy' council houses are as much an example here as the mortgages extended to tenants willing to buy converted cooperative units in Scandinavian countries (Turner, 1997). But the traditional post-war homeownership subsidies, originally only meant for newly built homes, were also extended to buying existing units, as was the case with the extension of German subsidies to buying existing units in multi-family houses in 1979. In Scandinavian countries like Sweden, the financial deregulation and conversion of private rentals into owner cooperatives created mortgage and house-price increases without additional units (Turner, 1997). The 'buy to let' programs have worked similarly for rental markets: current landlords have much higher burdens of debt than the previous generation of landlords who purchased the apartments with government subsidies (Wijburg, 2019).

Generally, this shift in subsidy policies has also been described as a shift away from object- or 'stone'-based supply policies to subject-based demand policies, which had the advantage of better targeting individuals' needs and circumventing the heavy construction machine with its lagging output (Bourdieu, 2005). But the policies came at the cost of steering investments into new supply. Also, the mortgage extensions on the demand side, encouraged nationally, did not necessarily create the most fruitful conditions for new construction locally. In short, *state financialization* replaced public construction at low private mortgage levels with private mortgage credit to purchase existing (public) units, which pushed mortgage levels and prices up but left a construction void. While these are broad tendencies, they mostly occurred in countries with a large public-provision sector and strong homeownership catch-up processes (e.g. Sweden, Finland or the UK).

Financialization of private households: supply-side monopolies and housing rentiers

On the level of *household financialization*, these homeownership policies were part of a broader move toward the so-called asset-based welfare regimes, where state-incentivized private assets and particularly the family home are supposed to replace the retrenching public welfare, and the pension system above all (Doling and Ronald, 2010). Only an extension of mortgage credit to broader strata of the population permits such a welfare shift, whereas a construction boom suddenly risks becoming a supply shock to the housing assets that make up citizens' pension savings. In countries with large private or self-provision sectors, there are therefore very heterogeneous anti-urban-growth coalitions with an interest in preventing too much new construction that would typically destroy the current house price levels of housing-market insiders and rentiers.

This is an important background condition for the observation made by urban economists that (land) supply-side restrictions are one problem behind low construction levels and elasticity. *On the local level*, not-in-my-backyard (NIMBY) residents, environmentalists and private developers thus often create the bottleneck in construction land with restrictive land policies (Ihlanfeldt, 2007). Empirical work, almost exclusively using within-US variation, shows that more building- and land-related regulation increases housing prices, but not necessarily new construction (Glaeser and Gyourko, 2002). The members of this coalition are first and foremost local homeowners who, afraid of falling house prices, oppose new and denser construction in or close to their neighborhood (Coelho *et al.*, 2017). This opposition is strongest in English-speaking countries and particularly the US context where the power of suburbs over their own zoning laws and building codes is particularly pronounced, whereas in many European countries, cities are more centralized and powerful in comparison to their suburbs (Nolte, 1988). But even in these European cases, the austerity of municipal budgets is an obstacle to major suburb extensions like those of former times. In the context of English-speaking countries, the number of subnational entities with administrative competencies is increasing, allowing homeowners to translate their fear of declining house prices into protective measures. Some even argue that it was the 'fiscal revolt' of Californian homeowners against a reassessment of their property-tax values that was at the origin of the rising anti-tax and anti-central government mood in the USA (Martin, 2008). What is more, the insistence on strong property rights and today's stronger democratic sensibilities make many of the urban redevelopment or city extension projects of the post-WWII kind not feasible. Rising asset prices have thus created a housing rentier class that acts against local supply shocks.

Homeowners have, of course, always cared about their house values, but this interest has arguably increased over time. First, the privatization of pensions has made housing a third pillar in the pension system in many countries since the 1970s, making local house price shocks increase old-age economic insecurity. Second, housing wealth has become more important for individual household budgets because it has absorbed most of the average household's savings and because long-run house prices have had almost as high return rates as stocks but are less volatile (Jordà *et al.*, 2017b). Besides this volume effect, the secular trend of homeownership expansion has also simply increased the number of homeowning households (Kohl, 2017). The aggregate effect of both has led some to claim that Piketty's finding about the global increase in wealth to income is entirely reducible to the house price

increases of recent decades (Rognlie, 2016). More local homeowners have therefore had more to be concerned about.

The NIMBY argument, however, is not a sufficient explanation, as anti-growth coalitions act on the neighborhood level while new construction problems occur on the metropolitan markets. In many countries and cities, studies indicate, these markets are controlled on the supply side by landlord interests as in Dublin (Norris, 2016), by private developers undertaking land-banking as in the UK (Ryan-Collins *et al.*, 2017), and by oligopolies in a concentrated construction industry as in Sweden (Blackwell, 2018). Cambridge, MA, of the 1970s, for instance, has been described as being completely dominated by vested local landlord interests which use all means to create a structural undersupply (Mollenkopf and Pynoos, 1972). Many more city case studies paint a similar picture.

On the national level, the new housing rentier class is supported by all groups profiting from rising house prices, implicitly by the media (Mercille, 2014), and not least by central banks and their concern for financial stability, which is endangered by potentially bursting house-price bubbles in the event of a supply shock (Fligstein *et al.*, 2014). Given the importance of stable house prices for economic stability and the asset-based pension and welfare system, rarely does a governing political party pronounce itself in favor of policies that would cause house prices to decline; this is also suggested in an analysis of recent European party manifestos (Fuller, 2019). Fuller proposes that housing and construction policies even shape voting patterns in these countries: elderly suburban or rural voters vote for right-wing parties that propose more demand-side subsidies encouraging more mortgage debt, but they fear new construction programs. Young urban voters, in contrast, vote rather for left-wing parties that propose supply-side policies in the hope of bringing prices down.

One implication of the national asset-based welfare regime is that those taking out new mortgages are not necessarily those contributing to new construction. Many new mortgages can be taken out without residential capital being formed: mortgages for other than residential purposes, buying existing houses (first or second properties), pure repairs and maintenance (without capital formation), speculative purposes or refinancing existing mortgages, etc. (Haffner *et al.*, 2015).[13] Mortgage equity withdrawal (MEW) for consumption purposes is even openly admitted to be a desired macroeconomic effect of house price rises (Smith, 2005). Particularly with an aging population, more mortgages are not necessarily used for new construction, as housing supply is perhaps less of a problem than adequate pensions. The International Monetary Fund (IMF) reported in 2008 that nine of the countries examined here had MEW institutionalized—incidentally they tended to be those with high levels of mortgage indebtedness. As the European Central Bank (ECB) household finance survey reveals, the absolute importance in terms of extensity and intensity of nonconstruction or nonrepair related mortgages is overall less than studies suggest, but averaged by year of mortgage issuing, there is clearly a rising tendency since the 1990s (Van Gunten and Navot, 2018).

In short, in housing production systems where private developers dominate or incumbent homeowners enjoy power over new supply in potentially broad policy coalitions ranging from local NIMBYs to central banks, mortgages can increase because suppressed construction drives up asset prices and hence mortgages for purchases of existing units, while political obstacles make new supply inelastic even in the long run. In self-provision regimes,

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13 In extreme cases, mortgages on property can even be used to demolish existing units or replace them with fewer high-end ones in urban redevelopment.

weakly organized potential homeowners (young families, migrants) are less likely to realize new construction against these strong incumbents.

Financialization of nonfinancial entities: earning more with less

In production regimes that rely heavily on private developers and corporate landlords, in turn, *financialization of nonfinancial entities* can entail a move away from maximizing supply to one of maximizing returns on investment. Recent financialization literature has highlighted the rise of more actors with financial interests in housing markets (Aalbers *et al.*, 2017). Either traditional social housing providers or even private households have had a change in mentality and started to buy additional units for pure investment purposes, or financial actors such as private equity firms or even branches of asset-managing firms have become increasingly active in the housing markets of major cities (Fields and Uffer, 2014; Wijburg *et al.*, 2018). During earlier phases of 'financialization 1.0' (Wijburg *et al.*, 2018), these actors were mainly interested in a quick turnover from privatized or regenerated units, but the general lack of safe assets with decent returns has made global property markets the target of rent-seeking capital in the latest financialization phase.

While the fast conversion or re-dedication of units does not increase housing supply in any way, redevelopments to create luxury apartments for investment purposes, though creating new physical units, likewise add nothing to the relevant supply because they either come with no use value and serve purely to 'store' capital or, being out of reach for even the middle classes, hamper quick filtering-down through vacancy chains. Such redevelopments can even reduce the number of previously existing units. Generally, financialized real-estate investors tend to look for high margins from a few high-end projects at the cost of building less overall. These processes help explain how mortgage debt can increase without necessarily being accompanied by housing supply for countries where private development or the privatization of public-housing associations has been particularly pronounced.

Conclusions

This article makes the overall observation that since the 1970s and in many advanced economies, there has been a decoupling of the financial side of housing—mortgages and prices—from real economic activity—new houses and residential capital formation. Beyond a certain country-specific threshold of mortgage indebtedness per GDP, additional mortgage lending does not increase the housing supply further but rather inflates house prices and has construction-depressing effects. While housing supply is positively affected by rising mortgage availability in the historical long-run, as anticipated by the urban economics literature, the 1970s marked a turning point both in the steepness of the initial positive effect and the strength of the depressive effect of too much mortgage debt, as anticipated by the housing financialization literature. This result holds when controlling for the demographic and economic background factors that also predict new housing supply.

Why have the recent decades of 'great mortgaging' been different? Drawing on and extending the financialization literature into the neglected field of housing supply and construction, I put forward the hypothesis that the recent, 'variegated' processes of financialization can account for why the growth of mortgages has not necessarily resulted in more houses and residential capital formation. The growing financial orientation of nonfinancial firms, the state and private households has led to market constellations in which mortgages

increase without additional residential capital being formed. They have generally been enabled by states moving away from supply-based housing policies towards neoliberal demand-side interventions that incentivize homeownership through easier mortgage lending. These constellations are more or less pronounced depending on how important private developers, private households and public development have been in a country's housing provision. In the central and Northern European countries with homeownership catch-up, the demise of the public-housing in new construction and the sale of public housing units created an increase in mortgages (and house prices) and a decline in construction. In high homeownership countries, housing rentier politics lead to favorable national mortgage conditions, whereas local anti-urban growth coalitions create bottlenecks of inelastic supply. Local supply restrictions are a particular problem in countries with a strong share of self-provision (German-speaking countries), where individualized housing outsiders encounter more powerful housing insiders. The prevalence of private developers as in the USA or the European periphery (Ireland or Spain), meanwhile has an ambivalent influence. On the one hand, private development gains are higher for high-end units where margins are high but quantities are low, and oligopolistic developer structures have therefore been linked to low supply, high prices and unaffordability problems. On the other hand, in countries where the construction sector has become the *de facto* growth model for the economy, the dominance of private developers in collusion with the banking sector can lead to simultaneous construction and mortgage booms, as witnessed in Spain, Portugal, Ireland and potentially some Eastern European countries (Bohle, 2018; Kohl and Spielau, 2018). This ambivalence can also account for the peripheral exceptions to the decoupling of mortgage and construction development.

The great decoupling is no trivial matter as urban economists have shown that the more inelastic housing supply is (with regard to prices), the larger and deeper house-price bubbles can become (Glaeser and Nathanson, 2014). Macroeconomists in turn have shown that business cycle downturns are also longer and deeper if they have been fueled by burst mortgage and housing bubbles (Jordà *et al.*, 2015). With the construction sector creating up to 10% of modern employment in OECD countries, low construction volumes can become a macroeconomic problem. On the urban level, continuously high prices can imply the rise of urban inequalities, either in terms of segregation into high-price and low-price neighborhoods or the complete exodus of lower-income groups from the emerging superstar cities (Gyourko *et al.*, 2013). Wealth inequality, which is largely driven by housing-wealth inequality, can also be exacerbated by housing-market insiders' rentier strategies to prevent new supply from depressing their asset prices.

Another consequence beyond housing concerns the potential misallocation of capital that economists have pointed to (Martín *et al.*, 2018) when mortgage credit crowds out business loans in banks' lending behavior (Chakraborty *et al.*, 2018) or crowds out state finance. The construction sector, although good for employment and local stimulus effects, suffers from lower productivity compared to manufacturing and services. It is no coincidence that governments planning economic expansion in post-war Europe or the Soviet Union always gave priority to more basic industries to stimulate the economy (Finkel, 1997). But the crowding-out effect is potentially more worrying if the use of mortgage credit is not even channeled into new construction and used instead to inflate an asset bubble. Housing seems to be particularly well-equipped to do this because it can be used as leveraging collateral and faces relatively inelastic demand; in ownership-dominated markets, households need to buy in order to live somewhere, no matter whether they dream the homeownership dream or not.

The article thus expands on a claim that has been made about finance and its effects on growth more generally, namely, that although necessary for growth in the initial stages and up to a certain point, it can become a curse if extended too far (Cecchetti and Kharroubi, 2012; Shaxson, 2018). In housing, 'too much mortgage debt' not only breaks the promise of creating more homeowners while macroeconomically leading to deeper recessions and socially undesired outcomes, it is also less likely to achieve what it is originally meant for: building new houses, affordable homes and eliminating shortages.

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Appendix

Table A1. Regression with first-lag of dependent variable

	(1)	(2)	(3)	(4)	(5)
(AR1)	0.882***	0.880***	0.882***	0.876***	0.855***
	(0.0183)	(0.0167)	(0.0184)	(0.0191)	(0.0192)
Mortgage debt	0.00836	0.0173	0.00322	0.00525	0.0395
	(0.0364)	(0.0352)	(0.0340)	(0.0354)	(0.0300)
Mortgage debt^2	−0.00335*	−0.00388	−0.00349*	−0.00340	−0.000284
	(0.00144)	(0.00192)	(0.00158)	(0.00165)	(0.00256)
GDP		0.000218	0.000124	0.000174	0.000146
		(0.000229)	(0.000196)	(0.000194)	(0.000182)
Interest rate		0.0368	0.0708*	0.0873*	0.0853
		(0.0619)	(0.0309)	(0.0406)	(0.0436)
Building cost		0.00932			
		(0.00763)			
House prices			0.0204**	0.0193*	0.0198*
			(0.00686)	(0.00712)	(0.00772)
Population				0.000152**	0.000234*
				(0.0000425)	(0.0000934)
Marriage rate				0.0825**	0.0681*
				(0.0280)	(0.0288)
Urbanization				0.0421	0.0831**
				(0.0394)	(0.0218)
% 65 plus				0.240	0.776*
				(0.257)	(0.287)
Homeownership* mortgages					−0.0223
					(0.0296)
Constant	0.787***	0.356**	0.314	−0.412	0.0645
	(0.0645)	(0.0925)	(0.291)	(0.453)	(0.342)
N	1620	1355	1527	1418	1165
R^2	0.875	0.876	0.882	0.882	0.883
Fixed effects	Country/year	Country/year	Country/year	Country/year	Country/year

Note Standard errors in parentheses.
*$p < 0.05$;
**$p < 0.01$;
***$p < 0.001$. All nonflow independent variables are first differences and lagged by one period.

Table A2. Generalized least square regression using mortgage *levels*

	(1)	(2)	(3)	(4)	(5)
Mortgage debt	0.0768**	0.106***	0.0907***	0.105***	0.126***
	(0.0256)	(0.0289)	(0.0269)	(0.0287)	(0.0364)
Mortgage levels*growth	−0.00102**	−0.00122***	−0.00112**	−0.00134***	−0.000976*
	(0.000336)	(0.000362)	(0.000343)	(0.000364)	(0.000461)
GDP		0.000226*	0.000200*	0.000102	0.000282**
		(0.0000933)	(0.0000896)	(0.0000980)	(0.000108)
Interest rates		−5.03e−11	−3.39e−11	0.0401	−0.108
		(4.70e−11)	(4.33e−11)	(0.0566)	(0.125)
Building costs		0.00286			
		(0.00540)			
House prices			0.0142***	0.0161***	0.0123**
			(0.00392)	(0.00430)	(0.00463)
Population				0.000205	0.000426*
				(0.000180)	(0.000186)
Marriage rates				0.0769	0.0189
				(0.0466)	(0.0497)
Urbanization				0.104**	0.180***
				(0.0383)	(0.0450)
% 65 plus				0.0696	0.521
				(0.151)	(0.417)
Homeownership* mortgages					−0.0361
					(0.0257)
Constant	3.052*	3.103*	2.931	2.074	0.105
	(1.549)	(1.518)	(1.574)	(1.631)	(1.227)
N	1638	1367	1544	1429	1169
Fixed effects	Country/year	Country/year	Country/year	Country/year	Country/year

Note Standard errors in parentheses.

*$p < 0.05$;

**$p < 0.01$;

***$p < 0.001$. All nonflow independent variables are first differences and lagged by one period (mortgage *levels* excepted).