Bringing the Household Back in: Comparative Capitalism and the Politics of Housing Markets

Greg Fuller
University of Groningen

Alison Johnston
Oregon State University

Aidan Regan
University College Dublin

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Greg Fuller[1], Alison Johnston[2] and Aidan Regan[3]

Abstract: Households consume an increasing share of credit in developed economies; however, past and current comparative capitalism research has had very little to say on housing markets. This is an important blind spot: house prices have crucial implications for national economies. Unsustainable housing prices can cause significant macroeconomic instability, drive wealth inequality, and accelerate households' accumulation of debt. Moreover, housing markets across the developed world fail to conform to traditional comparative political economy "typologies." While the liberal economies of the UK and Ireland experienced rapid housing price growth between 1995 and 2008, the "egalitarian" Nordic countries were close behind. We argue that the study of comparative capitalism needs to bring the household back in, through an analysis of the largest financial liability they own: mortgages. To understand heterogeneity in housing inflation, it is vital to understand dynamics in two markets that determine homeownership: First, the labor market, which shapes households' incomes (on which comparative capitalism and comparative political economy more broadly have a lot to say), and; second, the market for mortgages, which

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[1] Assistant Professor in International Relations and International Organizations, University of Groningen. Email: g.w.fuller@rug.nl

[2] Associate Professor in Political Science and Public Policy, Oregon State University. Email: Alison.Johnston@oregonstate.edu

[3] Assistant Professor, School of Politics and International Relations, University College Dublin. Email: aidan.regan@ucd.ie

shapes households' access to financial resources (on which comparative capitalism and comparative political economy have very little to say). We argue that the impact of labor market institutions on housing inflation is conditional on national regulatory frameworks that govern *mortgage credit access*. Using a panel analysis of 17 OECD economies from 1990 to 2007, we find that in permissive mortgage credit regimes, countries with coordinated labour market institutions that restrain income growth have lower housing inflation than countries with uncoordinated wage-setting. This is what the comparative capitalism literature would predict. However, in restrictive mortgage credit regimes (those which undermine households' capacity to assume mortgage debt), the structure of labour market institutions have no effect on housing inflation.

I.   Introduction:

The study of comparative capitalism and comparative political economy (CPE) has always been concerned with the cross-national variation in macroeconomic outcomes, particularly inflation. This is typically conceived in terms of the harmonized consumer price index (HCPI), and its impact on the real exchange rate. As argued by Colin Hay (2009), there are two types of inflation for policymakers: good inflation, and bad inflation. Bad inflation is when wages increase too much for employers, or when the price of goods and services become excessive for consumers. Good inflation refers to rising asset prices, which makes the owners of property feel wealthier. Rising housing prices generally falls into the "good" inflation category: when home prices rise, homeowners net worth rises, encouraging more spending (the wealth effect). CPE knows a lot about domestic institutions that affect "bad" inflation – and hence the real exchange rate – but relatively little about institutions that shape variation in the price of residential real estate.

This is a serious oversight, especially considering that housing constitutes most families' most substantial asset, and that housing price inflation behaves very differently from ordinary inflation. In almost all OECD countries, the HCPI has been largely tamed, rarely exceeding 3 per cent per annum. The opposite is the case with asset-housing prices, which, in some countries, has increased by 100% in the space of a few years. Rising housing prices both compel homeowners to take on more debt (due to the higher prices) while also encouraging them to do so voluntarily (due to expectations that prices will rise further). This paper seeks to determine the drivers of cross-national variation in housing inflation, focusing on two key sets of domestic institutions: those involved in shaping wage/income growth (labour markets) and those involved in shaping national mortgage credit consumption (housing finance markets).

Rising house prices are a good thing for those who already own property. As a result, house price inflation over the past decade has widened and exacerbated wealth inequalities, particularly between generations (Trumbull 2012). Thomas Piketty's (2014) book, *Capital in the 21st Century*, popularized the importance of these rising wealth inequalities. Since the

1970's, in almost all of the advanced capitalist societies, the capital-income ratio has increased to around 400-600%. For Piketty, this can be explained by the *volume effect* of increased savings over the past 30 years. However, more recent research, based on Piketty's data, suggests that the increase in the capital-income ratio is predominately driven by the *price effect* of housing (Bonnet et al 2014; Rognile 2014). Rapidly rising house prices has driven up the total stock of capital in advanced democracies, and in turn, inequalities. Further, as we know from the financial crisis, when house prices collapse, the wealth of the middle classes can be wiped out.

It is for all these reasons that we agree with Schwartz & Seabrooke (2009), Ansell (2014), Aalbers & Christophers (2014), and Kohl (2017) that it is necessary to bring the household back in to the study of comparative political economy. But unlike these authors, we are interested in trying to explain the variation in *housing prices* not homeownership rates. This focus on housing prices, as opposed to housing preferences, links our analysis to the wider Varieties of Capitalism literature (VoC – see Hall and Soskice, 2001), and in particular, to more recent comparative capitalism work on 'growth models' (Baccaro and Pontusson 2016). The growth model perspective in CPE emphasizes the importance of aggregate demand in the study of capitalism. For countries that prioritize *consumption-led growth*, as opposed to export-led growth, which the first generation of VoC largely emphasized, the role of borrowing (especially with homes as collateral), together with the wealth effect of house price increases, is central to understanding how those capitalist systems function. Our contribution is not to expand capitalism typologies, but to expand comparative capitalism's focus to a sector (housing) which it has largely neglected, despite housing's importance for macroeconomic and distributional outcomes.

We propose a framework for understanding housing price dynamics that integrates both capital (housing) and labour (income) markets. This means analytically shifting the lens away from firms and corporate governance, the traditional emphases in VoC research. Accordingly, we focus on the *market for mortgages* and derivative products (broadly, housing finance markets). In many national systems, access to mortgage credit is the *sine qua non* for getting on to the so-called housing ladder. In other words, any investigation of the

contemporary influences on housing prices must be sensitive to the force of financialization (c.f. Magdoff and Sweezy 1987; Martin 2002; Epstein 2005). As a result, understanding the institutional features of a national mortgage system is crucial to revealing the drivers of housing prices (Fuller 2015).

At the same time, however, making sense of housing finance markets requires an analysis of the labour market. This is particularly true of those institutions that shape income and wage growth, as income/wages ultimately allows households to service their debt-mortgage contracts. Johnston & Regan (2017) have recently discovered that the wage-setting institutions are crucial drivers of housing prices, suggesting that contrary to what prior welfare state research suggests (Schwartz, 2012; Schelkle, 2012), wages and credit (at least outside of the USA) are complements: the more households earn, the more they are capable of taking on mortgage debt.

Ultimately, our theoretical framework leverages both the institutions that govern labor markets and housing finance markets, and examines how they interact in driving housing prices. Our empirical approach; a (distributive lag) panel analysis of 17 OECD countries from 1990 to 2007[4], formally tests their interaction effects. Our core empirical finding is that the impact of wage-setting and housing finance institutions on housing prices is co-dependent. Coordinated/centralized labor market institutions that deliver wage moderation play a major role in restraining housing inflation, but *only* in countries where housing finance institutions encourage mortgage credit formation. However, in countries where access to mortgage credit is restrictive, (wage-moderation producing) labor market institutions have no effect on housing inflation. Because credit-mitigating institutions restrict households' access to mortgage credit, they ultimately make the income requirements for mortgage loans (which are impacted by wage-setting institutions) less relevant for housing prices. These findings suggest that comparative capitalism's predictions on how wage-setting institutions operate work somewhat differently in housing markets. In credit-encouraging housing finance systems, coordinated/centralized wage-bargaining has similar effects on housing

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[4] We explain our use of this time period below.

inflation as it has been shown to have on the general inflation rate. In credit-restrictive housing finance system, there is no empirical distinction between coordinated/centralized and uncoordinated/decentralized institutions in determining housing price growth.

Focusing on households and housing markets delivers a number of innovations and insights to comparative capitalism: it shifts our attention to the importance of mortgage-credit finance institutions, which both VoC and the growth model perspective has largely neglected. It highlights how housing finance systems cause wage-setting institutions to produce outcomes contrary to what comparative capitalism would expect, and; it explains why typical VoC, growth model and welfare state typologies do not hold in housing markets. Due to their different housing finance regimes, the coordinated (and export-centric) Nordic economies behave very differently from coordinated market economies, such as Germany and Austria in housing price growth. This difference toward housing finance may explain why domestic demand, and consumption-led growth, is so much stronger in Nordic countries.

The remainder of the paper is structured as follows: first, we identify in more detail the shortcomings in comparative capitalism research in understanding housing markets, and make the case for centering the household in comparative capitalism and CPE more broadly. Second, we outline a theoretical framework that integrates the labour market (which governs wages and income) and the housing finance market (which governs households' credit access), to explain cross-national variation in housing prices. Third, we present our empirical findings that demonstrate the interaction effects of wage-setting and mortgage-market institutions on housing inflation. We conclude with a discussion on the implication of our findings for the study of comparative capitalism, and a suggestion that future research ought to focus on the relationship between housing capital and wealth inequality.

II.   Putting Households at the Center of Comparative Capitalism

VoC's central insight lay in its explanation of how supply-side institutions (namely those governing wage-setting, training, inter-firm relations and corporate finance) determine national comparative advantages (see Hall and Soskice, 2001). In coordinated market economies (CMEs) employers cooperate in the skilling of their labor force, while patient capital enables firms to help their workers develop specific skills that take time to develop but are central to maintaining trade advantages in high value-added manufacturing goods. By contrast, employer relations are more competitive in liberal market economies (LMEs), where short-term venture capital and the potential for poaching causes firms to rely upon more generalized skills – largely provided by higher education – and more extensive research and development. Generalized skills and accessible short-term corporate finance, however, enable firms to engage in radical innovation and take the risks required for specializations in sectors like pharmaceuticals, high-tech goods and high-skilled services, such as finance.

Whereas the "first generation" of VoC scholarship emphasized the role of the manufacturing firm and supply-side institutions, the ("third generation") growth model turn in the study of comparative capitalism emphasizes the *demand-side* of the economy (see Nölke, 2015 for a fuller discussion). This shift in focus is largely a response to key transformations in contemporary capitalist societies over the past decades: rising wealth and income inequalities, the decline of manufacturing, and the impact of financialisation on household debt (Baccaro & Pontusson 2016; Hope 2016; Hall 2017). New growth model literature has distanced itself from VoC's original typologies, emphasizing (domestic) consumption-oriented growth vs export-led growth.[5] Consumption-led growth is generated either through buoyant wage growth, credit/debt accumulation, and/or government expenditure. Likewise, (manufacturing-centric) export-led growth enhanced by policies prioritizing export firms,

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[5] Growth model "types" exhibit some but not perfect overlap with VoC's initial CME/LME typologies. Most growth model scholars characterize LMEs as falling into the consumption-led growth model, while most CMEs lie within the export-led growth model. The Nordic countries deviate from this slightly, as they have managed to balance growth between their export and domestic sectors (see Baccaro and Pontusson, 2016).

including most crucially, industrial relations institutions that deliver nation-wide wage moderation, which makes manufacturing goods price competitive. Unlike welfare state and VoC research, the growth model turn in comparative capitalism focuses on the disparate drivers of macroeconomic outcomes. Growth model theory's emphasis on the determinants of growth, particularly in non-tradable sectors (i.e. real-estate) which the first generation of VoC largely neglected, draws our attention to the role of household consumption and indebtedness in shaping the demand-side of the economy (Pontusson & Weistanner 2017). However, a core problem in any analysis that seeks to explain macroeconomic outcomes is that it must identify *agency*. This is precisely what gave rise to the post-Keynesian "supply-side" revolution in economics, and the focus on firm strategies in the VoC literature. Households have never been identified as crucial agents of economic growth in either the earlier versions of VoC or the recent growth model literature. The latter oversight is particularly strange given its emphasis on debt-accumulation and credit consumption.

In the absence of a clear sense of agency, it is difficult to explain why house prices, and household indebtedness exploded in the UK, Ireland, and Spain prior to the 2008 global finance crisis, while it either stagnated or declined in Germany and Japan during the same period (see Figure 1). Moreover, housing market dynamics – measured in terms of (nominal) housing price growth and increases in household debt (whose largest item is mortgage debt) – do not fall comfortably into VoC and welfare state typologies, or growth regime distinctions. As Figure 1 demonstrates, while the liberal-market, domestic consumption-driven UK and Irish growth models witnessed considerable nominal housing price growth between 1995[6] and 2007, so did Spain, and Northwest Europe's small export-focused corporatist states (Sweden, Denmark and the Netherlands). A similar blur in typologies also emerges at the lower end of the graphic: CMEs (Germany, Japan and Austria), Mediterranean mixed-market economies (MME's – Portugal) and LMEs (Canada and to a lesser extent the US), all had housing inflation below the OECD average.

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[6] Figure 1's data ranges from 1995-2007, rather than 1990-2007 like our regression analyses, because household debt data is only available from 1995 onwards from the OECD.

Figure 1: Growth in housing prices and household debt (1995-2007)
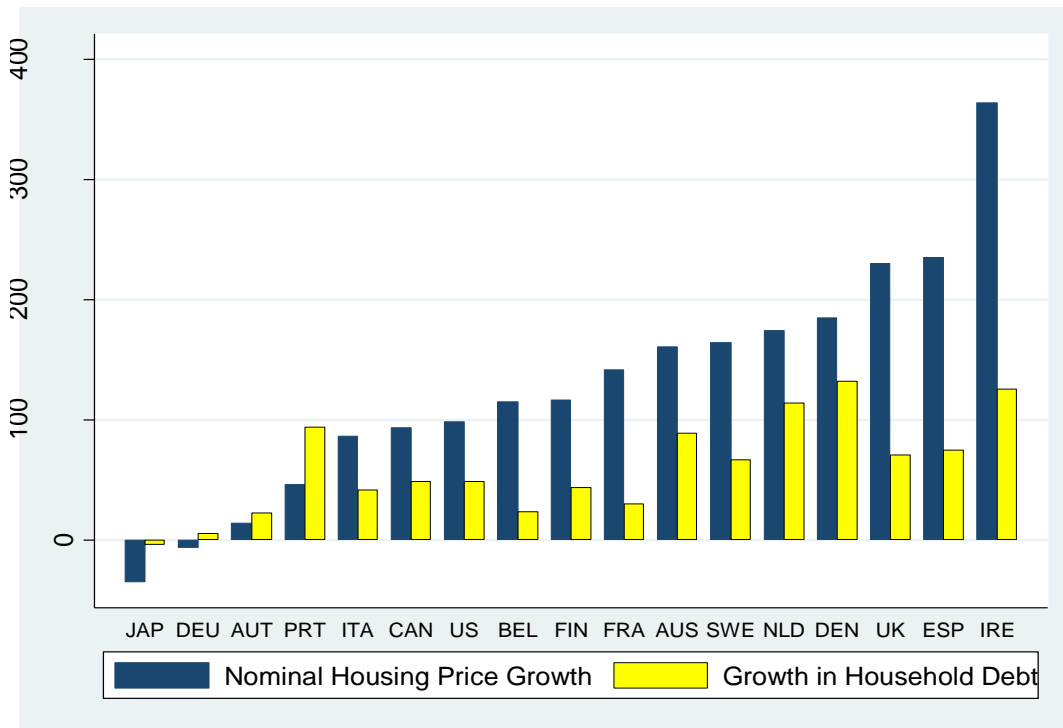
The vertical axes is the percent change in nominal housing prices and the percentage point change in household debt (as a ratio of household income). Housing price and household debt data from the OECD (2016). Ireland's and Spain's household debt values start in 2001 and 1999, respectively.

Some comparative political economy scholars (Bohle, 2014; Schwatrz and Seabrooke, 2009; Schwartz, 2009, and Kohl, 2017 most notably) have done a better job drawing attention to the uniqueness of housing markets, how they defy pre-conceived capitalist and welfare state typologies, and how domestic institutions influence households' consumption of real-estate. They highlight the precarious position of the Nordic countries, where household debt is substantial and home-ownership rates are above the OECD average, which suggests that even CMEs with egalitarian welfare states can enjoy credit-financed consumption, secured on housing assets. Liberal access to mortgage finance encourages more buyers to enter housing markets, contributing to rising asset wealth. That new wealth, in turn, facilitates more borrowing and spending, encouraging conventional wage growth and reinforcing the demand for both housing and housing-derived financial products (including mortgages, mortgage-backed securities, and collateralized debt obligations). Yet these works still remain in the minority in CPE. We content that comparative capitalism – both the firm-centered analysis of VoC and the macroeconomic focused analysis of the growth model

literature – and CPE more broadly, are problematic in understanding economic outcomes in housing markets, because they ignore the crucial agent that drives the demand-side of real-estate transactions: the *household.*

Household debt accumulation and the demand for real-estate

The growing centrality of the household in contemporary finance capitalism matters because *who borrows matters.* In a country like Greece, the government absorbed a large share of capital inflows in the years following the launch of EMU. In Ireland, the domestic banking sector filled this role. In Spain, it was the regional savings banks and local governments (Fuller and Jones 2015). The stability of a financial system relies on the capacity of indebted sectors to manage their repayments adequately; however, that capacity and the factors that modify it differ from sector to sector. For example, wage compression in a country with heavy household borrowing may lead to non-performing loan problems and a weaker housing market. The same wage compression in a more traditional system, where non-financial corporations borrow extensively and households do not, would pose less macroeconomic risk.

Household borrowing generally grew faster than borrowing in the non-financial and government sectors in the years leading up to the global financial crisis. The average OECD economy saw the household share of liabilities rise, from just under seven percent of all liabilities to over eight percent between 1995 and the crisis. That may sound insignificant; however, that is comparable with the overall debt load of most OECD *governments.* In fact, the typical government went from accounting for 15 percent of borrowing in 1995 to just over 9 percent by 2007. Figure 2 shows the OECD-average ratio of household to non-financial (dotted line) and government (solid line) sector liabilities, illustrating a pronounced relative increase in household debt. This trend halts but is not fully reversed in the post-crisis period. This data suggests that OECD economies have become relatively more exposed to the financial management of households – displacing businesses and governments to some extent.

Figure 2: Household Debt relative to Non-Financial Sector and Government Debt (OECD Average, 1995-2012)
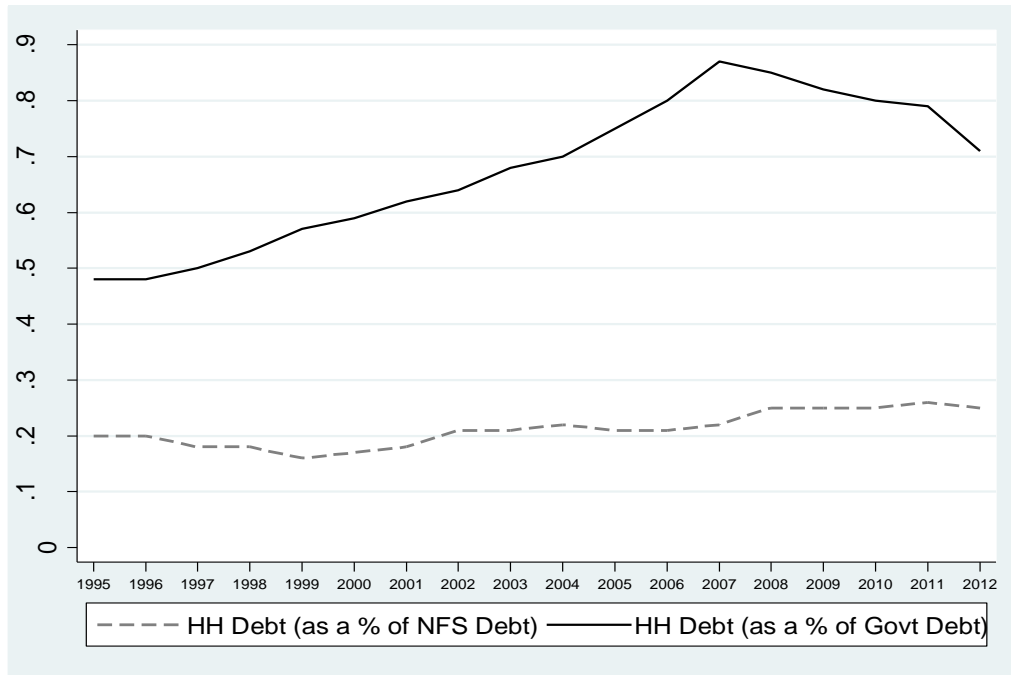
Vertical axis is the ratio of household (HH) debt to non-financial sector (NFS) debt (for the dotted line) and the ratio of household debt to government debt (for the solid line). Data from the OECD (2016).

Despite this general trend, Figure 3 – which shows the ratio of household debt to government liabilities – provides an impression of how much national variation remains. Germany is an outlier in that its households have actually seen their share of liabilities decline, following Gerhard Schroeder's labor market reforms. The British and Dutch cases are comparatively consistent with the overall picture, although the UK has seen more extreme declines in household borrowing in the post-crisis period. Quite clearly, there is a comparative story to tell.

Figure 3: Household Debt relative to Government Debt for Germany, the Netherlands and the UK (1995-2012)
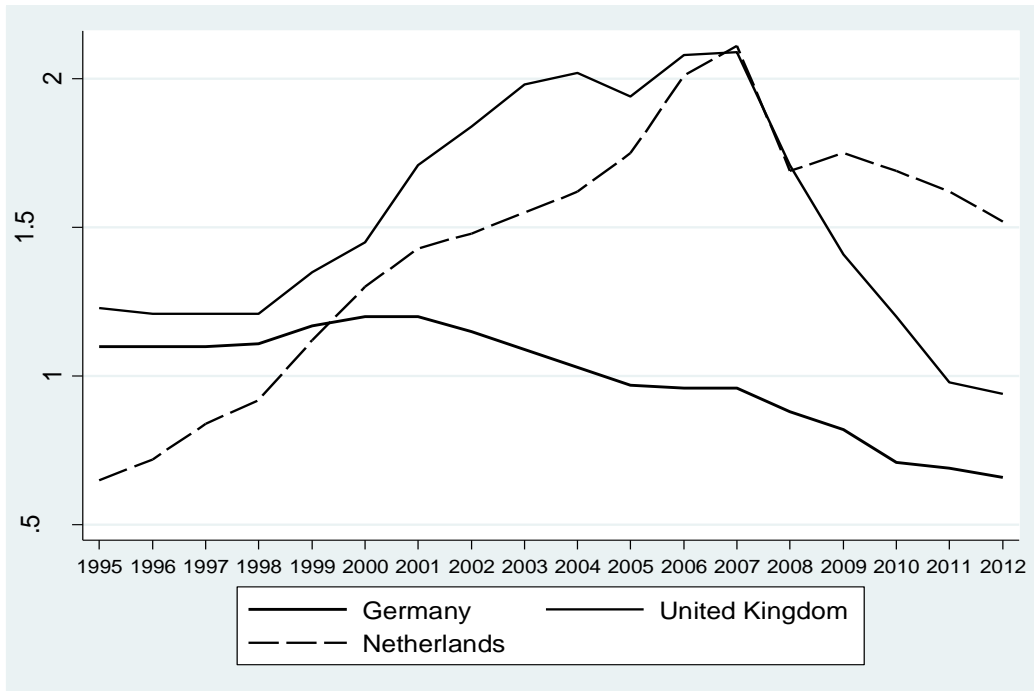
Vertical axis is the ratio of household (HH) debt to government debt (for the solid line).
Data from the OECD.

It is crucial to note that these figures radically *understate* the real-world importance of rising household borrowing. A substantial portion of financial sector borrowing is also directly linked to household borrowing because banks must also borrow to create mortgages; every time a homeowner signs a mortgage-debt contract, they also create financial assets within the financial sector (Fuller 2016). In a traditional financial system – where banks take customer deposits and lend them out as mortgages – this is not a major issue. In a contemporary financial system, however, a single household transaction can underpin numerous layers of financial sector debt. For instance, a bank might borrow from the interbank market to create a mortgage intended for securitization. That means selling the mortgage to a separate securitization vehicle, which must also buy the mortgage, paying with funds raised from short-term bonds. Finally, an investor might also borrow in order to purchase part of the resulting securitized asset (and then borrow more to pay for a credit default swap protecting their investment).

In other words, the evolution of household finance is closely linked to the development of financial balance sheets, which economists have long recognized would have an effect on

economic performance (c.f. King and Levine 1993). Ultimately, this multilayered tangle of liabilities remains fundamentally reliant on the ultimate end-borrower: for the system to work, the homeowner must *pay their mortgage*. That means that any instability in the mortgage market could ultimately threaten banks, their creditors, government and global economic stability, which is precisely what happened in 2007-08 (Lewis 2011).

Mortgages are indeed the financial product of central concern here. For European and OECD countries – setting aside post-communist transition states where the housing stock was largely privatized prior to the development of a robust mortgage market (see Bohle, 2014) – mortgages make up the vast majority of personal debt. According to financial balance sheets, long-term debt accounts for 80 percent of households' liabilities in OECD economies. This means that when we talk about household debt, we are overwhelmingly talking about borrowing for one purpose: to buy a home. Essentially, almost every discussion of household debt is indirectly a discussion of the housing market.

In sum, looking at the origins of debt clearly reveals that households are playing a growing role in national financial systems, and the political economy of advanced capitalism. As noted above, one major consequence is that today's advanced capitalist economies are more reliant on the (mortgage) debt management of individual households than they ever have been in the past. Yet as Figures 1 and 3 indicate, there remains significant variation in the growth of household debt that remains to be explained. Below, we argue that understanding the rise and fall of housing prices goes some way to explaining this, and requires understanding two markets and how they interact: the labor market, which governs income growth, and the mortgage credit market, which governs how much debt households can accumulate to finance home-ownership.

III.   A tale of two markets: How labor and credit market institutions impact housing prices

It is important to distinguish between two components of the housing market. On one hand, there is the actual market for housing. This will be affected by factors such as household income, the stock of housing that is available to purchase (housing supply), and the transaction costs involved in buying or selling a home. On the other hand, there is the market for mortgages, which is affected by a very different range of forces, including laws governing interest rates and their taxability, mortgage size, and the ease of selling mortgages in a secondary market.

We aim to provide a framework that allows us to dissect underlying dynamics in these two components of the housing market. Specifically, we seek to explain how two key sets of institutions – those governing income growth (i.e., wage-setting institutions within labor markets) and those governing the market for housing finance (i.e., mortgage markets) – interact to determine housing prices. Labour market institutions are important because they directly influence income (and income growth), which is unarguably the most important household characteristic that banks assess when issuing (prime) mortgages.[7] Logically, the more households earn (and the faster their wages grow), the greater capacity they will have to purchase a house because they will be able to service larger mortgages. Johnston and Regan (2017) empirically demonstrate this, highlighting that countries with wage-setting institutions that restrict income/wage growth nation-wide have more moderated wage growth, and in turn lower housing inflation, than countries with wage-setting institutions which lead to buoyant wage growth. VoC has frequently highlighted that CMEs are more likely to deliver comprehensive wage-moderation via coordinated and decentralized labor institutions than MMEs (and to a lesser extent LMEs – see Soskice, 1990), and consequently

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[7] An exception to this is non-traditional (i.e. subprime) mortgage markets, where mortgage sellers provide loans that are not directly tied to households' income (the most obvious example being stated-income, or "liar liar" loans, where households have to report their income to a mortgage lender but not provide formal documentation of it). However, expansive non-traditional mortgage markets are largely a US phenomenon (prior to the bursting of the subprime mortgage bubble) and is much less prominent in other developed economies (see the US Financial Crisis Commission, 2011).

observe lower inflation (in addition to Hall and Soskice, 2001, see Hall and Franzese, 1998, and Iversen and Soskice, 2010). By extension, we should expect similar dynamics to hold in housing markets; because housing is a normal (rather than inferior) good, rising incomes should result in higher demand for housing.

Income growth, and the institutions that impact it, however, is only one side of the story. Given the substantial cost of buying a house, homes are not usually purchased in full upfront. Rather, households rely on mortgages and long-term financing to make real-estate purchases. To illustrate on a basic level: the demand for housing will be seriously constrained if all purchasers are cash buyers. Hence, the demand for housing means a demand for mortgages, which banks can sell, with high interest rates. Similarly, robust demand for mortgage lending leads financial institutions to encourage housing investment among buyers who might otherwise have been excluded from the housing market on the basis of their incomes – i.e. those with "thin-file" credit scores in the American subprime market. This brings into play a different set of institutions (a set which VoC has largely ignored) that govern households' access to credit. If households are easily able to obtain cheap (mortgage) credit (and a lot of it), they will also enjoy greater access to the housing market, which should increase demand for housing, and in turn housing inflation. However, if households' access to mortgage credit is restricted, their access to the housing market will be limited (driving demand and housing inflation down).

Combining these two types of institutions, we get a new set of economic classifications – one that accommodates conventional comparative political economy differences of wage-setting relations as well as the substantial differences in how households interact with financial markets. Taken together, there emerges four possible institutional "worlds" of housing markets:

1. Coordinated/centralized wage-setting combined with permissive mortgage credit institutions: Under this constellation of institutions, households' income growth is moderated, but their access to credit is enhanced, enabling them to take

out more (in regards to mortgages) with less. This institutional grouping is seen in the Nordic countries as well as the Netherlands.

2. Uncoordinated/decentralized wage-setting with permissive mortgage credit institutions: This constellation of institutions combines more buoyant income growth with generous access to mortgage credit. This combination of institutions exists in the UK, Spain, and to a lesser extent (at least on the labor market side), Ireland.

3. Uncoordinated/decentralized wage-setting with restrictive mortgage credit institutions: In this institutional combination, buoyant income growth is dampened by restricted access to mortgage credit. Here, households have to do less with more; while their income potential should ease their access to the property ladder, limited mortgage loan amounts will constrain what and whether they can buy. This constellation of institutions can be observed in countries like Italy, and to a lesser extent Australia and France.

4. Coordinated/centralized wage-setting combined with restrictive mortgage credit institutions: Under this constellation of institutions, extensive wage moderation coupled with limited access to mortgage loans leave households with few options to enter the property ladder, forcing them to delay home-ownership by accumulating the level of savings that is required for a (substantial) down-payment (although households may be assisted by family members, or property inheritance). This grouping of institutions is best seen in countries like Germany, Austria and to a lesser extent, Japan.

These institutional configurations allow us to make predictions on their impacts on housing inflation. For countries with coordinated/centralized wage-setting institutions and restrictive credit access, the outcome is obvious: both of these institutions constrain housing demand, which in turn limits inflation (Germany and Austria). Housing inflation outcomes are also obvious in those countries with uncoordinated/decentralized wage-setting institutions and permissive credit access: both of these institutions facilitate high housing demand via buoyant income growth and access to generous loan terms (and larger mortgages), placing inflationary pressures on housing prices (the UK). The effect of the

remaining two configurations is less clear, however, as labor market and credit institutions work against each other. Countries with coordinated/centralized labor markets but permissive mortgage credit regulations (the Nordic countries and the Netherlands) are likely to exhibit lower housing inflation than their uncoordinated/decentralized counter-parts with similar finance institutions, given their more moderated income growth. However, the distinction in housing inflation performance between coordinated/centralized and uncoordinated/decentralized labor markets (i.e. Italy) is indeterminate in countries with restrictive mortgage credit regimes. Restrictive credit markets may mitigate the relationship between income (growth) and housing prices (growth); unless they can pay for a home upfront, households even with strong incomes will be limited in the type of home they buy if they face strict loan terms, and limited mortgage sums. Below we formally test the interactive effects between labor market and mortgage credit institutions on housing inflation, in order to determine whether these groupings bear fruit.

IV.   The impact of wage-setting and mortgage credit institutions on housing prices: Evidence from 17 OECD economies

Our empirical methodology employs a distributive lag panel analysis of housing inflation in 17 OECD economies[8] between 1990 and 2007. Our panel's start date is limited by the availability of the mortgage credit mitigation index data, as the majority of countries in our sample have index values from the mid-1990s onward.[9] We select 2007 as the end date in order to focus on the "Great Moderation" before housing bubbles burst in multiple countries with the onset of the 2008 global financial crisis. In line with Aizenman and Jinjarak (2009) and Johnston and Regan (2017), whose regression analysis motivates our model design, all of our independent variables are lagged because market and institutional developments are unlikely to promote instantaneous real-estate purchases (or sales) by households. In other

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[8] These countries include Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, the Netherlands, Portugal, Spain, Sweden, the UK and US.
[9] Australia, Austria, the Netherlands, the UK and US possess data from 1990 onward; Denmark, Finland, France, Germany, Italy, Portugal, Spain and Sweden possess data from 1992 onwards; Belgium and Canada possess data from 1994 and 1995 onwards, respectively, while Ireland and Japan lack data until 2000 and 2001, respectively.

words, if real interest rates declined tomorrow, it is unlike that a household would immediately buy a house; however these developments may influence their (near) future decisions to take on a mortgage (or engage in re-financing). Our baseline model incorporates one year lags of all of our variables, however we emphasize that our results are consistent when two year lags are used (these results are available in Appendix A). Our baseline model is as follows:

$$\Delta y_{i,t} = \hat{\beta}_0 + \hat{\beta}_1 LMInst_{i,t-1} + \hat{\beta}_2 MCMInst_{i,t-1} + \hat{\beta}_3 (LMInst_{i,t-1} * MCMInst_{i,t-1})$$
$$+ \hat{\beta}_4 \sum M_{i,t-1} + \hat{\beta}_5 \sum N_{i,t-1} + \hat{\beta}_6 \sum FE_i + \hat{\beta}_7 \sum TE_i + \varepsilon_{i,t}$$

All of our variables, with the exception of our political and institutional controls are differenced in order to rectify non-stationarity problems within our data. $\Delta y_{i,t}$ is the growth in housing prices (*percentage change* from the previous year[10]) in country i in year t: we run our models for both real and nominal housing prices growth. Housing price data stems from the OECD (2016).

$LMInst_{i,t-1}$ is a measure of the wage-setting institutions that govern income growth, which should in turn shape demand for housing, in country i in t-1 (see Johnston & Regan, 2017, for a more in-depth analysis). We use the two most popular measures of labor market institutions in comparative capitalism within our models: the degree of coordination in wage-setting, based on Kenworthy's (2001) index (values range from 1, indicating no coordination, to 5, indicating high coordination) and the centralization of wage bargaining (values range from 1, indicating that wage-setting is completely decentralized, to 5.75, indicating that wage-setting is completely centralized[11]). Using institutional variables rather than more direct measures of wage growth is preferred in light of reverse causality problems – if housing inflation lingers, it is likely that households will demand higher wage increases in order to maintain mortgage payments (or to participate in home-ownership more broadly). Labor market institutions, in contrast, are less likely to be changed by sustained

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[10] Percentages are expressed from 0 to 100 rather than 0 to 1.
[11] This measure, taken from Visser (2016) is computed slightly differently than Iversen's (1998), but both are measures of the *level* at which wage-bargaining takes place. More conveniently, Visser's (2016) index has more complete time-series for our 17 countries.

growth in housing prices on a yearly basis. While our results did not hold if we used trade union density as a measure for labor market institutions (although several, including Calmfors and Driffill, 1988, and Soskice, 1990, outline that trade union density is not an adequate measure of wage-setting cohesion), the direct effect of bargaining coverage (the proportion of the labor force covered by collective agreements) on *nominal* housing prices was consistent with those for wage coordination and centralization; countries with higher bargaining coverage, ceteris paribus, have lower nominal housing price growth than those with lower coverage (results provided in an online appendix). Data on wage coordination and centralization were taken from Visser (2016).

$MCMInst_{i,t-1}$ is the (mortgage) credit mitigation index for country i at time t-1. It reflects the extent to which national housing finance regimes encourage or mitigate the creation of household debt, ranging from 0 (systems that are highly permissive in allowing households to accumulate mortgage debt) to 10 (systems that are highly restrictive in allowing households to accumulate mortgage debt).[12] Fuller (2015) identifies five institutional characteristics – both formalized policies and informal practices – that mediate the formation of household debt. They are: (1) legal "usury" restrictions on the interest rates that lenders can charge; (2) transaction costs imposed on the transfer of personal real estate assets; (3) general willingness to extend mortgages with high loan-to-value (LTV) ratios (80 percent and above);[13] (4) subsidies to the mortgage market; and (5) the size of secondary (securitized) markets for mortgages.

For each of these five traits, countries are coded (from 0, the most credit *encouraging*, to 2, the most credit *mitigating;* values of 1 indicate moderate levels of credit permissiveness) for the degree to which their institutional mix favors the formation of credit.[14] The scores are then summed together to create the overall index value. This assumes, for lack of any

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[12] Despite the fact that the credit mitigation index has a maximum value of 10, no country in our sample obtained this value during the time period under examination (the highest credit mitigation score observed among our 17 countries was a 9, held by Germany in various years and France in 1999).

[13] 80% is a commonly observed dividing line between lower and higher-LTV mortgages. Few systems are unwilling to offer an 80% LTV loan; but a large number will not generally offer anything higher.

[14] For a full accounting of the coding process – including the specific country codes for the 2000-2007 period, see Fuller 2015.

compelling reason to do otherwise, that each of the factors play a roughly equal role in determining national approaches to mortgage credit. For interest rate restrictions, coding varies between 0 for countries with essentially no restrictions on the interest rates banks can apply to mortgages (such as the United Kingdom) to 2 for those with strict caps on what lenders can charge – such as in France, where interest rates cannot exceed 133 percent of benchmarks set by the Bank of France.

Property transfer taxes are included in the index as a means of capturing how amenable a national system is to property speculation. Policies that impose high taxes on the sale of personal real estate (such as Germany, Italy, and Austria) are intended – often explicitly – to depress property speculation, placing a brake on mortgage formation and the (short) selling of real-estate. Where tax exemptions are restricted to primary homes that have been owned for 5 years or longer, countries are scored as 2s. More permissive regimes, offering lower tax rates and more generous exemptions, encourage more use of property as a form of investment are scored as zeros (like those in the Netherlands, US, and UK). Intermediate cases – such as systems with robust exemptions but higher fees (France) or low transfer costs but stricter exemptions (Sweden) receive the intermediate 1.

Prevailing LTV ratios indicate the systemic degree to which each country is willing to accept household leverage. While formal rules concerning LTV limits have been implemented by a number of countries after the global financial crisis, there were relatively few legal restrictions on LTV ratios prior to 2008. Nevertheless, there is a clear divide between countries that generally limited maximum LTVs to 80 percent (such as Germany, Italy, Denmark) and those that did not. At the most extreme end, 125 percent LTVs were not uncommon in the pre-crisis Netherlands. Unlike the other scores, there is no intermediate category for leverage: countries either receive a 2 (those that typically do not offer mortgages above 80%) or a 0 (for those that do).

One of the most important ways that national policy can encourage mortgage-formation is through direct subsidies. The most notable of these measures are mortgage interest tax breaks. Many states allow homeowners to deduct some amount of their interest payments from taxable income – including the extremely generous case of the United States. Other

economies, including some that generally *do* encourage mortgage markets, have eliminated these programs because of their distortionary (and regressive) consequences during the period covered, most notably the UK. State-backed mortgage insurance schemes, an indirect form subsidy, have a less-pronounced credit-encouraging effect. Countries that provide extensive subsidies were scored as more credit-encouraging (value of 0). Those that offered no subsidies – or operate relatively small means-tested programs – were coded as credit mitigating (value of 2).

Finally, the presence of secondary mortgage markets also encourages mortgage-formation by making mortgages more liquid. In some systems, these secondary markets are dominated by covered bonds, a relatively simple form of securitization that usually requires lending institutions to keep mortgages on their own balance sheets (such as in Germany or Denmark). This encourages credit-formation in relation to places with no secondary markets (mostly in Eastern Europe). However, mortgage-backed securities provide even stronger encouragement. Unlike covered bonds, these instruments allow lending institutions to sell mortgages to separate entities which issue derivative financial products (including collateralized debt obligations), which effectively allows banks to move mortgages completely off their balance-sheets. Housing systems that possessed or developed large MBS markets during the period of interest – like the US, as well as Britain, Ireland, Spain, and the Netherlands – are considered the most credit-encouraging.

The use of an index here – rather than using each national trait separately – holistically captures national variation in credit approaches. These measures are not independent of one another: for instance, governments that find themselves encouraging credit in other areas may balk at also offering heavy mortgage subsidies (as was the case in Britain). In short, these national configurations are best considered as components of a single overall approach to mortgages, not separate drivers of mortgage-creation.

Figure 4 presents scatter plots between the (standardized) values of (real and nominal) housing price growth and the credit mitigation index for our 17 economies from 1995 and 2007. Standardized values above 0 indicate that the country's index/housing price growth is above the sample average (a standardized value of 1 indicates that a country's

index/housing price growth is one standard deviation above the OECD average), while values below 0 indicate below average performance. As noted above, the 17 countries in our sample do not behave in a manner that the comparative capitalism literature would predict in regards to housing inflation. Countries with coordinated labor markets (notably the Nordic countries) do not automatically reveal lower-than-average housing inflation, while countries with more market-based wage-setting systems (the UK, US, Canada, Australia and to some extent Ireland) also exhibit considerable heterogeneity in housing price growth. Yet with the exception of the US (and to a lesser extent Canada and Portugal), the *credit mitigation indices* of these countries align well with their housing inflation performance. Countries with more restrictive credit regimes, also had lower housing price growth between 1995 and 2007 than countries with credit encouraging regimes.

Figure 4: Credit mitigation and housing price growth, 1995-2007 (standardized values)
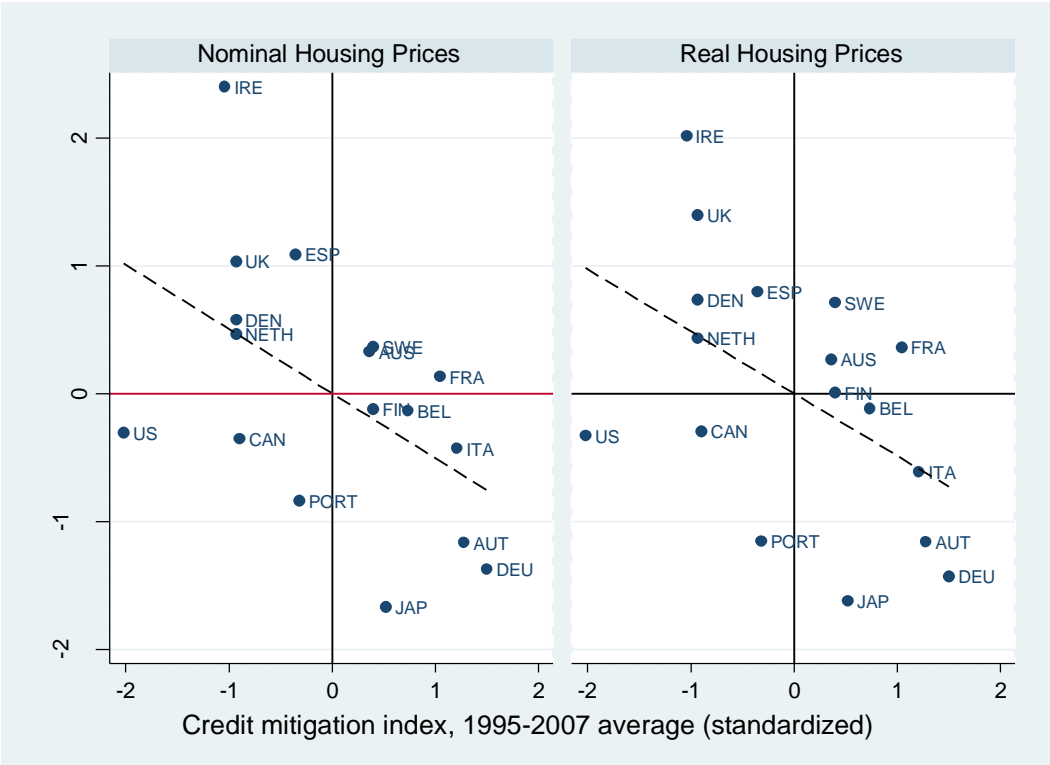
The US – and Canada, to a lesser extent – are relative outliers because of the vast heterogeneity in housing prices between major metropolitan areas (where housing inflation is high) and the rest of the country. In the US, large swathes of the Midwest and Appalachia

(where home price inflation is quite low) have tended to lag behind the rest of the country in economic growth. This may reflect a crowding-in effect as broadly dispersed populations move toward major cities with stronger economies. For its part, Portugal features a large supply of unoccupied housing, due in part to strict rent control laws, which are not included in the model due to highly localized policy differences and data unavailability (although our inclusion of fixed effects will partially account for this as rent control laws do not change frequently year-on-year).

$(LMInst_{i,t-1} * MCMInst_{i,t-1})$ is an interaction term between our wage-setting institution measures and the credit mitigation index. All else being equal, countries with restrictive credit indices should have lower real and nominal housing price growth: $\hat{\beta}_2$, in other words, should be *negative*. Likewise, all else being equal, coordinated/centralized wage-setting institutions should demonstrate a negative relationship with housing price growth, because wage moderation is higher, and hence income growth is lower, in these countries, on average, than in countries with less coordinated/centralized labor markets; hence $\hat{\beta}_1$ should also be *negative*. However, this distinction in housing price growth between coordinated/centralized and uncoordinated/decentralized countries should *lessen* as mortgage credit access becomes more restrictive; if housing finance is restrictive, even households with buoyant income growth will be constrained in the size of the mortgage they can assume. Hence, we expect $\hat{\beta}_3$ to be *positive*.

$\sum M_{i,t-1}$ is a vector of economic controls for country i in time t-1 that impact housing prices given their influence on the volume of credit that banks can lend or on annual (interest) mortgage servicing costs. These include: the interest rate (*differenced* from the previous year – differences in the real/nominal interest rates are used in regressions where real/nominal housing inflation is the dependent variable); the ratio of domestic credit provided by the banking system to the private sector as a ratio of GDP[15], a proxy for financial depth (*differenced* from the previous year); and the ratio of net foreign capital inflows as a

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[15] In addition to (mortgage and non-mortgage) credit extended to households, this measure includes credit extended to firms, purchases of non-equity securities, loans to public enterprises, trade credits and other accounts receivable that establish a claim for repayment

percentage of GDP, which accounts for the degree of foreign lending entering a country's financial system (*differenced* from the previous year). This vector also includes real GDP growth to control for cyclical effects which may cause households to invest (or not invest) in home-ownership. Nominal interest rate[16] and foreign capital flows data stemmed from the EU's Ecofin's Annual Macroeconomic Database (AMECO, 2016), the ratio of domestic credit to GDP stemmed from the World Bank (2016), while GDP growth and real interest rate data stemmed from the OECD (2016).

$\sum N_{i,t-1}$ is a vector of demographic and political controls in country i at time t-1. These include: population growth (*percentage change* from the previous year), which serves as a rough proxy for housing demand[17] (our findings below also hold when we control for growth in population density; results are provided in an online appendix); the partisanship of government (measured as the proportion of cabinet seats occupied by right parties), and; central bank independence index, a rough proxy for inflation aversion (and possible central bank responses to housing-driven inflation with monetary contraction)[18]. Population data is taken from the OECD (2016), partisanship data is taken from Armingeon et al (2016), while central bank independence data (an updated version of the Cukierman, 1992, index) is taken from Johnston (2012).

$\sum FE_i$ is a vector of (n-1) country (fixed) effects. Fixed effects enable us to *partially* control for omitted variables that affect housing inflation but change little over time (such as rent-control laws and legislation governing the availability and sale of social housing, etc.) and to *completely* control for omitted variables that are time invariant within all our country panels (such as the historical foundations of housing finance and urban/rural legacies – see Kohl, 2017, for an overview). While some (see Kittel and Winner, 2005 and Plümper et al, 2005) have criticized the use of fixed effects in quantitative analyses that focus heavily on institutional variables (because the accuracy of their standard errors are jeopardized by the

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[16] Australia and Canada's more complete nominal interest rate data came from the OECD.
[17] While the OECD has data on housing starts (work started on dwellings), time-series data is available for only nine countries within our sample.
[18] This measure becomes less relevant for countries within EMU, who share the same central bank, as the ECB is unlikely to respond to housing inflation within individual Euro-zone countries.

fact that they will share high correlation with country dummies), our institutional results below remain significant even when country effects are included. $\sum TE_i$ is a vector of (n-1) time dummies in order to control for omitted common shocks that would impact housing inflation across countries, but that vary over time. Wooldridge tests for autocorrelation and likelihood ratio tests indicated that both first order serial correlation and heteroskedasticity were present in our baseline models. Consequently, we used country-clustered standard errors to correct for downward bias in our standard errors.

Results

Table 1 provides our results. Models I-III use wage coordination as the measure of labor market institutions, while Models IV-VI use wage centralization. The dependent variable for Models I-II and IV-V is real housing price growth (for these models, Δ Interest Rate (t-1) pertains to the first-difference of the *real* interest rate), while the dependent variable for Models III and VI is nominal housing price growth (where Δ Interest Rate (t-1) pertains to the first-difference of the *nominal* interest rate). Models I and IV serve as our baseline models, while Models II and V add political controls (government partisanship and central bank independence).

Table 1: Institutional determinants of housing inflation

Dependent variable	Real housing inflation	Real housing inflation	Nominal housing inflation	Real housing inflation	Real housing inflation	Nominal housing inflation
	I	II	III	IV	V	VI
Credit Index (t-1)	-1.012	-0.749	-1.317	-0.604	-0.348	-0.819
	(0.329)	(0.474)	(0.146)	(0.567)	(0.755)	(0.376)
Wage Coordination Index (t-1)	-3.113*	-2.469*	-3.642**			
	(0.052)	(0.091)	(0.018)			
Credit Index *	0.617*	0.532*	0.672**			
Wage Coordination (t-1)	(0.053)	(0.094)	(0.023)			
Bargaining Centralization (t-1)				-3.717**	-2.965	-3.998**
				(0.047)	(0.130)	(0.040)
Credit Index *				0.485	0.402	0.499*
Centralization (t-1)				(0.123)	(0.224)	(0.100)
Population Growth (t-1)	3.951**	3.786**	4.288**	3.892**	3.844**	4.136**
	(0.023)	(0.030)	(0.012)	(0.037)	(0.045)	(0.026)
Δ Interest Rate (t-1)	-0.643	-0.69	-1.196**	-0.652*	-0.695*	-1.558**
	(0.131)	(0.103)	(0.017)	(0.096)	(0.083)	(0.028)
Δ Private Credit to GDP (t-1)	-0.054***	-0.052**	-0.047**	-0.058***	-0.056**	-0.048**
	(0.005)	(0.015)	(0.016)	(0.004)	(0.012)	(0.021)
GDP growth (t-1)	1.421***	1.463***	1.549***	1.377***	1.439***	1.499***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Δ Net (external) capital	0.426*	0.457*	0.409*	0.562*	0.591**	0.545**
inflows (t-1)	(0.098)	(0.073)	(0.064)	(0.053)	(0.043)	(0.021)
Right cabinet seats (t-1)		0.007			0.005	
		(0.371)			(0.657)	
CBI (t-1)		-2.503			-2.811	
		(0.238)			(0.241)	
Constant	-6.247	-7.394	-2.052	-5.744	-7.009	-1.707
	(0.345)	(0.245)	(0.725)	(0.416)	(0.312)	(0.793)
N	226	226	226	213	213	213
R-squared (overall)	0.655	0.6588	0.6306	0.6403	0.6435	0.6228
Chi-squared (p-value)	0	0	0	0	0	0

Estimator used was a pooled cross-sectional, time series, OLS estimator for 17 OECD economies from 1990 to 2007. N-1 time dummies and n-1 country dummies included but not shown. P-values provided in parentheses (standard errors are clustered by country). *, **, and *** indicate significance at a 90%, 95%, and 99% confidence level respectively.

Confirming our expectations about the impact of (wage-moderating) labor market institutions on inflation, higher (lagged) levels of wage coordination and wage centralization are associated with lower real (and nominal) housing price growth. From Models I and III, a 1 unit increase in our (lagged) wage coordination index leads to a 3.1% and 3.6% reduction in annual real and nominal housing price growth, respectively. The significance of this result also holds when we incorporate political controls into the model. Likewise, a 1 unit increase in our (lagged) wage centralization index leads to a 3.7% and 4.0% reduction in annual real and nominal housing price growth, respectively. While the significance of centralization's impact on real housing price growth did not survive when we controlled for political variables (Model V), it did remain significant when our independent variables were modeled on a two year rather than one-year lag structure (under a two year lag structure, wage coordination's negative impact on housing inflation only held significance for nominal housing prices - see Appendix A). What this suggests is that the wage restraint built into the domestic labour markets of CME countries, which is aimed at holding down prices and the domestic real exchange rate, impacts housing prices growth as well. But, as we show below, this impact is conditional upon the type of *mortgage credit regime* within the country.

While the mortgage credit restrictiveness index held the anticipated (negative) sign, it was non-significant. However, the interaction between wage-setting institutions and credit restrictiveness behaves in the way that we expected. CME's with highly coordinated wage-setting institutions exhibited lower annual real and nominal housing price growth than countries with more lowly coordinated ones, *but* as mortgage credit restrictiveness increases, this difference in housing price growth between the two wage-setting systems erodes (by roughly 0.6% for every one unit increase in the credit restrictiveness index, as indicated by the beta on the interaction term). The significance of the interaction between wage coordination and credit restrictiveness also holds for a two year lag structure of our independent variables (see Appendix A). A similar interaction effect emerges when wage centralization is used to measure wage-setting cohesiveness, but only when nominal housing price growth is the dependent variable – highly centralized wage-setting institutions produce lower nominal housing inflation than decentralized ones, but this negative

distinction is reduced as credit restrictiveness increases (by up to 0.5% for each one unit increase in the credit index).

Figures 5-7 provide a (more straightforward) visualization of these interaction effects. Figures 5 and 6 demonstrate how the interaction between wage coordination and mortgage credit restrictiveness impact real and nominal housing price growth, respectively, while Figure 7 depicts how the interaction between wage centralization and credit restrictiveness impact nominal housing inflation (we do not present graphics for real housing inflation because the interaction effect was non-significant). Figures 5 and 6 provide the predicted growth in real and nominal housing prices, respectively, for the maximum and minimum value of the wage coordination index across the total range of credit restrictiveness: the highly coordinated wage-setting line (in grey) has a wage coordination index value of 5, while the uncoordinated wage-setting line (in black) has an index value of 1. Sections of the graphic where (90%) confidence intervals do *not* overlap indicate that highly coordinated wage-setting regimes demonstrate *significantly different* growth rates in housing prices than uncoordinated regimes; if confidence intervals overlap, housing inflation performance between the two is not significantly different.

From Figure 5, countries with highly coordinated wage-setting demonstrate significantly lower real housing price growth than countries with uncoordinated wage-setting but *only* when the mortgage credit restrictiveness index is low. Once this index reaches a value of 2, the confidence intervals between these two types of labor markets overlap, indicating that real housing price growth is not significantly different between the two wage-setting regimes. This distinction between uncoordinated and coordinated labor markets is more apparent when examining nominal housing inflation (see Figure 6), but the interaction effect with credit restrictiveness is the same: for low levels of credit restrictiveness, countries with highly coordinated wage-setting have significantly lower nominal housing price growth than countries with uncoordinated wage-setting, but for higher levels of credit restrictiveness (index values roughly higher than 4), there is no significant difference in nominal housing price growth between uncoordinated and highly coordinated regimes (indicated by the overlap in confidence intervals between the two lines).

Figure 5: Interaction effect between wage-setting coordination and credit restrictiveness on real housing price growth
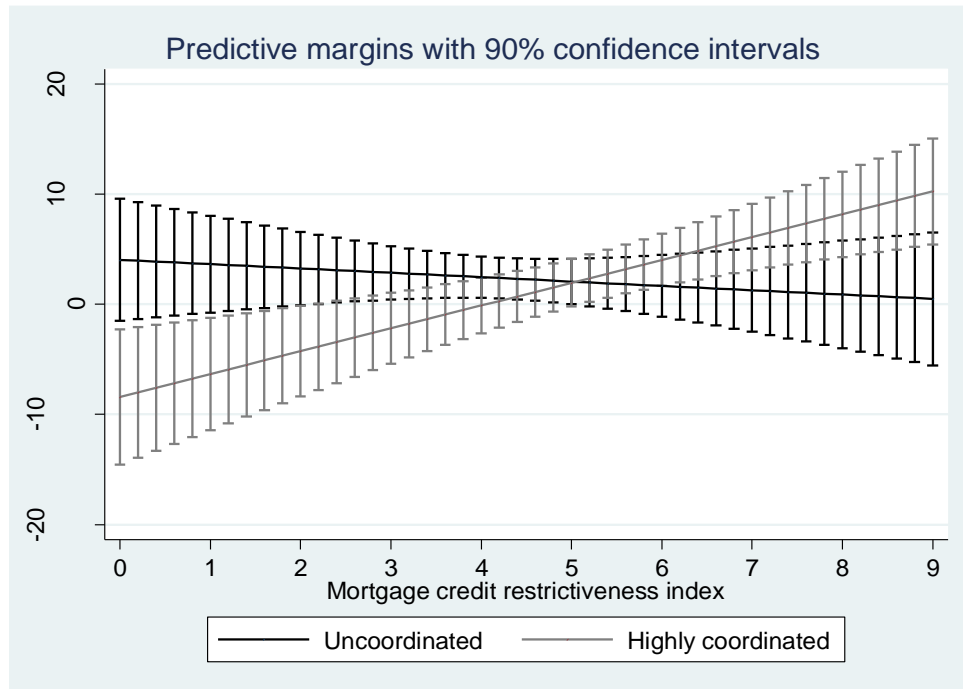
Graphic produced from results in Model I, Table 1. "Uncoordinated" index value is 1, "Highly coordinated" index value is 5.

Figure 6: Interaction effect between wage-setting coordination and credit restrictiveness on nominal housing price growth
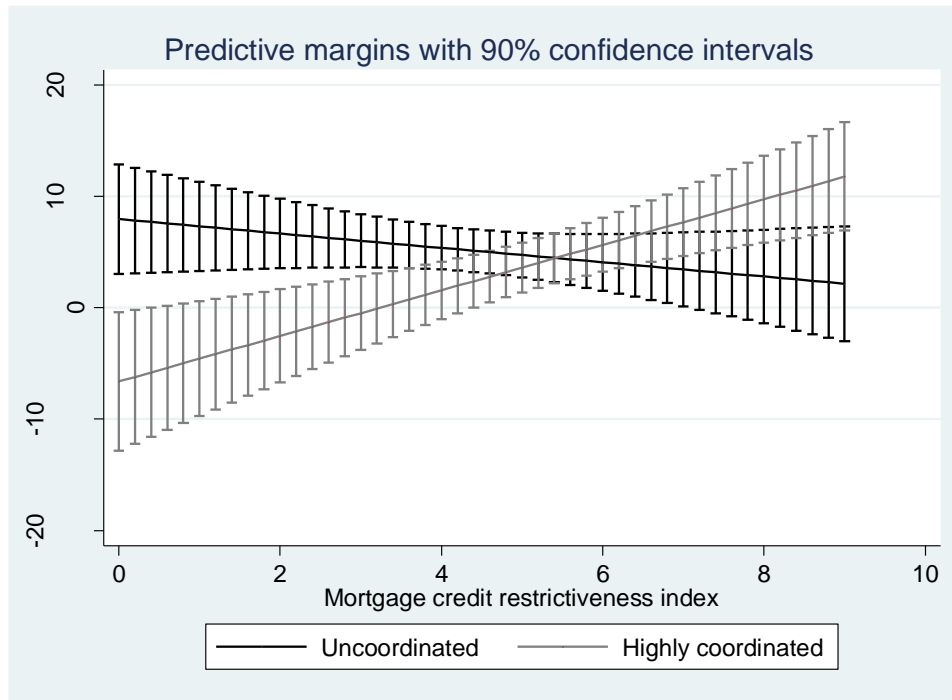
Graphic produced from results in Model III, Table 1. "Uncoordinated" index value is 1, "Highly coordinated" index value is 5.

Figure 7 presents a similar result when comparing annual nominal housing price growth between the maximum and minimum values of wage centralization across the range of mortgage credit restrictiveness: the highly centralized (gray) line has a centralization index value of 5.75, while the decentralized (black) line has an index value of 1. Highly centralized regimes produce lower annual nominal housing price growth than decentralized regimes for low values of mortgage credit restrictiveness (as indicated by the gap between the confidence intervals of the two lines), but for very credit restrictive regimes (index values higher than 5, roughly), the confidence intervals between decentralized and highly centralized wage-setting systems overlap, indicating no significant difference in nominal housing price growth between the two wage-setting regimes.

Figure 7: Interaction effect between wage-setting centralization and credit restrictiveness on nominal housing price growth

Predictive margins with 90% confidence intervals

Decentralized ——— Highly centralized
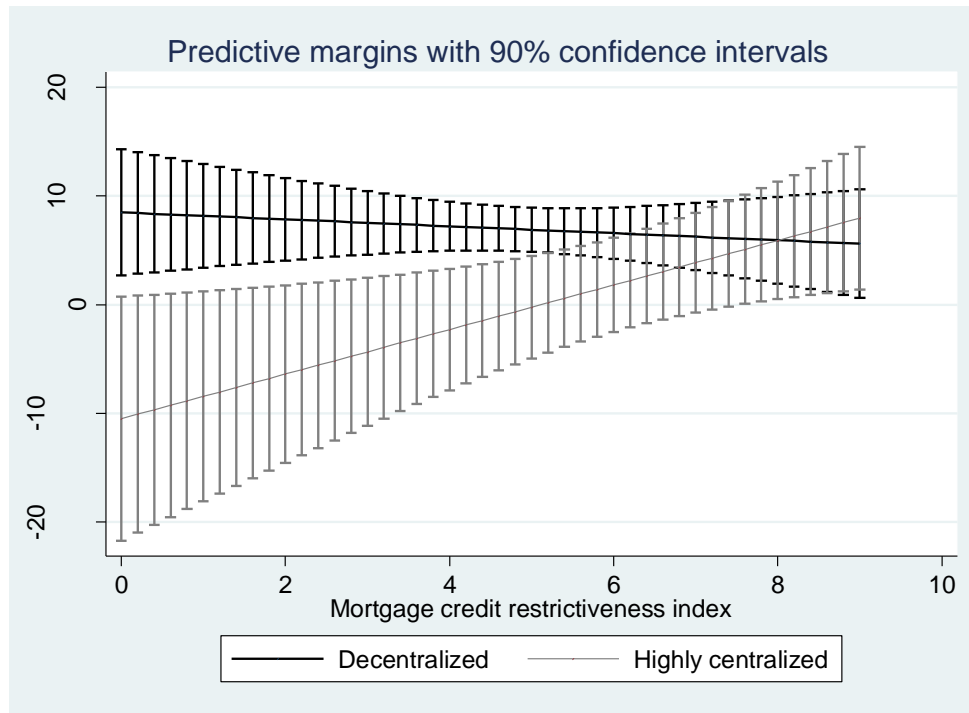
Graphic produced from results in Model VI, Table 1. "Decentralized" index value is 1, "Highly centralized" index value is 5.75.

Most of the other controls performed as expected: (lagged) increases in population (and population density, see the online appendix for these results) and GDP growth were associated with higher annual nominal and real housing price growth across all models. (Lagged) increases in real and nominal interest rates were associated with lower real and nominal housing price growth, respectively, in four of the six models (for the other two, they were non-significant). (Lagged) increases in foreign capital inflows were associated with higher housing price growth. (Lagged) growth in the private credit supply, however, performed against expectations, leading to lower nominal and real housing price growth. The partisanship of the executive and central bank independence demonstrate no significant effect on housing inflation; rather our models indicate that the impact of "politics" on housing inflation only emerges when we look at labor market organization and mortgage credit policies, not the composition of government.

Conclusions:

Our results highlight a conditional finding about the impact of the organization of different national varieties of capitalism on housing markets. Traditional and new (growth model) comparative capitalism theories agree that countries with highly coordinated/centralized labor market institutions (often those where the export sector has elevated prominence in the economy) produce higher levels of wage-moderation, and hence also witness lower inflation, than countries with uncoordinated/decentralized labor market institutions. We have found that these dynamics reveal themselves in housing inflation, but only under certain conditions. For countries where households are easily able to access mortgage credit, labor market institutions behave as comparative capitalism predicts (more coordinated/centralized wage-setting produce lower housing price growth). Hence, wage restraint tames the impact of permissive credit access on housing prices. However, in countries where households' access to mortgage credit is restricted, institutions governing income growth are effectively irrelevant; countries with coordinated/centralized and uncoordinated/decentralized wage-setting exhibit similar housing inflation performance.

Our analysis provides a number of important conclusions for the study of comparative political economy. First, if comparative political economy scholars seek to understand how housing markets operate, and the economic and political outcomes that are impacted by them, they need to not only focus on the household, but also on the institutions that shape households' behavior. Most crucially, this includes institutions governing mortgage credit access, which have been largely neglected in the study of comparative capitalism and CPE more broadly. At present, housing markets (and housing inflation) sit awkwardly in comparative capitalism literature: they defy typical varieties of capitalism and growth model typologies (permissive mortgage credit access exists not only in the liberal-market, consumption-oriented UK, but also the coordinated-market, export-oriented Nordic countries), and they also rebuke how coordinated market institutions (namely wage-setting institutions) are expected to perform. Does this mean that comparative political economy theories are completely unequipped to understand housing dynamics? Not necessarily. Our paper has shown that, within housing markets, mortgage credit regulations display significant interactions with (wage-setting) institutions that lie within the traditional remit

of comparative capitalism, and only when comparative household finance is brought in can comparative political economy properly explain variation in housing prices.

More broadly, our findings have important implications for the politics of wealth distribution, to which comparative political economy has significant potential to contribute to. As demonstrated by Piketty (2014), wealth inequality is rising in all the advanced capitalist democracies, and in particular, Anglo-Saxon economies. Whilst his research has focused on top incomes, and the volume effect of savings in shaping the rise of wealth-income ratios, other scholars have pointed out that these dynamics are increasingly shaped by the *price effect of housing*. If it is the case that rising house prices is a determinant of wealth inequality within OECD countries, then future comparative capitalism research would be well placed to analyze this relationship between housing capital and inequality.

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Appendix A: Results with a two year lag structure

Dependent variable	Real housing price growth	Real housing price growth	Nominal housing price growth	Nominal housing price growth
	I	II	III	IV
Credit Index (t-2)	-0.861	-0.503	-1.133	-0.471
	(0.449)	(0.653)	(0.276)	(0.647)
Wage Coordination Index (t-2)	-3.068		-3.663*	
	(0.151)		(0.090)	
Credit Index * Wage Coordination (t-2)	0.603*		0.700**	
	(0.089)		(0.043)	
Bargaining Centralization (t-2)		-5.009**		-5.019**
		(0.029)		(0.037)
Credit Index * Centralization (t-2)		0.551		0.522
		(0.125)		(0.150)
Population Growth (t-2)	2.087	2.231	1.927	1.796
	(0.347)	(0.360)	(0.422)	(0.492)
Δ Interest Rate (t-2)	0.061	0.195	-0.795*	-1.013**
	(0.807)	(0.479)	(0.054)	(0.038)
Δ Private Credit to GDP (t-2)	-0.053	-0.058	-0.048	-0.05
	(0.247)	(0.208)	(0.286)	(0.269)
GDP growth (t-2)	0.753*	0.646	0.927**	0.819*
	(0.052)	(0.101)	(0.020)	(0.053)
Δ Net (external) capital inflows (t-2)	-0.112	-0.019	-0.118	0.018
	(0.646)	(0.949)	(0.624)	(0.948)
Constant	-2.932	-0.481	-1.109	0.576
	(0.693)	(0.948)	(0.876)	(0.936)
N	226	213	226	213
R-squared (overall)	0.5601	0.5709	0.5899	0.5943
Chi-squared (p-value)	0	0	0	0

Estimator used was a pooled cross-sectional, time series, OLS estimator for 17 OECD economies from 1990 to 2007. N-1 time dummies and n-1 country dummies included but not shown. P-values provided in parentheses (standard errors are clustered by country). *, **, and *** indicate significance at a 90%, 95%, and 99% confidence level respectively.