Stylized facts from housing and finance
How do they relate across space and time?

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Introduction

This paper brings together stylized facts that cover the process of housing-centred financialization across different types of economies. This particular interpretation of the broader concept of financialization revolves around the impression that residential real estate, as store-of-value, has become a central carrier of practices of financialization. Real estate bridges the balance sheet of households (debt and equity) with financial institutions. This balance sheet inflated dramatically in the last two decades, altering the relationship of these domains. As such real estate became a pillar of the debt-led accumulation model that developed across advanced economies on the back of market-oriented restructuring as the Bretton Woods arrangements were dismantled.

The purpose of this paper is to provide an empirical overview of how housing-centred financialization developed across space and time. The broader conceptual issues have been discussed elsewhere (Aalbers 2016; Fernandez & Aalbers 2016); here the focus lies on presenting a description of the data on this topic. Hopefully this will give impetus to a debate that will renew interest in real estate and housing by political economy scholars concerned with the transformation and evolution of contemporary capitalism. Central to the notion of housing-centred financialization and closely related to the concept of ‘varieties of residential capitalism’ developed by Herman Schwartz and Len Seabrook (2008) is the uneven development of this debt-led accumulation model. This paper seeks to portray the diverse manifestations across institutional models; its ambition is not to understand the nature of this diversity but merely to document. This paper will restrict itself to the residential real estate/private debt nexus and will not debate real estate as investment object for (institutional) investors.

While residential real estate – as a home – is spatially fixed, as collateral it is part of a chain of financial claims that are used and re-used as collateral in global capital markets. The institutional origins of real estate are double edged. Firstly, it is an essential part of the housing system which is closely intertwined with welfare state policies that deal with rent control and urban planning. Secondly, it is part of the system of housing finance which is part and parcel of financial markets and financial institutions.

Both systems transformed under the weight of globalization. Therefore, we need to include the historical process of globalization, as a transmission mechanism, to understand changes across space and time. Globalization operated as an enabler by providing a cross-border financial infrastructure. On the other hand, it was a carrier of ideological renovations. The new realities of financial globalization, charac-
terized by hypermobile capital, cross-border competition and deregulated markets were increasingly incompatible with large publicly controlled housing providers that typically were key architects of the post war housing regimes (Aalbers 2015; Brenner et al 2010; Rolnik 2013). With the rise of the homeowner society, based on the believe that residential real estate was able to serve as a vehicle to preserve and enlarge private wealth, we saw the rise of “indebted man” (Lazzarato 2011) and the return of the rentier (Hudson 2012). The rising levels of indebtedness resulted in ever more effective and intrusive disciplining structures that permitted an increase in the extractive capacity of financial agents (Lapavitsas 2013; Lazarato 2011).

The transformation of housing into a central pillar of a debt-led accumulation model carrier was enabled by transnational markets that allowed the growth of mortgage debt beyond the domestic deposit base. While systems of housing and housing finance remain nationally bound, we can witness a cross-border realignment towards soft regulation and more debt. The growth of debt is strongly related to growing cross-border financial flows, in particular interbank loans and non-bank funding vehicles (shadow banking) for domestic banks.

The key question in this paper is how and why the evolution of this debt-led and housing-centred economic model varies across-borders. This requires a profound understanding of how the different components work together across different institutional settings. This paper contributes to the cross-country comparison but does not provide an overarching set of conclusions or conceptual innovations; instead it is purely explorative in nature. The picture that emerges is that in the fields of both finance and housing a diverse configuration can lead to an increase in mortgage debt and hence produce a process of housing-centred financialization. However, there is a difference between the field of finance and housing. The range of different institutional arrangements in the field of finance that are compatible with housing-centred financialization seem to be significantly broader.

In this paper we follow the four trajectories of housing-centred financialized distinguished in Fernandez & Aalbers (2016). The question we face is whether the dynamic transformation towards higher levels of private debt will translate in a housing-centered process of financialization in economies where this development was so far absent. For this purpose, we organized economies inductively into ideal-types of national institutional structures that relate in similar way to the influence of the global pool of liquidity and hence share characteristics of housing induced financialization. Basically we identified two different types of national models (group 1 and 4) that resisted moving towards a debt-fueled economic model for different reasons and two types (2 and 3) that experienced a housing induced type of financialization with different outcomes. These four ideal-types largely overlap with the distinction made by Herman Schwartz and Len Seabrook (2008), based on mortgage debt-to-GDP and levels of homeownership. Column A in table 1 includes a rough composition of the 4 trajectories of institutional models discussed in the introduction. Japan is intentionally not part of this classification as it combines to many contradictory characteristics. These trajectories are preliminary categories that do not hold for all countries across all variables discussed in the paper.
The first group consists of Central- and East- European (CEE) countries, some Mediterranean EU countries (Greece, Portugal and Italy) and some emerging economies (Brazil, Mexico and Turkey). These countries combine high to very high rates of homeownership (69-96%) with comparatively low to very low cross-border capital flows and a modest financial sector in terms of diversification and size (World Bank 2009; 2012). The dominance of a privately-owned housing stock, mostly free of mortgage debt, means that the housing market has not been financialized yet. However, we have to remember that Spain was once part of this group and also had an equally high homeownership rate, 78% in 1991 (OECD 2011b), and low private debt levels and cross-border capital flows, but transformed radically in the brief period from the late 1990s to the collapse of the bubble. This shows that a large stock of privately-owned, mortgage-free dwellings is not a guarantee to keep the global forces of financialization from entering the domestic system of housing finance. The case of Spain is crucial to understand institutional change in this group. A final element is the absence of institutional support for mortgages, portrayed by the low score on the mortgage market index and the absence of equity withdrawal schemes.

The second group, consisting of Iceland, Ireland, Spain, Canada, Australia, the UK and the US, has high levels of homeownership in combination with high to very high mortgage-to-GDP levels. These countries have large cross-border capital flows (Table 2) and, with the exception of Spain, a deep and sophisticated financial sector (World Bank 2012). The outlook of this group is mixed. The US and the UK have continued, pushed by monetary policy, on the previous path. This seems unlikely in Iceland, Ireland and Spain where the housing boom produced a large overcapacity of residential real estate. Spain and Ireland have in common that their housing booms were not only accompanied by a sharp rise in private debt, financed by cross-border flows, but also by a construction boom. In Spain and Ireland, the gross fixed capital formation as percentage of GDP rose from, respectively, 20% and 15% in 1993 and to 31% and 26% at the top of the boom in 2007. In contrast, other countries that also experienced a housing boom, like the UK, the US and the Netherlands, had an unchanged gross fixed capital formation as percentage of GDP in 1993 and 2007 of respectively 18%, 19% and 20% (World Bank data).

The third group, consisting of the Netherlands and Denmark has moderate homeownership levels combined with very high mortgage-to-GDP levels, reflecting an extremely low share of privately-owned houses that are free of mortgages, respectively 12% and 22%. These mortgage markets are the opposite of those in Mediterranean and CEE countries, where mortgage-free homeownership is not the exception but the norm, e.g. 79% in Italy, 77% in Greece and 73% in Hungary. It is important to note that both the Netherlands and Denmark had the largest increase in homeownership rates in the boom period of all OECD countries, reflecting the institutional changes of higher LTV ratios combined with a very high tax gap (OECD 2011). Table 3 shows that Denmark and the Netherlands enjoy the largest tax gap (fiscal stimuli for mortgage debt) and that both countries have an institutional framework in place that is geared towards a housing-based form of financialization. These countries have extremely high cross-border capital flows and very high funding gaps
making these countries vulnerable to economic downswings, as domestic deposits are not able to cover debt levels. An important characteristic of this group is the small economic footprint of the real estate sector in terms of employment.

The fourth group consists of countries with very low to medium homeownership rates, low mortgage-debt-to-GDP levels and extremely low price-to-income levels (Germany, Switzerland, Austria, and France). Germany⁴ shows a rare change in its credit-to-deposit share, only shared with Argentina (for different reasons). Whereas the overall trend was an increase in the credit-to-deposit ratio, as leverage surged across developed economies, in Germany this ratio decreased from 178% in 1998 to 80% in 2011 (World Bank financial development and structure dataset, November 2013). Table 3 shows that Germany and Switzerland are outliers that experienced a decline in the price-to-income-ratio of respectively 30% and 16% in 2010 compared to 1985. These countries have deep and sophisticated financial markets and medium to (very) large cross-border capital flows.

This paper will present data from different perspectives to show how this basic separation of countries holds across different dimensions. The data is collected for a selection of 42 countries ranging from developed economies to emerging economies, where possible. Throughout the paper this group of countries will be referred to as ‘REFCOM’ countries, which refers to the “real estate/financial complex”, an ERC funded research project led by Manuel Aalbers at KU Leuven, the University of Leuven (for details, see http://ees.kuleuven.be/refcom). This project combines overarching, comparative studies (Aalbers 2016) with in depth studies focussing on particular aspects at the national scale (Van Loon 2016) and subnational scale (Budenbender 2016, Fernandez et al 2016).

Most of the data is derived from the World Bank database on financial development, which itself brings together statistics from a broad range of institutions such as the BIS and the IMF. In addition to these financial statistics there are datasets that cover housing systems and institutional change in particular areas. As some countries, namely non-OECD and non-EU countries are less well covered by statistics. Also included are separate datasets from the IMF, the BIS, the OECD and the EMF, not part of the World Bank dataset.

The first cycle of housing-centred financialization, in which private debt levels, cross-border financial flows, rising homeownership levels and rising residential real estate prices moved together in a number of countries, runs from the mid 1990s to 2008. For this reason, most of the comparisons over time, focus on this period. However, as most datasets do not overlap in time, for most countries, the approach was to pragmatically select the best available years within this period. In other instances, the longest available timeframe was chosen, to portray long-term changes, such as private debt-to-GDP (1965) and the gross fixed capital formation (1970).

⁴ Germany has a unique historical trajectory related to its unification in 1990 that may explain many irregularities that appear in statistics covering housing, tenure, private debt and demography.
The age of private debt: the face of housing-centred financialization

The key component of housing-centred financialization is (private) debt, connecting households with global financial market and a marker for the financialization of housing (Aalbers 2008). Since the 1980s, the second age of financial globalization, the world has seen an unprecedented rise in levels of private debt, primarily mortgages on the back of real estate. This signifies the importance of real estate in the expansion and development of national financial systems in the last three decades. This rise in debt levels is uneven across different countries. On the one hand, there is a gap between emerging and advanced economies. Emerging economies have a smaller capacity for financial development and therefore typically have lower debt levels as share of GDP (World Bank 2008). But there are also significant differences within the group of emerging and advanced economies. Furthermore, next to the differences in private debt levels there are also variations in how these debt levels translate into cross-border flows. The rise of private debt is part of a three-way relationship, linked to both cross-border financial intermediation and non-deposit finance to fund the expansion of debt.

Countries rely on cross-border capital flows to fund debt levels beyond the stock of domestic deposits. This is most significant for smaller economies (Ireland, Denmark, Netherlands) and medium sized economies such as the UK and Spain and is less evident in large economies such as the US and Japan (see C in Table 1.). Therefore, rising levels of private debt are part of and drive financial globalization, albeit in an uneven way. In general terms, we can state that in the absence of cross-border financial intermediation, debt could not have increased to the extent it did. And without the mobility of collateral (financialization of housing), global financial markets could not have grown the way they did in the last three decades.

The stock of private debt, relative to GDP, grew from 1960 to 2011 across all economies as Table 1 shows. The upswing, however, was most pronounced in the countries we identified as frontrunners (Ireland, Spain, Netherlands, Denmark) and the least in emerging economies (Argentina, Brazil, Indonesia, Mexico). The result for developed economies is linked to the positive relation between income levels and size of the financial sector (Čihák et al 2012). This means that economies with a larger GDP per capita are more likely to have a larger financial sector as a share of the economy. More liquid financial markets allow for more diversification, which translates into non-banking financial intermediaries and capital markets. This bias towards lower debt on the part of emerging economies makes the debt levels of China and South Africa extraordinary.
Table 1. A) type of trajectory B) Private debt as share of GDP from 1965 to 2011; C) percentage change from 1965 to 2011; D) claims of BIS reporting foreign banks as share of GDP

<table>
<thead>
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<th>'75</th>
<th>'85</th>
<th>'95</th>
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As discussed above we find that the frontrunners, that lead in debt-to-GDP and claims of foreign banks to GDP, also lead in the debt-to-deposit ratio (Figure 1). This is the share of domestic deposits to total outstanding private debt. This is an important marker which indicates how large the stock of private debt has grown relative to deposits and therefore the need to engage with non-deposit financial intermediation. Figure 1.1 shows how the US and Japan are outliers, with high debt-to-GDP ratios but low private debt-to-deposits ratios. Other economies show a clear connection of both variables, with Ireland, Spain and the Netherlands in the top right corner. Denmark is absent because its values are off the chart, with a debt-to-deposits ratio of 313 in 2008.

These observations, however, presents us with an endogeneity problem. Did existing forms of non-deposit based finance (like securitization and interbank loans) make it more attractive for households and non-financial forms to increase their leverage? Or did growing levels of private debt create the need (demand for) non-deposit based financial intermediation? These questions will not be tackled in this article, but remind us that these simple statistical relations do not inform us about causality or the mechanisms involved.
1.1 Private debt-to-GDP and debt to deposits in selected countries in 2011

Source: World Bank financial development and structure dataset (World Bank)

FIGURE 1.2 TOTAL PRIVATE DEBT AND MORTGAGE DEBT AS % OF GDP IN 2000 AND 2010

Source: World Bank (private debt) and EMF (mortgage-to-GDP)
From this triad relationship between (A) debt-to-GDP, (B) foreign claims-to-GDP and (C) debt-to-deposits we move on to a narrower view on private debt, namely mortgage debt. Figure 1.2 shows the strong correlation between levels of total private debt and mortgage debt. Due to limited data on mortgage debt, this graph does not include emerging economies. Compared to the year 2000, the frontrunners in the upper right corner, got further removed in 2010 from the group average. Spain and Ireland are special cases, coming from modest debt levels in 2000. The face of housing-centred financialization surfaces in this comparison in time, as the frontrunners move forward amassing an unprecedented stock of debt. Germany is also an interesting case, showing a reduction in debt levels between 2000 and 2010. Other economies, like France, Belgium and Italy clearly stay at a distance from the frontrunners.

Figure 1.3 shows that the change in nominal house prices across different countries is strongly correlated to the change in the outstanding stock of private debt. Debt inflates house prices and prices that outpace income growth compel the growth of debt, causing a vicious cycle.

**Transformation of the financial system**

The other side of rising debt levels (liabilities), on the balance sheet, are claims (assets). One of the distinctive features of the age of financial globalization is the inflated balance sheet (both assets and liabilities) as a share of the economy (Turner 2015; Hudson 2012). This inflated balance sheet means that the claims on future
income and production have increased. One element is the increase in corporate savings (profits minus investments and taxes) signalling overaccumulation. Corporate earnings are not re-invested but hoarded as financial assets. This has led to an annual increase in financial holdings of non-financial and a rising share of profits from financial activities (Krippner 2005).

Another structural feature is the sustained high savings rate of institutional investors (pension funds, insurance companies and sovereign wealth funds of commodities-exporting countries during the boom years). These diverse sources that inflate the global balance sheet are discussed as a “wall of money” (Fernandez and Aalbers 2016). As a result of their search for yield there is a steady supply of capital allocated to funding private debt in particular mortgage debt. This connection of global macro trends to household debt lies at the core of the analysis of housing-centred financialization. However, given this global environment, characterized by a wall of money seeking for yield we may ask: why and how did some countries kept it at bay while others experienced severe housing bubbles?

One of the answers lies in the institutional differences in housing finance. These cross-border differences in channelling liquidity from global capital markets to households are critical to understand the uneven geography of housing bubbles. This section will present stylized facts about institutional change in the field of the financial sector across different countries. The most important conclusion from this section is that these changes were truly multidimensional and there is no perfect set of institutional characteristics that explains why debt levels increased. Econometric analysis could be helpful in showing the different types of relations.

The dimensions we focus on are size, market structure and openness of the domestic financial market. The statistics were selected from the ‘financial development and structure dataset’ from the World Bank, which for more than 20 years has been compiling and studying this data. The main concern of the World Bank is to understand how economic development relates to financial market development. This broad focus ensures that data is collected and standardized for non-OECD countries. Our focus is different as we try to understand how the financial market structure is related to levels of debt.

**Debt and cross-border capital flows**

The first four variables of the spider charts below cover the development of debt that were discussed in the previous section, namely ‘bank credit to bank deposits’, ‘consolidated claims of foreign banks to GDP’, ‘loans from non-resident banks’, and ‘total private credit as percentage of GDP’. These charts show how the growing stock of debt relates to multiple changes in the financial system. The first measurement is the ratio of private debt and deposits and varies under influence of both variables. A high score can equally mean an increase in debt or a decrease in deposits as share of GDP. The next two variables underscore the openness of an economy, i.e. the role of cross-border capital in providing domestic debt. As discussed in the previous section, larger economies, particular Japan and the US, proportionately speaking,
rely less on cross-border funding. The fourth variable, “total private credit as percentage of GDP”, finally is the measurement of debt also discussed in the previous section.

**Financial reform index (IMF)**

The IMF’s financial reform index is an attempt to capture the policy reforms in the field of finance and banking from 1973 to 2005 (IMF 2008). This is a crucial period in which the post-war Bretton Woods arrangements were gradually lifted. The dimensions covered by the index include: credit controls, capital requirements, privatization of banking sector, interest rate controls, entry barriers and capital account restrictions. Each dimension was given a score which combined was normalized between zero and three for all countries involved. Zero corresponds to the highest degree of “repression” and one to “full liberalization”. In the spider chart below the score has been multiplied by 100 to fit the scale.

As measurement of institutional change this index is useful. However, it points to an overwhelming convergence towards liberalization across the board, leaving a monotone landscape which highly contrasts to other variable, such as debt and cross-border capital flows. In other words, the explanatory value of the financial reform index is very low. Most developed economies converged from a low score to the highest possible score in roughly the same period (1973-1994), yet remain fundamentally different in terms of financial market composition, levels of debt and openness. Emerging economies did not completely converge into a fully liberalized financial system. The only country with a meaningful change was China, as it adopted the market oriented reforms in the financial sector significantly later. The most important field in which China differs is in the field of international capital flows, which are still “partly repressed” according to the IMF methodology.

![2.1 IMF financial reform index 1973 and 2005](image)

*Source: IMF 2008 (Data for Panama not available)*
**Bank non-interest income to total income**

A measurement of the orientation of the banking system (ranging from ‘traditional banking’ to ‘investment banking’) is the share of non-interest income to total income. This is a ratio comparing different sources of income for banks. Interest income is derived from taking deposits and lending money, considered a proxy for traditional banking. Banks charge a higher interest rate on the money lend out compared to interest rate paid for deposits, which results in interest income. Non-interest income consists in commission received for a variety of banking services (securities transaction and related services, foreign exchange transactions, payment services) and net profits from financial operations. In the period before the crisis, the rising share of non-interest income to total income was considered a development that would bring more stability into the banking system as it reflected that banks diversified into a broader set of income (Bank of England 2003).

The ratio of non-interest income to total income, for the selected REFCOM group, however does not appear to have a significant statistical relation (correlation is 0.078 in 2010) with the growth private credit. If we leave aside some strong outliers, namely Argentina, Russia and Mexico, that combine very low levels of debt with high non-interest to total income, the correlation converts into a modest 0.45. Leading economies in terms of non-interest income to total income are the Netherlands, Ireland UK, Canada, but also Germany. If we look at countries with a low score this includes highly indebted countries such as Spain and Denmark. If we compare the score of 1998 (oldest available data) with 2011 we see that by far the largest increase is visible in Ireland and the Netherlands. In 1998, these two countries had a non-interest to total income of 22. Greece, Australia and Belgium, on the other hand, show a drop in 2011 compared to 1998. All in all, it does not show a clear connection with levels of private debt on its own.

![2.2 Non interest income to total income in 1998 and 2011](chart)

*Source: World Bank*
Stock market capitalization as share of GDP

The stock market capitalization as a share of GDP is a measure of the depth of capital markets and can be perceived as a simple measurement of financialization. It portrays the size of a segment of the capital stock versus the economy of flows (income and production). Stock markets around the world, virtually unchanged in the preceding century, started to transform in the 1970s and have not stopped ever since in becoming more transnational, liquid, digital and integrated in an ever more concentrated portfolio management industry (Cassis 2006; Michie 2006).

The market capitalization of stock markets is strongly related to the GDP per capita (World Bank 2009). On top of this research by the World Bank, it has shown that emerging economies have a strong bias towards the intermediation of capital by the banking sector. Third, liquidity reinforces itself and attracts markets share, this means that there are strong network externalities present in the financial geography of stock markets. Therefore, the market capitalization to GDP also reflects the presence of a successful financial centre. The capitalization of the stock markets of the selected REFCOM economies and total private debt have a modest correlation score of 0.51.

Financial sector deposits

The financial sector deposit to GDP is a broader category than bank deposits to GDP and includes ‘bank-like’ institutions, such as building societies and cajas, but excludes public monetary institutions and institutional investors (World Bank 2009, p 4). While total private debt signifies the claims of the financial system on the private sector, financial sector deposits are the liabilities. These liabilities exclude savings by institutional investors, such as pension funds and therefore do not complete the balance sheet. Some countries combine large financial sector deposits with large savings by institutional investors, such as the Netherlands. Also we would need to include non-financial wealth such as residential real estate based wealth to have a full picture of the balance sheet (Piketty 2014). The financial sector deposit is therefore a portion of the balance sheet, albeit an important share. It is a measure of the size of the financial sector and correlates positively to GDP per capita (World Bank 2009). The larger the GDP per capita the larger the proportional size of the financial sector deposits.

If we look at the selected economies, we see that financial sector deposit increased across the board and are higher in the highly indebted economies as well as in Japan and Germany, the two archetypical bank-based systems. The statistical correlation of this variable with total private debt is fairly high (0.68) as portrayed in Figure 2.4 below.
Source: World Bank

Economies with no score for 1961 have no data. The UK and Canada have no data for 2011.
2.6. Banking concentration

This variable measures the level of concentration in the banking sector by looking into the assets of the three largest banks as share of total assets of the banking sector. It is a proxy for the market structure, from highly competitive to oligopolistic. Since the 1980s as cross-border FDI flows started to rise, this led a massive wave of mergers and acquisitions which resulted in a concentration of corporate ownership of transnational corporations, including banks and financial institutions. However, if we look at the assets of the largest three banks within one country we can see that these remained fairly stable in this dynamic landscape. In Brazil and the US, we even see a steep decline in levels of concentration, from respectively 65% and 32% in 1998 to 40% and 22% in 2011. It is important to realize that the bulk of the rise in debt in the US occurred off-balance, in the shadow banking system, and as such is not part of these statistics. These assets are particularly important for our analysis on the interrelated changes between finance and real estate, as they cover the rise of mortgage backed securities. Unfortunately, only the US and Japan provide comparable statistics for the shadow banking sector. The FSB, for instance, does provide an extensive overview of overall assets of shadow banks across a number of countries, but these do not cover the degree to which shadow banks are part of providing credit to the private sector. Therefore, we cannot know how big the impact of the rise of this alternative banking channel is across the selected economies.

From all of the indicators assessed in this section, this is the only indicator that does not correlate with GDP per capita. This means that the market structure (measured by the size of the largest three banks) does not vary according to the size of the economy but is related to a broader set of institutional characteristics. Moreover, we see that the relation between the concentration in the banking sector and private debt is weak as different market structures can produce a high and low debt environment.

However, we must take note of the absence of the shadow banking system, a major infrastructure to park banking assets off-balance. If this were included, we would possibly see a strong relation between economies with a high level of concentration in the banking sector and high levels of private debt. Figure 2.6 shows the development of the shadow banking system in the US. It shows that as-share-to-GDP the banking system remained stable while the shadow banking system increased sharply. This resulted in a decrease in the share of credit intermediated by the domestic banking system. These securitized assets were sold in large parts to foreign investors (Bernanke 2011). If these capital movements are included, the US low dependency on cross-border capital looks very different, probably more in tune with other countries that experienced a surge in private debt.

Furthermore, there is a bias of concentration towards small and open economies such as Belgium, the Netherlands and Denmark with scores in the range of 80%. Finally, there seems to be a strong correlation between the level of concentration and claims of foreign banks as a share of GDP. If we exclude some extreme outliers such as Panama, Ireland and the UK (sharing extremely high foreign claims with low levels of bank concentration), as well as Ukraine and South
Africa (sharing extremely high concentration in the banking sector with extremely low claims of foreign banks), we have a score of 0.8.

Source: World Bank

2.5 Bank concentration: assets of three largest bank as share of total

2.6 Total private credit provided by banks and shadow banks as share of GDP in the US from 1980 to 2011

Source: World Bank
2.7. Figures combined

If we combine these different dimensions, we see that the models of housing-centred financialization discussed above show similar characteristics. However, the changes across time and space display a truly multidimensional relation, different pathways exist for rising levels of debt. Consistently we see that countries classified as 2 and 3 in table 1 portray a higher score on the spider graphs below. An exception is Belgium, which is a small and open economy, but with a relatively underdeveloped state of housing-centred financialization. The conclusion we can draw from this, is that we can have a variegated landscape of financial systems that nonetheless moves towards higher leverage without converging into a similar system.

Source: IMF; World Bank
The “real” economy: construction sector, employment and housing units

One of the crucial aspects of housing finance is how it interacts with the real economy, primarily the production of new housing units. The macro-economic footprint of the construction of new housing units is significant, containing the employment in the construction sector and fixed capital formation with a substantive multiplier effect. In the case of China for instance, the surge in urban based fixed capital formation, from the late 1990s onwards, was a global locomotive fuelling a commodity super cycle, that lifted economies around the world. If we use the lens of financialization to evaluate the role of the real economy dimension of real estate, that is, if we focus on the exchange value and liquidity of residential real estate, the production of new units (over and above the replacement of the existing stock) is a critical variable. In the absence of a net increase in housing units, there is only a secondary market (exchange of existing housing units). If, on the other hand, there is an increase in the net stock of housing units there is a primary and a secondary market. These different outcomes lead to different types of housing-centred financialization.

Another critical element is demography. The supply of housing units must be evaluated against the backdrop of demographic change. An increase in population or a shift in the average household size requires a growing stock of housing units and vice versa. This is not only relevant for national demographic shifts, including ageing, but also changes at the sub-national level. In response to globalization and deindustrialization the urban landscape of advanced economies and emerging economies changed dramatically. The de- and reterritorialization of production and consumption propelled by the rescaling of capitalism changed the urban map significantly, leaving certain regions to perish and others to expand. In the last four decades, as the world of finance revolutionized, so did the real world economics of cities. And the vast global push towards urbanization is not over. While in the 1970s the global urban population was only half the rural population, the urban population surpassed the rural population around 2010 and is expected to be twice as large in 2050. If we look at the ten largest cities by population in 1950, three of them where located in developing economies, in 2007 only two out of ten were located in advanced economies, namely New York and Tokyo (PwC 2007).

These broader dynamics will not be addressed here, but are key to understand the bigger picture in which the interaction of the production of housing units and housing finance are situated. This section will focus on how the production of housing produced different modes of housing-centred financialization in the recent cycle of housing bubbles (1995-2008). On one end of the continuum we find China, Spain and Ireland. The Netherlands and Denmark are on the other end. The first group is characterized by a significant rise in the share of fixed capital formation as a share of GDP and an increase in the employment by the construction sector. This increase in economic production was large enough to (temporally) initiate an economic perpetual motion: the construction sector reinforces economic growth, leading to more demand for housing units. In the case of China and Spain this
economic activity went hand in hand with attracting immigrants, fuelling the expansion of the construction sector. This rising macro-economic footprint of real estate construction interacts positively with developments in the field of housing finance, leading to a rapidly rising stock of private debt as a share of GDP.

On the other end of the continuum we find the Netherlands and Denmark, and to a much lesser extend also the US and the UK. In these countries the extension of credit did not ignite a rise of the construction sector. As a consequence, the constructing sector to a much smaller degree rose and declined during and after the bubble years. The shape of the housing-centred mode of financialization of these countries was centred on the existing stock of residential units. This has important consequences. The multiplier of the debt-financed expenditure on housing was much lower. The investments, predominantly, led to a change in ownership of existing homes instead of a growth of the stock of housing units. The effect is a lower oversupply or persisting scarcity of housing units, which sets a floor for prices for residential units in the right location. Again, location matters and therefore sub-national spatial considerations are key.

Nevertheless, the construction sector is an important part of economies, in terms of employment and fixed capital formation, both in developed and emerging economies and both in countries with high and low fixed capital formation. In 2012, five years after its peak, the construction sector accounted for 9.5% of all employment in the EU (Eurostat data). Except for extreme cases such as Spain, Ireland and China, other economies seem to portray steady long-term developments in both fixed capital formation and the share of construction sector in total employment. These long term developments are a decline in the fixed capital formation and a declining share of the construction sector in total employment, most clearly in developed economies.

3.1. Gross fixed capital formation

The following three figures show how gross fixed capital developed in a number of economies. The OECD average shows a steady decline in investments from the 1970s onwards. Figure 3.1 displays the high debt economies, showing a clear divergence between Denmark and the Netherlands, that behave similar to the OECD average, and Spain and Ireland, that detached from this decline and show a strong boom and bust. Figure 3.2 shows lower debt developed economies that follow the OECD average. Finally, Figure 3.3 shows three different developments. Firstly, the UK and the US that equally follow the OECD trend. Secondly, Japan portrays a steep drop since 1970. This is related to the extremely high growth period of Japan in the 1950s and 1960s, which derailed with the real estate crisis and economic and financial collapse in 1988, causing a debt overhang from which Japan is still to recover. And finally, China shows a dramatic increase of investments in fixed capital. If we compare it to other emerging economies that are also growing rapidly, China does stand out in the fixed capital formation. Indonesia, for instance, has investments of 32% of GDP in fixed capital in 2011. Russia and South Africa have investment levels of around 20% of GDP.
3.1 Gross fixed capital formation as share of GDP, 1970-2011

Source: World Bank

3.2 Gross fixed capital formation as share of GDP, 1970-2011

Source: World Bank
3.2 Employment in the construction sector

Next to investments in fixed capital, the share of employment in the construction sector is a key characteristic of the macroeconomic footprint of the real estate sector. The construction sector is broader than residential and commercial real estate and includes work in infrastructure. The fixed capital formation and the share of labour in the construction sector however do not correlate in the year 2010 (-0.089) for the REFCOM group. If we compare Figures 4.1 and 4.4, however, we see a similar pattern emerging in time. The figures for Germany, France, Italy, Greece, the UK and the US follow a similar pattern as the Netherlands and Denmark, namely a steady decline in the overall share of employment of the construction sector from over 8% at the start of the 1980s to 6% or less in 2012. Developments in China also corroborate what was shown by Figure 4.3, namely a massive presence of real estate in macro-economic terms. The share of employment in the construction sector in China increased from 5% during the Asian crisis in 1997 to a whopping 12% in 2012.

In order to appreciate the magnitude of the macro-economic weight of the expansion of the real estate sector in China we need to look at the scatter plot below. In this figure we see the change of fixed capital formation and employment in the construction sector. The change in employment is portrayed on the horizontal axis and shows the how large the employment in the construction sector was in 2009 (as share of total employment) as percentage of its size in 1991. The change in the fixed capital formation as share of GDP features on the vertical axis and shows the score for 2010 as percentage of 1991. The two dotted lines show the 100% score and divide countries that had a larger share of employment and investments in fixed capital and those that shrank in 2009-2010, compared to 1991. China, in the upper-
right corner, leaves all countries far behind, both in terms of employment and investments. Ireland and Spain have a modest score, partly because their real estate bubbles had already collapsed in 2009-2010, also visible in the figures above, and partly, in the case of Spain, as the rise of the construction boom was already underway in 1991. Equally surprising is the decrease in the macro-economic footprint of the Dutch real estate sector. It is the only high debt economy to see both variables shrink. The group of larger, low debt Eurozone countries, such as Germany, France and Italy, do show common characteristics. All in all, the dominant move, as discussed above, was for investments and employment to decline in developed economies and to rise in emerging economies. Except for Australia and Canada, this picture is clearly visible in the scatter plot.

Source: ILO
3.3 The production of housing units

If we move from fixed capital formation to a more precise figure on housing units, the magnitude of the Spanish boom and bust becomes clearer. Unfortunately, these figures are only available for a much more limited number of countries. Figure 3.6 shows share of employment of the construction sector in 2008 and the increase of housing units in 2010 compared to 2000. The divide in the group of high debt countries becomes sharper. We see Spain and Ireland on the upper-right corner and the Netherlands and Denmark in the lower-left corner together with Belgium and Germany; and the UK and Italy in between.

A final element that will be introduced in this sector in the change in population and its relation to the production of housing units. As a result of ageing societies the endogenous population growth has been decreasing in most advanced economies. Net immigration was an important source of growth. Spain developed an unusually strong dynamic that involved growing private debt, growing real estate production, economic growth, growing immigration and as a result more debt and real estate production and so on. We have seen the rising debt, fixed capital formation and housing units. Now we look at population growth. What Figure 3.7 depicts is the size of the population in 2011 as a percentage of 1994. The population of Spain increased by 22.8% and Ireland by 19.6% in this 16-year period. The US had an increase of 16.6%, which given its size is very significant.

Source: ILO (employment construction sector); World Bank (fixed capital formation)
3.6 Construction as share of total workforce in 2007 and the increase in stock of dwellings from 2000 to 2010 (2000=100)

Source: ILO (construction as percentage of workforce) and EMF dataset (stock of dwellings)

3.7 Population in 2011 as percentage of 1994

Source: EMF
Figure 3.8 shows the completion of housing units in the large EU countries. Unfortunately, the statistics for France are not available in this dataset. This figure depicts a flow, namely the annual completion of housing units, from which we need to subtract the units that are replaced to get to the net growth of the housing stock. The housing stock is used as a measure in the figures above and below. This annual flow serves to illustrate the number of units that were produced in Spain. At the peak of production in 2007 Spain produced 614,000 housing units. The combined production of Italy, Germany and the UK in this year was 745,000.

Figure 3.9 shows how the change in the size of population relates to the change in the stock of housing units. Ireland stands out with an increase of 84% in the stock of housing units in 2009 compared to 1995. Next is Spain with an increase of 46% in the stock of dwellings. Also, by far most countries, irrespective of debt levels, witnessed an increase of 10-20% in these 15 years. Statistically, the change in population and housing units correlate strongly (0.67). The direction of the causality does not seem to be equal for all countries involved. For Spain and Ireland, the increase in population seems to be related to the housing-centred boom, which attracted immigration and fuelled more demand for real estate. In other countries, the rise in housing units seems to have kept pace with the direction of the changing size of the population. A low growth or decrease in population seems to have limited the growth of housing units for Germany, Russia, Hungary and Poland. The largest group, which is composed of high and low debt countries, is concentrated around the average. The two dotted lines show the average unweighted score for the group excluding the outliers Spain and Ireland.

Source: EMF
Institutional characteristics of the housing system

Housing-centred financialization is produced by the interaction of the financial system and the housing system in a context of globalization. This section will delve deeper into the institutional characteristics of the housing system. The IMF produced an index to measure the level of innovation in the mortgage market, the mortgage market index. This index brings together five institutional elements of the housing finance system, condensed in one index from 0 to 1 (IMF 2008, p 5). These elements include (1) the possibility of mortgage equity withdraw; (2) covered bonds and or securitization; (3) the average typical term; (4) The typical loan-to-value ratio and (5) the ability to refinance fee-free. If we look at the relation between the score of this index of housing finance with characteristics of the housing system, such as homeownership levels, the regulation of the private rental market and the price responsiveness of residential real estate we fail to see a connection. As was set out in the introduction there are two types of low debt economies. One with low home ownership rates and one with extremely high levels of homeownership. The low debt and low home ownership rates are Austria, Switzerland and Germany and to a lesser extend France (homeowners hip rate is 62%). The countries that share low debt-to-GDP and high home ownership are typically emerging economies, CEE and Mediterranean countries.

Not surprisingly there is a very strong correlation between the mortgage market index and level of mortgage debt (IMF 2008). Figure 4.1 is an updated version of the figure that features in Fernandez and Aalbers (2016). This figure shows the mortgage-to-GDP ratio in 2011 instead of an average of the years before the crisis.

Source: EMF
The correlation remains high: 0.75 compared to 0.78 in the previous dataset; and debt levels increased since 2008. High debt economies typically share characteristics of innovative finance (covered bonds and securitization), liberalized mortgage markets (LTV ratios, years to repay, equity withdraw schemes) and high penetration of foreign capital as credit to deposit ratio grow larger mortgage. On the other hand, different types of housing systems (measured by tenure, rent control and price responsiveness) can progress into (or are compatible with) a highly indebted political economy. From this observation we may tentatively draw the conclusion that the housing system itself is less dominant in producing the process of housing-centred financialization. Different housing systems can financialize. On the other hand, a single set of characteristics in the field of housing finance results in financialization. However, these characteristics in the field of finance can develop quickly, as Spain exhibited, and do not seem to evolve at the same speed as other institutional domains.

If we look at the mortgage market index and the regulation of the private rental sector portrayed in Figure 4.2 we see that there is little connection between the two. The correlation is 0.036. The score measuring the extend of regulation is a composite indicator of the extent of controls of rents, how increases in rents are determined and the permitted cost pass-through onto rents in each country (OECD 2011b). Here we see how the US and the UK diverge from other countries with a high score on the mortgage market index such as the Netherlands and Denmark. As discussed above, the homeownership levels and the mortgage market index of countries also do not correspond. The correlation between these two sets of data is 0.032.

The price responsiveness of the construction of new houses (elasticity), derived from the OECD (2011b), on the other hand, does correlate significantly to the mortgage market index (0.71). The nature of this statistical relation, however, is unclear. The OECD (2011b) is focused on the need for regulation in relation to population density. The Netherlands, with a long tradition in urban planning and a high population density is a clear example.

**Concluding remarks**

The main conclusion to be drawn from this explorative study is that the institutional configuration of finance and housing in the process of financialization is multidimensional. Housing-centred financialization can be produced by numerous institutional patterns. However, there is a difference between the field of finance and housing. The range of different institutional arrangements in the field of housing, compatible with housing-centred financialization seem to be significantly wider. In other words, the field of housing finance seems to be a stronger determinant for housing-centred financialization compared to housing. More research is required to test this hypothesis.

Also moments of swift institutional change feeding into and generated by a housing bubble are at odds with the debate on varieties of capitalism, with a strong focus on path dependencies of national models. Finance and housing finance have
proven to be far more dynamic than this body of literature allows. We need to construct a typology that is open to periods of rapid transformation led by housing booms, manic periods, that always involve abundant credit and often end with panics and crashes (Fernandez & Aalbers, 2016).

Source: IMF 2008 (mortgage market index); EMF 2014 (mortgage-debt-to-GDP)

Source: OECD 2011 (private rent control); IMF 2008 (Mortgage Market Index)
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The Real Estate/Financial Complex (REFCOM)

Real estate and finance were at the roots of the global economic crisis that started in 2007. States and their many institutions have also been seen as complicit to the crisis. The connections between real estate (both residential and non-residential), finance and states still remain under-researched and under-theorized. Work in various political economy traditions has done a great deal of research into the connection between finance and states, but they have often ignored a crucial sector: real estate. There is also a tradition of work focusing on the interaction between real estate and states, usually concentrating on the involvement of municipalities in real estate projects. Finance is often ignored in this tradition. Moreover, this tradition has its roots in urban studies and is very micro focused, while the various political economy traditions are very macro focused. In other words, we not only need a stronger connection between finance and real estate, we also need a stronger connection between different scales: local/urban, national and global.

We here propose a new metaphor that can help us to centre attention on the connection between real estate, finance and states: the real estate/financial complex, akin the military/industrial complex. Both complexes should be seen as triangles since states are also part of the equation. This is an internationally comparative research project, with case studies in Europe, Asia and the Americas, focusing on the different scales of the real estate/financial complex, from urban projects to national structures and from firms to global markets.

This research project is made possible by Starter Grant number 313376 of the European Research Council (ERC) and additional funding by the KU Leuven / University of Leuven and is further expanded through a Joint PhD programme with Politecnico di Milano. Together, we will map the Real Estate/Financial Complex in: Belgium, Brazil, China (both Mainland and Hong Kong), France, Germany, Italy, the Netherlands, Russia, Spain, Poland, United Kingdom and United States.

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