The origins of national housing finance systems: a comparative investigation into historical variations in mortgage finance regimes

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Introduction

Mortgage loans have become a central driver of credit growth in the majority of industrially mature economies today, making up roughly 60 per cent of bank's total lending portfolios, compared to 30 per cent over a century ago (Jordà, Schularick, and Taylor 2016). Yet, while there is broad consensus that housing finance has come to play a central role in the modern macroeconomy (Schwartz and Seabrooke 2008, Jordà, Schularick, and Taylor 2016), empirical and conceptual understanding *vis-à-vis* cross-national differences in the institutional structure and form of housing finance provision, both contemporarily and historically, remains almost as unchecked as when Mark Boléat (1985: 483) lamented the 'marked lack of knowledge about housing finance systems' over three decades ago.

Housing scholars (Aalbers and Christophers 2014, Schwartz and Seabrooke 2008) have begun to examine housing finance with more rigour since the Global Financial Crisis, but much of this research lacks historical scope and focuses mainly on developments since the 1990s. Financial historians, on the other hand, have focused almost exclusively on banking and corporate finance systems (Fohlin 2012, Verdier 2002b) - and the varying institutional dynamics of *market-based* versus *bank-based* finance systems - and economists (Jordà, Schularick, and Taylor 2016, Bezemer and Samarina 2016), as well as political economists (Schwartz and Seabrooke 2008), have tended, with rare exception (Fuller 2015), to privilege the analysis of aggregate mortgage volumes, ignoring important institutional differences between housing finance systems and the historically diverse origins of housing finance system heterogeneity.

This comparative-historical study aims to address these lacunae by examining the complexion of national housing finance systems in a variety of OECD countries with a view to understanding their emergence, diffusion, and endurance through time. The paper's aims are threefold. First, we propose a historically informed typology of housing finance systems. Identifying proto-industrial housing finance institutions as important historical precursors for the institutional templates of *urban* mortgage finance that developed during the *long nineteenth century* throughout the OECD, we observe four distinct modes of housing finance provision, whose legacies are broadly recognisable today. These are, in order of the degree of credit centralisation (least to most): the *direct finance mode*; the *deposit-based finance mode*; the *bond-based finance mode*; and the *state finance mode*[1]. These modes represent more a continuum in which movement between modes over time is infrequent, rather than absolute categories, but there is also a spatial-temporal dimension to our schema.

All countries surveyed here, at one stage, relied on *direct finance* organised through families or notary networks, making this a historical point of departure for essentially all housing finance systems. Many also relied on forms of state assistance when establishing their institutionalised housing finance systems during the nineteenth century, or subsequently in response to capital scarcity brought about by wars or other severe socio-economic dislocations. Notwithstanding the patterns of informal intermediation, or the varying degrees of state support, however, we observe that the majority of OECD countries essentially developed along two trajectories of urban housing finance during the course of the *long nineteenth century*: one based on the collection of deposits, and the other based on the sale of bonds on capital markets. We find that Anglo-Saxon and North-Western European countries developed a predominantly *deposit-based* system of housing finance, whereas central continental European and Scandinavian countries developed *bond-based* systems in order to finance their urban expansions, with varying degrees of state sponsorship. While the Southern and Eastern European countries upheld the *direct finance mode* much longer than their central and northern counterparts, these countries generally developed deposit based systems as the twentieth century progressed.

Second, we build upon Gerschenkron-inspired explanatory hypotheses emanating from corporate finance literature (Verdier 2002a) in order to account for this observed housing finance system heterogeneity. Cross-national differences in institutional forms of housing finance provision that emerged in many OECD countries during the *long nineteenth century* were ultimately the products of attempts by a range of state and non-state actors to *mobilise long term capital* during periods of demographic transition, or in response to exogenous city- or region-level shocks, but not all countries adopted the same methods or means of capital mobilisation. Indeed, we note that late industrialisers tended to develop *bond-based* or even *state finance* systems during the nineteenth century establishment phase, while earlier industrialisers, and those closely connected to the English-speaking world, relied more on deposits.

In all cases surveyed here, the need to resolve impediments to *capital mobilisation*, in the face of demographic change and growing demand for mortgage credit, created the fulcrum around which class and sectoral conflicts were played out; and legal factors and relative levels of democratisation played important conditioning roles here too. Once an institutionalised housing finance system mode was established prior to 1914, we document a path-dependent development which endured for nearly a century when, during the 1970s, the territorially bound nature of these institutions' assets and liabilities became (somewhat) decoupled from the geographical regions they were originally established to serve with the advent of *financial globalisation.*

Third, we assess the significance of our typologies in light of corporate finance literature and Varieties of Capitalism (VoC) approaches to the study of financial system development. We observe that, *prima facie,* the variegated forms of housing finance that emerged throughout this period calibrate with the Gerschenkron-inspired corporate finance typologies (Zysman 1983, Verdier 2002b), and the varieties of residential capitalism typologies advanced by Schwartz & Seabrooke (2008). Countries characterised as *market-based* or *liberal* in these traditions tended to develop *specialised deposit-based institutions* in order to finance their urban expansions, whereas countries characterised as *bank-based*, or *corporatist* in Schwartz & Seabrook's groups, were more likely to develop specialised *bond-based mortgage banks*.

Despite this ostensive degree of correspondence between the spheres of housing and corporate finance, however, we observe that the logics underpinning the Gerschenkron-inspired distinction between so-called *market-based* and *bank-based* systems within corporate finance literature - adapted ideal-typically in the VoC approach - are somewhat turned on their heads when applied to national housing finance systems. So-called liberal market economies (LMEs), whose corporate finance systems have historically been characterised as *market-based*, developed deposit-based mortgage institutions, whereas the *bank-based* coordinated market economies (CMEs) are historically associated with mortgage systems based on the sale of bonds on capital markets. *Market-based* countries thus developed housing finance systems which were ostensibly *off market*, whereas the *bank-based* countries developed *bond-based* systems which were very much *market-based*.

This disjuncture, we suggest, relates to fundamental differences in the way capital was mobilised for the purpose of urban expansion between countries and regions during the nineteenth century and, significantly, by whom. We note that while the forces behind institutional differentiation in countries' housing and corporate finance systems appear to have been similar, the mechanisms and subsequent path-dependencies have created different, isolated circuits of capital, which have relevance to the present day. Indeed, we find associations between our historically *bond-based* countries and certain features of contemporary mortgage systems, such as less reliance on mortgage securitization, less mortgage market liberalisation and a stronger tendency towards to what Gregory W. Fuller terms *credit mitigation* (Fuller 2015).

The paper is organised as follows. The next section analyses corporate finance literature and VoC contributions from the fields of financial history and political economy and seeks to apply a modified version of Gerschenkron's *theory of economic backwardness* to national housing finance systems. Following this, we survey the characteristics of the aforementioned housing finance system modes and seek to explain their emergence. We then empirically explain the emergence and path-dependency of these the systems using bivariate and multivariate panel analyses. Finally, the discussion section and conclusion point to the consequences of our four modes for existing typologies and contemporary financial systems.

Financial Systems and Late Development

Various explanations have been advanced to account for the cross-national differences in financial system structure, but these have invariably been concerned with the development of corporate and not housing finance (Verdier 2002b, Fohlin 2000). Although a degree of overlap exists between these two spheres, institutionalised housing finance has historically been organised independently via specialised institutions. Nonetheless, we draw on corporate finance approaches - which encompass economic, political, and legal explanations - in order to make sense of the different developmental paths in national housing finance systems.

A first such approach draws inspiration from Alexander Gerschenkron. Gerschenkron's core insight was the notion that stages of economic development help to predict the type of financial system that would subsequently develop in the pre-WWI industrial nations (Fohlin 2016, 419). This thesis provides a purely economic assessment: the earlier a country industrialised, the more capital markets, and not banks, determined the structure and composition of corporate finance (Gerschenkron 1962, Goldsmith 1969).

While the clear-cut distinction into market-based and bank-based financial systems has recently been challenged (Fohlin 2016, Forsyth 2003), this dichotomy still features prominently in influential VoC approaches. Here, the distinction between *market-based systems* and *bank-based* corporate finance systems is one of four complementary institutional spheres, as schematised in Peter A. Hall and David Soskice (2001). In *coordinated market* *economies* (CMEs), such as Germany, universal banks had access to more *insider information* and formed close relations to companies in return for so-called *patient capital*. Conversely, in *liberal market economies* (LME), such as Britain, more anonymous short-term investors used public information in order to lend to firms on capital markets. For housing finance, the link between economic and financial development is less the credit needs of firms, but rather the capital needed to finance the rapid urbanisation that often accompanied the industrialisation process. We might thus intuitively expect countries' housing finance systems to differ also depending on the relative stage of economic development and urbanisation in which said systems developed. We elaborate on this more below.

A second approach focuses on the influence of political factors. In centralised states with fragmented deposits and a reliable lender of last resort, universal banks tended to emerge (Verdier 2002b). Information asymmetry disadvantaged centrally operating universal banks in competition with local banks under local government jurisdiction, but this was overcome with the support of centralising states, supported by central banks. Analogously, then, we might expect more centralised states to rely on the more centralised mortgage banks to expand and reconstruct their major towns and cities, with decentralised countries rather relying on the more fragmented deposits organised via specialised deposit-based institutions, such as building societies, which persisted for so long, in part, due to their local information advantages.

A third approach seeks to explain financial development in relation to relative levels of democratisation. In late-democratising countries, such as Germany, elites organised mortgage and savings banks from above, hampering the inclusion of smaller creditors into the financial system. Conversely, in earlier democracies, such as Great Britain and the USA, more democratic financial institutions such as the mutual building societies in England and the savings and loans in the USA developed from the *bottom-up* (Seabrooke 2006). Extrapolating from these three cases we might thus expect less democratic countries to rely more on centralised bond-based mortgage banks established by and for financial elites[2].

A final approach relies on legal factors. Common Law systems tended to offer better protection for investors and for smaller peripheral banking structures (La Porta, Lopez-de-Silanes, and Shleifer 2008). The role of legal institutions in the case of housing finance relates to the availability of reliable public land registries that bond-based mortgage banks could rely upon in countries with a Germanic legal tradition. These registries allowed the centrally operating mortgage banks to penetrate the local real estate markets in which local actors and deposit banks had had privileged information and access hitherto. We might thus expect Common Law countries to display less bond-based mortgage banking activity. We empirically test the expectations underpinning these four approaches below.

The literature on financial system development during the nineteenth century focuses much on the role of finance for *corporate* enterprises, and the importance of *universal* banks in mobilising capital on the European continent. We complement this research now by looking at *housing* finance as undertaken by the *specialised* housing finance institutions which emerged throughout much of Europe and the OECD during the *long nineteenth century*. Our exploratory investigation draws upon each of the explanatory traditions from corporate finance literature in order to show how financially *immature* countries with civil law traditions, lower initial levels of urbanisation and an entrenched agricultural elite were more likely to develop bond-based mortgage banks - with varying degrees of state-sponsorship - during this formative establishment phase of national housing finance systems. For now, though, we turn to the theoretical insights of Gerschenkron.

Gerschenkron's theory of economic backwardness

Gerschenkron (1962) set about the task of trying to explain *the variety of outcomes that the single historical process of industrialisation had generated as it spread across Europe* (Rosenberg 2013: 202), and adapting Gerschenkron's framework has provided fertile terrain for scholars interested in corporate finance, and economic development more generally (Verdier 2000, 2002b, Selwyn 2011). Gerschenkron did not write about housing finance systems and the specialised banking circuits in which they were historically couched. His theory does, however, have much explanatory potential and provides a lens through which to understand the differential outcomes brought about by the process of industrialisation *vis-à-vis* national housing finance systems. Our intention here is to build upon his conceptual insights regarding the spatial-temporal unevenness of financial system development in pre-WWI Europe and the OECD and to adapt these, as far as possible, in order to enhance our understanding of the genesis of national housing finance systems.

The premise of Gerschenkron's theory revolves around examining the methods by which capital was mobilised during the industrialisation process. He identifies three temporally bound stages, beginning with the first country to undergo industrialisation: Britain. Britain's accumulated private wealth and well-capitalised merchant banks were sufficient to mobilise resources for the purpose of investment in 'primitive' technology and manufacturing plants (Landes 1999: 275). Family fortunes, small loans, and the reinvestment of profits from initial investments provided the blueprint for industrial investment in Britain during her industrialisation (ibid.).

Gerschenkron observed, however, that these processes and means were not repeated *verbatim* elsewhere, noting that subsequent industrial developments in relatively more *backward* European countries relied on different methods and means of *capital mobilisation*. In the less advanced second group, investment banks were key in mobilising capital and allocating funds to industry. In the case of Germany, this process involved state-sponsorship. Countries such as France, and particularly the USA and the Netherlands, however, arguably fall somewhere between Britain and Germany, in this respect. Finally, in Gerschenkron's schema, we have the third area: areas of *extreme backwardness* (Selwyn 2011). For Gerschenkron, Russia was the most obvious example of this. Here, the private capital base was so weak that the state had to assume the central role in mobilising capital for the purpose of industrialisation. These temporally bound stages of industrial *catch-up* produced what Gerschenkron called an *orderly system of graduated deviations* from the first industrialiser (Gerschenkron 1962: 44); no two countries would mobilise capital during the industrialisation process in the same way.

Gerschenkron's *economic backwardness* thesis has the potential to offer much explanatory insight *vis-à-vis* the origin of national housing finance systems. Rapid urbanisation was a corollary of economic development and industrialisation in Europe during the *long nineteenth century* and this created imperatives to accommodate burgeoning urban populations, which, in turn, posed a *capital mobilisation* challenge. Producing housing requires labour and time, which in turn, implies upfront capital costs; often felt more acutely in the financially immature later developers with a weak domestic capital base. Our claim here, echoing that of Gerschenkron, is that these costs were borne differently in different countries, in part, based on their relative degree of economic and financial maturity.

Relating Gerschenkron's theory to our housing finance typology, we find that the early industrialisers, and those English-speaking settler societies who adopted many of the institutions and norms of Great Britain, tended to rely on specialised *deposit-based* institutions for funding the construction of urban dwellings. Countries in Gerschenkron's second mode relied on long-term financing of urban development by the establishment of more centrally organized specialised bond-issuing mortgage banks, with varying degrees of state-sponsorship. In the third mode (areas of *extreme backwardness*), the *state* tended to play a greater role in mobilising capital for the purpose of urban housing construction. Finally, those countries which failed to develop specialised housing finance institutions to any significant degree during the late-nineteenth century instead relied on a mixture of notary lending and savings and commercial banks. We embark now upon a more detailed case-by-case analysis of our four varieties of historical housing finance system.

Historical housing finance systems

Modern housing finance institutions developed mostly during the nineteenth century in Western countries as part of the overall establishment of countries' banking systems. The tradition of lending on property was by no means novel, but the displacement of personal credit relations by banks acting as financial intermediaries on a large scale was a new phenomenon. This was the era in which the traditions of informal and unmediated personal credit relations were steadily eroded and displaced by more formal credit transactions, mediated by financial institutions; and housing finance was no exception. Informal person-to-person credit networks - within families, ethnic groups, or mediated by notaries - would still play an important role, but to the extent that rapid urbanisation created capital mobilisation challenges, eroded traditional religious and ethnic informal credit networks, and made investment in urban real estate a profitable undertaking, OECD countries generally developed organised systems of mortgage intermediation.

The degree to which the institutionalisation of housing finance occurred during the nineteenth century, and the types of intermediation that developed, differed across countries. Nearly all countries developed specialised housing finance institutions whose principal function was to supply mortgages. These *special circuits* persisted for about a century, when financial liberalisation in the 1970 and 1980s led to the integration of many of these institutions into commercial banks. We now characterise and historicise our four different *ideal-type* configurations which emerged during the *long nineteenth century*, roughly comparable to

Boléat's (1985). The fourfold distinction can be summarised along two dimensions: the degree to which finance is centralised, and the degree to which finance is intermediated by institutions.

Table 1. *Varieties of historical housing finance*

We now present these chronologically, and in accordance with their increasing degree of *centralisation*.

Direct finance

Direct modes of finance (those not mediated by banks or state institutions) take a variety of different forms. They often, but not necessarily, correlate with low levels of financial development and describe the type of finance found in pre-capitalist societies, or developing countries today (Chiquier and Lea 2009: 30). Taken to extremes, direct finance might not involve any credit relation, and simply imply high down payments or levels of self-build. In German-speaking countries high down payments remain quite regular, and in countries with a tradition of building wooden single-family houses, such as Canada and Finland, high rates of self-build still exist today.

Once this subsistence mode of financing was unable to satisfy demand in urban centres during the proto-industrial era, external credit relations, based on kinship, neighbourhood or notary trust, were often entered. In such systems, capital remained mostly local in its use. Whilst legal frameworks were often established, lending was primarily based on informal, personal relations between borrower and lender, possibly involving a non-bank intermediary such as a solicitor. Such lending secured against real estate may not even have been publicly registered and even persisted in advanced mortgage environments[3].

In France, Germany and Belgium these networks were mostly organised by notaries who had privileged access to information through the legal property inscription process. In England, solicitors organised similar networks (Muthesius 1982: 20), and in Spain, mortgage cooperatives organised club-like mutual provision of mortgage credit (Vorms 2012: 186).

Another example of capital collection outside of formal banking circuits involved prospective apartment owners pooling capital, directly or via a real estate or construction firm, to build multi-story structures with 'horizontal ownership'. During the capital-scarce interwar years, this mode became popular to overcome the breakdown of capital markets, especially in southern Europe[4].

Deposit-based finance

In our second housing finance mode, *deposit-collecting* institutions are the most important. There are the *specialised deposit-based institutions* specialising in housing, such as the mutual *building societies*, and the more *universal* banking institutions such as savings banks, whose deposits are only partially used for extending mortgage credit. The same holds true for another type of universal deposit bank, namely credit cooperatives[5]. Contrary to the continental European savings banks, which were *top-down* institutions mostly founded and governed from *above* by municipalities or philanthropists, credit cooperatives were member-based, *bottom-up* institutions that collected members' deposits to provide loans, often for business purposes. Virtually all Anglo-Saxon countries developed building societies, which retained dominant market shares until the 1970s, but such institutions did not emerge on the European continent prior to the 1920s, and had limited market shares prior to the 1950s.

The *specialised deposit-based* institutions specialising in housing finance (Lea 2009: 31) go by different names in different jurisdictions: *Building Societies* in Britain and Ireland; *Savings and Loans Associations* in the USA; and *Loan Associations* in Canada. They emerged most robustly in the early industrialisers and those English-speaking countries that adopted the institutions and norms of Britain. Until the 1970s, the central feature of these institutions was that they originated and funded mortgages mainly via deposits. They did not issue bonds like the continental Europe mortgage banks, nor did they raise funds on money or capital markets in order to originate mortgages like commercial banks. More often than not, they were mutual organisations, but despite institutional similarities, there are still important differences in the development of these institutions in each of the countries where they emerged.

The world's first known *specialised deposit-based institution* was formed in Birmingham in 1775 but their numbers increased steadily henceforth throughout Britain, and later to other English-speaking countries. Until the 1840s, the sole purpose of these societies was to provide each member with a plot and a house paid for out of their collective funds and, after this objective had been achieved, they were dissolved (Boleat 1981: 1). However, from the 1840s onwards, *terminating societies* were gradually displaced by the proliferation of *permanent societies*, which accepted deposits from savers without a contractual obligation to obtain a mortgage. This is when the modern Building Society was born.

Initially, these institutions were geographically confined to the Midlands, Lancashire, and Yorkshire, but by the 1860s, there were over 750 societies in existence in London alone and 2,000 in the provinces (BSA 2015) which played an ever-increasing role in suburban development (Sheppard 1971, 158). By the 1880s, they accounted for nearly 40 per cent of the institutional mortgage market (Samy 2008, 6), and on the eve of the outbreak of the Second World War, their share of the institutional mortgage market was over 60 per cent (ibid.). Prior to the 1930s, these institutions were small and highly localised, and their members were not generally high net worth individuals; but nor were they drawn predominantly from the working classes either (Daunton 1990a: 26).

In the USA, the first *specialised deposit-based institution* (Buildings & Loans Association) is said to have been founded in Pennsylvania in 1831 (Daunton 1988: 235). They spread steadily from the Midwest and Eastern States, focusing initially on rural populations, but then increasingly on urban areas, in response to dramatic urban growth. Unlike Britain, the Buildings & Loans Associations were more *integrated into the working-class economy* (ibid.).

In New Zealand, building societies were the main source of organised housing finance, starting in the 1860s and existing mostly in the form of terminating societies until the 1960s (Davidson 1994: 109). In Canada, the loan companies or associations were special types of building societies in that they also relied on debentures to some extent, often sold in London, as additional sources of finance (Doucet and Weaver 1991: 254). In Australia, the first building societies date from the 1840s and became the most important source of private organised housing finance as the twentieth century wore on (Hill 1959).

Despite differences in clientele – broadly reflecting social and class structure – and their respective mortgage market share, a key point to note about their institutional structure is that, unlike the mortgage banks which developed on the European continent, or the commercial and non-specialist savings banks throughout Europe and the USA during this period, the inflow of funds to the *specialist deposit-based institutions* constituted *special circuits of capital*, which, although not completely isolated from prevailing capital market trends, were, to some extent, *hived off* from competition in capital markets. These institutions were more likely to lend to owner-occupiers (Samy 2008, Rodger 2001, 272, Daunton 1990b, 26), than the continental European mortgage banks and as the market share of these institutions grew, so too did homeownership.

An interesting question to pose is why these institutions came to increase their respective market shares sizably in *Anglo-Saxon* countries during the second half of the nineteenth century, yet featured little in continental European settings prior to the 1950s. These *institutions* may have been more likely to lend to prospective homeowners than the bond-based mortgage banks, but we should not think of their emergence in terms of some cultural predilection to home ownership that was absent on the European continent. More, it was to do with the decentralised and localised nature of their lending, and the overall domestic capital base within countries preceding their emergence. Real per capita income was higher in Britain and the USA than on the European continent in the first half of the nineteenth century (with the exception of the Low Countries: see: Maddison-Project, 2013), and this meant that, to the extent that existing capital resources could be tapped into, no particular need for a specialised bond-based mortgage bank emerged (Schulte 1918). This provides one explanation as to why co-called *market-based* countries developed housing finance systems that were *deposit-based* and not capital market based.

One reason for the belated rise of *specialised deposit-based institutions* on the European continent lies in the broad network of non-specialised savings institutions already in place on the continent. The continental European country most characterised by a deposit-regime based on these non-specialised deposit banks was Belgium, which mainly relied on public and private savings banks and life insurances for its institutionalised housing finance (Schulte 1918). Even though mortgage bonds existed by name, they were *de jure* only obligations or debentures issued by savings banks. The bank, not the property, backed these obligations and they were not traded on stock exchanges, unlike in the *bond-based* countries. As they were not favoured by the tax system when compared with savings accounts, they did not become a central part of the finance system here (van Put 1966).

Bond-based system

The third mode of housing finance system in our schema relies on the sale of mortgage bonds in order to originate mortgages, imitating government and railroad securities. These compete on capital markets directly with other types of securities - mostly domestically, but also abroad depending on the degree of financial maturity within a given country - and proliferated in the urban centres of the *later-developers* during their nineteenth century urban expansions. These, unlike the *specialised deposit-based institutions*, were well integrated into the overall capital market.

The *bond-based* mortgage banks spread from the East of Prussia throughout the continent. These institutions either existed in the form of centralised state monopolies or in the pluralist form of multiple private banks or mutual associations. In all cases, however, this capital market-based mode of housing finance was much more centralised than the deposit-based type[6]. On the demand side, insurance companies were important investors in mortgage bonds (Harold 2013). In general, countries' mortgage bond circulation per capita is a good indicator for the realisation of this type of finance[7].

Mortgage banks emerged in reaction to credit dearth following wars, economic modernisation pressures in agriculture, or catastrophes. Though often set up to be geared towards lending for agricultural purposes, those banks themselves or newly established banks imitating their design soon redirected their business towards the growing cities and urban rental real estate (Martens 1988). They preferred this type of real estate because evaluation of agricultural and non-standardised single-family housing property was more expensive and investments in them were deemed riskier. Their central location, often without branch networks, meant lower transaction and information costs in the case of urban mortgage lending. They were thus closer to other banks and securities markets through which their bonds were traded than the *specialised deposit-based institutions*. Much like stock market investors in corporate finance, though, they suffered from information asymmetries in peripheral markets, where local deposit lenders had advantages.

Legally, mortgage banks were more likely to emerge when a public land registry ensured that the mortgagor or bank could be sure to rank first among the creditors in case of foreclosure. This is one of the legal reasons why Common Law countries but also continental European countries such as Belgium developed bond-based mortgage banking to a much lesser degree (Kreimer 1999). Their larger sources of capital allowed for larger mortgages, usually with higher interest-rates - in the absence of subsidisation - as mortgage bonds had to compete with government and other bonds on capital markets (Glasz 1935). This privileged larger mortgagees as clients, linking mortgage banks to the financing of a particular type of housing stock, i.e. mostly the building of rental flats and tenements.

The origins of modern mortgage banks reach back to the aftermath of the Seven Years' War. Frederick the Great obliged local landholders to enter associations of debtors, *Landschaften*, in which both the individual properties and all landholders mutually backed a mortgage bond that the individual debtor himself had to sell in order to receive capital (Wandschneider 2013: 11). Both conservative lending standards and trust in the monitoring of the local landholders enabled the holders of larger estates to go into considerable mortgage debt, whereas small landowners were usually discriminated against. It also meant the creation of an organised credit system in a time when personal, informal credits were still the most common form, and it established a circuit of finance for largely agricultural purposes. These institutions thrived where regional noblemen with large property holdings had sufficient peer-solidarity to enter mutual guarantees. They, therefore, hardly arose in areas where property holdings were fragmented among many smaller owners such as in the German Rhineland, the Low Countries, or many settler colonies.

Landschaften tended to emerge in feudally backward areas as means for noblemen to cope with the credit burdens of modernisations. Their corresponding institutions in more democratic agricultural regions such as the Prussian Rhineland were member-based credit cooperatives (Schlütz 2013). The Prussian *Landschaften* maintained roughly 20 per cent of the mortgage market, dominated in rural areas, and served as an example for Scandinavian and Eastern European mortgage banks (Stöcker 1998).

In Denmark, the development of specialised bond-issuing mortgage banks was, much like developments in Prussia, linked to crisis where, following the Great Fire of Copenhagen in 1795, one in four houses were either damaged or destroyed. Steffen Andersen (2011: 185) notes that, by the early twentieth century, Denmark had one of the largest markets for mortgage bonds in the world, with outstanding mortgage bonds amounting to 71 % of GDP in 1915, but that ‘no simple explanation seems to offer itself for the ... size and growth of the … Danish mortgage system’ (*ibid*.).

Across the Øresund strait in Sweden, the first bond issuing rural mortgage association (*Landhypoteksföreningen*) developed in the southernmost region of Skåne in 1836. Inspired by the Prussian mortgage bank model, and emerging out of the pressing need to extend credit to Sweden’s burgeoning rural communities, the *Skånska hypoteksföreningen* - established in Lund - provided the blueprint for similar associations which would spread throughout Sweden - mainly in central and southern regions - during the following two decades. Unlike in Prussia, however, these institutions were not *top-down* but formed as *bottom-up* initiatives by rural property owners.

The nineteenth century liberal adaptation of the *Landschaften* in the more ‘advanced’ parts of Europe was the model of the joint-stock mortgage bank, where stock capital reserves and individual properties served as collateral for the mortgage bonds issued. After first attempts in France, Belgium and Germany in the first half of the nineteenth century, the French *Crédit Foncier* was founded and soon turned into the *de facto* state monopoly on the sale of mortgage bonds in 1852. Designed as a private stock bank, the *Crédit foncier* was intended to issue mortgages to credit seeking farmers (as an imperial gesture to regime-supporting peasants) to be refinanced by the sale of mortgage bonds on the Parisian capital market (Allinne 1984). However, in reality, it soon turned to the more profitable urban real estate market and financed large parts of the *Haussmannisation* of Paris and Provincial towns (Vaz 2009).

This form of joint stock mortgage bank became the model for other European countries, either with state monopolies as in France, Portugal (Companhia Geral do Crédito Predial Portugès, 1864), partially Italy (*Istituto Italiano di Credito Fondiario*, 1866), Spain (Banco Hipotecario, 1875), Iceland (1900, Veðdeild Landsbanka Íslands) and Greece (1927), or in form of a multitude of private banks such as Germany, Austria, Switzerland, Denmark and the Netherlands. Many of these banks were still founded with the reform idea to support agricultural credit needs, but the growing city extensions and renovations in times of growing urbanisation meant that banks turned very quickly to urban real estate, even in countries such as Spain or France, where urbanisation was slower and the government had complete control over its monopoly mortgage bank (Lacomba and Ruiz 1990). When international competition in agriculture began to depress agricultural land prices in the 1870s, mortgage banks turned even more to cities.

Figure 1. *Aggregate share of mortgage loans outstanding, broken down by type of lender in a selection of countries, c. 1900-1910*

Sources: Cf. (Blackwell and Kohl 2017)

Figure 1 depicts the share of mortgage credit outstanding, broken down by type of lending institution - i.e. those who rely on the issuance of bonds to extend mortgage credit and those who rely on deposits. Most of the deposit-based countries are clearly recognisable from this Figure, but the countries hitherto described as *bond-based* have, to varying degrees, an institutional housing finance system based on a combination of *bond-based* and *deposit-based* lending. Our decision to delineate a *bond-based* typology is based on the fact that, although most European bond-based mortgage banks were initially established to serve the needs of agrarian communities, by the late-nineteenth century, lending from these institutions was overwhelmingly focused on *urban* areas, where they became the dominant providers of mortgages.[8] Therefore, these data, at the national level, underplay the significance of bond-based lending at the *urban level*. As our analysis focuses on the urban context, we feel that this typological distinction is appropriate.

As Figure 1 attests, mortgage banks did not develop to any major extent in north-western Europe and former Anglo-Saxon settler colonies. Though the common law related absence of a land-registry equivalent of the German *Grundbuch* is certainly a background condition, it does not explain all cases, as Belgium developed a low number of mortgage banks, despite legal difficulties (Schulte 1918). The Netherlands is a special case too because even though they developed many mortgage banks, their overall market share was relatively low (Eberstadt 1914). Mortgage banks in the Netherlands, then, were much more regional in nature and their absolute size and average loan size was significantly lower than in Germany (ibid.).

The 1900-era world of bond-based mortgage finance, then, lies in the East of the German Empire and radiates both to northern, eastern and western regions, with early adopters of mortgage banks generally having higher levels of mortgage bond circulation per capita. Figure 2 displays the 243 European mortgage banks that existed around WWI, differentiated by type. The historical centre for the mutual and public type are the German states, those attached to savings banks existed in the Alpine region, while the private-stock-bank type started in more liberal Western Europe. Mortgage banks, however, did not generally spread to the Anglo-Saxon countries and, thus, the ideal-type deposit-collecting countries share the absence of any bond circulation, while countries with direct finance dominance in southern Europe display relatively low levels.

Figure 2. *Map of bond circulation (francs) p.c. 1898 and mortgage banks in Europe*

Sources: Illustration of (Hecht 1900)

The heyday of bond-based finance was certainly before WWI when the major urbanisation waves created a demand shock in late-urbanising European countries. Ever since this era of phenomenal industrial and urban growth, however, their relative importance has declined. The post-WWI inflation in many countries, rent controls for buildings financed by mortgage banks and the breakdown of (international) capital markets more generally led to a decline of private and a rise of state-sponsored finance for housing construction. Figure 3 shows this decline, but simultaneously shows the persistence of the bond-based systems over time: once a country introduced such a system, it generally endured throughout the following century.

Figure 3. *Time-series of mortgage-bank share of all financial assets*

Source: (Goldsmith 1969)

State finance

The *state finance* mode is the most centralised of all our housing finance modes present above. This mode is the least unambiguous in our fourfold typology, however, and can exist within both *deposit-based* and *bond-based* systems. States can pool resources via a variety of channels; from centralised state savings and bank capital, to mandatory state pension funds, treasury funds, or even by the issuance of specialised housing bonds. Indeed, sometimes the centralised mortgage banks were used for this purpose; for example, when the French *Crédit foncier* was charged with lending state subsidies to mortgagees. Examples of this type are the Belgian *Caisse Générale d'épargne et de retraite,* which centralised savings banks and pension deposits to redirect them to small mortgages (Schulte 1918), or the French equivalents *Caisse nationale des retraites et de la veillesse* and the *Caisse des dépôts et consignations*. Another example is the nationalisation of life insurances in Italy in 1911 as *Istituto Nazionale delle Assicurazioni*, later used for state-led housing construction (Piluso 2012). In many countries, the early social security funds served as long-term capital for financing government-subsidised housing construction, often directed toward homeowners. While some countries relied on existing networks of non-profit housing associations, others used municipal institutions or built up central state institutions.

Two distinct phases of state-driven housing finance can be observed. The first occurred in the nineteenth century during the establishment phase of modern housing finance systems, predominantly in the later-developers whose industrial and urban growth spurts occurred in the context of relative low financial maturity, or what Gerschenkron termed *economic backwardness*. Norway during the nineteenth century provides a good example of the state finance mode during the *establishment phase*. Norway's weak domestic capital base, meant that *Kongeriget Norges Hypothekbank* (*Mortgage Bank* of the Kingdom of *Norway*), established in 1852, played a central role in long-term lending for both urban and rural housing construction (Lange 1994: 791), but this story was played out across the Norwegian capital market. As Even Lange notes, 'One reason for the predominance of public sector banking institutions was their superior ability to mobilize foreign capital for domestic purposes'. Lange further comments that, 'This way of channelling foreign capital to Norway *was open only to the public sector, as private agents had no comparable credit standing abroad*' (*ibid*. 792). Thus Norway's economic immaturity was a barrier to private capital market formation. In the absence of private actors, the state played a central role in mobilising capital for urban housing production.

Subsequently, such developments repeat in countries like Greece and Iceland (*Landsbanki*) and even later in East Asia. Greece reacted to the massive inflow of new populations from Asia Minor in the 1920s with the creation of a national mortgage bank, later joined by a national housing bank (Leontidou 1990). In Asia, Japan created the *Hypothec Bank of Japan* at first as a debenture-issuing institution in 1896, although, contrary to its name, its primary lending focus was still agriculture, manufacturing and city corporations (Tamaki 2005: 98). It became the trendsetter for a state-led system of special banks that also led to the Housing Finance Corporation in 1950. Still in 1995, the public housing finance share amounted to 42.3% (Hayakawa 2002: 25)[9].

State involvement in national housing finance systems, however, was not confined to the pre-1914 period; this can be seen merely as an establishment phase. The second phase of state finance was realised strongest cross-nationally between the 1920s and 1970s, where we witness an unprecedented degree of state involvement in housing and housing finance systems in the majority of OECD countries, with even the most advanced countries providing state support to their housing finance systems. In this respect, *housing* can be seen as another example of the rise and fall of state banking institutions (Verdier 2000). The impacts of these varying institutional constellations of state-sponsored housing finance, are thus more indeterminate, and conditioned by multiple factors such as the level of organised credit market development and the pre-existing institutional nexus of housing finance provision.

A useful metric to appreciate the development of state housing finance is the percentage of newly constructed units that is due to private constructions. Even though these might be partially state-supported in some countries, through fiscal exemptions or direct building subsidies, the main source of capital is principally private, when compared to direct state institutions or housing associations as the constructing bodies. Figure 4 reveals clearly the twofold realisation of the state finance type: most countries reach all-time lows of private construction after the wars, even in countries with limited housing welfare such as the USA or Portugal. From the 1950s onwards, however, private construction gradually begun to displace state construction throughout the OECD.

Figure 4. *Share of private construction*

Sources: National Statistical Offices

Exploring explanatory hypotheses

During the course of the *long nineteenth century*, industrialising countries developed systems of urban housing finance, whose basic pillars are still recognisable today. However, despite undergoing similar historical processes, countries developed a variety of housing finance systems. While most countries moved from a direct finance mode to some degree of institutionalised banking finance, and while most countries shared a high degree of state finance in the 1920-1970 period, these similar trends hide systematic structural differences *between* countries; notably the extent to which they relied on either deposit- or bond-based mortgage finance. Now we explore the extent to which we can quantify and generalise the single-case country evidence outlined above. First, we try to account for the *emergence* of bond-based mortgage banking before WWI. We limit ourselves to correlational analyses, given data availability, a maximum of 15 country cases and a non-normal dependent variable. Second, we try to account for the path-dependence by regressing a pre-WWI mortgage-banking variable on a time series of mortgage bank-share *development*, controlling for factors influencing financial systems.

The emergence and growth of mortgage banks can be documented in most countries before WWI as the share of mortgage bond finance of all financial assets (adapted from: Goldsmith 1969). We choose this measure for reasons of data availability and robust correlation with alternative measures, but also because it controls for the general growth of finance that occurred in virtually all countries. While the absolute mortgage bank volumes increased everywhere, their share of all financial assets displays a falling tendency (see Figure 3). This measure of outstanding mortgages also has the advantage of accounting for the accumulation of mortgages of previous years and therefore goes beyond a single year snapshot. To account for the pre-WWI mortgage bank share, we use the 1900 level and correlate it with our most important explanatory variable: GDP per capita in 1870. While the overall linear correlation is weak, the following scatterplot reveals that this is due its parabolic form. This inverted U-shape for economic development and overall assets of financial institutions has been found in corporate finance literature (Fohlin 2000) and is replicated here for mortgage finance. The scatterplot allows us to distinguish the *moderately backward* countries with bond-based and/or state-finance from the two other groups during the late nineteenth century and into the early twentieth century: we can see that the *deposit-based* countries are all economically advanced (as per their high per capita GDP), whereas the *direct finance* countries are least developed. Between these two distinct modes, we can observe overlap between the *bond-*

based and *state finance* countries; the areas that would be categorised as *moderately* and *extremely backward* in our Gerschenkron-inspired typology. This is simply because we are unable to disaggregate bonds issued by private or semi-private institutions from those issues by state bodies in such an analysis.

Figure 5. *Mortgage Bond Share of Financial Assets (1900) & per capita GDP (1870)*

Sources: (Goldsmith 1969, Maddison-Project 2013, Andersen 2011)

Besides economic development, legal factors influence financial development, which is also reflected in the above clusters. Lacking a public land registry that mortgage banks relied upon elsewhere, Common Law countries did not develop bond-based mortgage banks before WWI to any major degree, while countries influenced by the French Civil Code did so, but to a lesser extent than countries of German or Scandinavian legal origin, using La Porta's classification of legal systems (2008). Political factors, in turn, can be operationalised by the latent democracy index that factorises seven existing democracy measures (Földvári 2014). The higher this metric variable, the more developed a country's democratic institutions. The previous section made clear that mortgage banks emerged first and foremost in countries with 'backward' democratic development as a means to mobilise capital *from above*. The correlation between the democracy index of 1900 and the mortgage variable turns out to be significantly (p=0.04) negative (-0.56) for the 14 countries covered.

Across all cases examined here no correlation could be observed between the administrative centralisation of a country (Verdier 2002b, 29) and its mode of housing finance. Interestingly, however, within bond-based housing finance systems it appears to play a role, with more centralised states such as France and Spain having only one centralised mortgage bank, and the more decentralised states such as Germany or Switzerland having multiple.

While these associations use variables from debates in historical corporate finance, the role of urbanisation is more specific to the housing finance case, as we hypothesised that late-urbanising countries were in particular need of large amounts of capital and mortgage banks were a means to accommodate this need. Correspondingly, a correlation of countries' level of urbanisation measured by the per capita population in cities with 100.000 (alternative: 50.000) inhabitants (Banks and Wilson 2013) with the mortgage variable yields a negative -

0.35 (alternative: -0.41) correlation, yet with low significance levels. Using the 1870-1900 urbanisation growth difference as a "spurt variable" produces an expected positive correlation, but also with low strength and significance. While these factors were important in the emergence mortgage banks, however, their continuity is a different matter.

In order to test whether housing finance *history matters*, we use the 1880 mortgage bank share levels as a proxy for the mortgage regime developed in order to explain twentieth century developments of mortgage bank shares. Figure 3 (above) implies a continuity of the country rankings in mortgage bank shares over time, and the autocorrelation with the pooled data points up to the 1960s is indeed on average 0.92 for our 17 countries. We could circumvent the non-normality and strong skewness of this dependent variable - remember that many countries never came to develop these types of banks - through a logit regression on the binary variable 'mortgage banks (yes/no)'. However, there are hardly cases that moved from 0 to 1 (only the very late developers) and no case that moved from 1 to 0, which just confirms the correlational findings and is not sufficient variation.

The alternative we choose is a panel regression on the *mortgage bank countries only*, using their logarithmised mortgage bank share as dependent variable to normalise it (Shapiro-test p-value of 0.09). This permits us to see additionally whether the nineteenth century mortgage bank-share levels also determine their twentieth century *levels* and not just the *existence* (or not) of mortgage banks. To do so, we control for various factors which are typically used to account for the development of financial systems because they could confound the historical influence of mortgage systems over the period of 83 years. Thus, the growth of finance in countries has been explained by GDP (Goldsmith 1969), by the rise of democratic institutions (Calomiris and Haber 2014) and by the need of states to organise their state debt. We therefore include GDP per capita (Maddison-Project 2013), the above democracy variable, and state debt (Reinhart and Rogoff 2010) as control variables. We also use the share of big-city population (100.000 inhabitants), as this might drive mortgage needs. As our main explanatory variable, we use countries' 1880 mortgage-bank-share levels as a time-invariant variable to explore path-dependence. The remaining unbalanced panel contains only 11 European countries over time and, as such, this analysis can only be read as exploratory. As we are more interested in cross-country differences than the overall declining trends over time, we estimate a between model. In a first step, we provide estimates using the four typical control variables. The second step introduces then the time-invariant variable on the 1880 mortgage level.

Table 2. *Between-model on log. mortgage-bank-shares within bond-based regimes, 69 country-years*

The first model reveals that, at low levels of significance, democracy, urban growth and state debt growth impact negatively on the mortgage bank-share, while GDP has a positive influence. This suggests that the factors that brought mortgage bank systems into being do not have to be the same that determine their subsequent course of development. The explained variance is at 21.6%. More importantly, the inclusion of the path-dependency variable in the second model makes this variable the only one that is positively significant. The explained variance also increases to 38.6%. This is one support for the idea that our historical account mattered for subsequent developments. The more countries relied on mortgage banks in 1880, the more they tended to rely on them during the course of the ensuing century. Given the nature of the available data, however, these findings have to be considered exploratory.

Discussion

This section seeks to develop the theoretical and empirical insights from the previous sections and explore to what extent we can relate our systematic and historical typological schema to two dominant typological traditions within the field of political economy: the VoC-related distinction of market- versus bank-based corporate finance, and the more recent residential VoC approach.

In our fourfold typology, we suggest that countries can be grouped into different housing finance systems depending on the principal source of urban-oriented mortgage credit. The country case studies above reveal that this systematic typology, presented in Table 1, has a temporal dimension, with direct and deposit-finance preceding the emergence of bond-based and state finance. This dimension also overlaps with the degree of capital centralisation of the systems. The previous section added an explanatory dimension to this typology: the later a country's economic (and urban) development, the more it relied on the more centralised bond- and state finance systems. Once established, these modes of housing finance developed along path-dependent trajectories. This sequence of housing finance development resonates with much of the Gerschenkronian stage-theory that ties economic to financial development. Originally applicable to the sphere of corporate finance, our analysis shows that the sequence of economic (and urban) development, in combination with legal and political factors, can also account for the development of housing finance institutions. It thus appears that there is a common cause behind two otherwise independent spheres within modern financial systems, namely housing and corporate finance. Table 3 offers a synopsis of our housing finance typology, anchored in the Gerschenkronian stages of industrial development and juxtaposed to simultaneous developments in corporate finance.

Table 3. *Industrial Development, Capital Mobilisation, and Housing Finance*

Sources: Adapted from Gerschenkron (1962); (Selwyn 2014: 86); and Landes (1999)

Although the differentiated trajectories of corporate and housing finance share a common cause and are components of the same national financial system, their developments appear essentially different and autonomous. A comparison of the last two columns in Table 3 suggests this. Countries with universal banking in corporate finance tended to develop considerable bond-based mortgage banking sectors, while so-called market-based mortgage countries relied more on deposits. Our mortgage-asset index shows a positive correlation with Fohlin's index of universal banking of $r = .32$ and a negative correlation of $r = -.40$ with the stock market capitalisation per GDP in 1913 (Rajan and Zingales 2003). Note that these correlations are based on continuous variables and thus do not hinge on the contested question of which country belongs to which discrete type. As both spheres of finance are largely institutionally independent, we interpret the correlations as spurious: there is no causal connection between the two spheres of finance but they both result from a common cause - late development - which had institutionally differentiated effects in both spheres.

Rather than spill over or complementarity between these two spheres of finance in the respective country groupings, then, they seem to have co-evolved along two distinctly path-dependent trajectories. These findings turn some tenets of the VoC approach upside down because the sphere of housing finance seems to follow a different institutional logic from the sphere of corporate finance. While LMEs might have relied on capital markets in the sphere of corporate finance, their principal source of housing finance came traditionally from deposits, which were very much *off market*. Conversely, CMEs, while relying on banks to finance companies, developed mortgage bonds sold on capital markets to build large parts of their urban housing stock. This latter method of capital mobilisation, then, was very much integrated within the dynamics of capital markets.

In our schema, countries' historically rooted housing finance systems can be characterized by their principal institutional source of mortgage credit, whereas existing mortgage typologies rely mainly on the relative size (Schwartz and Seabrooke 2008). When correlating mortgage debt to GDP (Jordà, Schularick, and Taylor 2017) with the share of bond-based mortgage banking between 1880 and 1963, we find a positive but weakly fitting correlation. In fact, some bond-based countries such as Denmark or Switzerland have had historically the highest levels of mortgage indebtedness in relation to GDP. But as deposit-based countries, particularly in more recent periods, have also accumulated much mortgage debt, it would seem that there are at least two functionally alternative institutional means of generating large volumes of private mortgage debt in modern housing finance systems. Or, to put it another way, there have been two alternative paths to mobilising housing capital by transforming shorter-term deposits into the long-term supply of mortgage capital in OECD countries (Schwartz 2014).

Although our typologies can be seen to correspond to Schwartz & Seabrooke (2009) to some extent (direct finance = familial, deposits = liberal, bonds = corporatist, statist-developmentalist = state-finance), in terms of outcomes, the implications of our typologies are fundamentally different and even challenge some of the causal mechanisms Schwartz & Seabrooke identify. We believe that the associations they observe between housing tenure, welfare and mortgage debt within OECD countries are largely ephemeral, and not causally significant over the long run of housing finance system development. There are several reasons for this disjuncture between our conclusions and theirs. First, their study is interested in neither the *type* nor source of housing finance within each of their country cases: they assess *financial liberalisation* only in relation to levels of mortgage securitisation and aggregate levels of mortgage debt, ignoring covered bonds. Second, their typology is based on housing tenure and relative levels of household indebtedness and how these ostensibly interact with the structure of welfare states. Third, the residential VoC framework is born from an analysis of a very specific timeframe (the average of two years: 1992 and 2002). Because of the volatile nature of mortgage *volumes,* which in turn follow volatile house price movements, we believe that our institutional typology has been shown to be much more stable over the long run.

Finally, contemporary housing finance systems have often been characterised by their degree of *liberalisation* (Fuller 2015, Schwartz and Seabrooke 2008). Fuller convincingly observes an association between liberal mortgage regulation and higher volumes of mortgage debt since about 2000, but leaves the question of where these regulatory traditions come from largely unanswered. One possible hypothesis could be that whatever historical housing finance system was first established in a country also determined (in part) its subsequent regulatory style. As support - and disregarding the general outlier, Denmark - we find a significant negative correlation (-0.54 at 1% significance) of 21 countries' historical bond circulation in 1900 and their degree of *liberalisation* in the 2000s, using Fuller's credit approach index. Apparently, then, the historical bond-based systems left a legacy of more conservative lending standards, which have regulatory impacts even today.

Conclusion

As revolutionary as they may seem, recent cross-national housing finance system developments still appear to contain palimpsests of a more distant past. Even though the historically bond-based and deposit-based finance systems have taken two alternative routes to the high levels of private mortgage indebtedness we witness today, the historical market share of these different institutions in countries' mortgage portfolios, their regulatory frameworks, and the urban buildings they helped to finance, still resonate today. The heterogeneity we observe originated in the *long nineteenth century* and was brought about by the relative degrees of economic and urban 'backwardness', in combination with legal and political factors.

Whilst we have demonstrated that housing finance systems exhibit path-dependent tendencies, we have also acknowledged that these systems are not immutable. Similarly to corporate finance systems, there has been a certain degree of convergence and institutional overlap in national housing finance systems. For instance, whereas historically bond-based countries gradually began to introduce specialised deposit-based institutions, such as the continental type of savings and loan associations during the 1920s, the securitisation revolution in certain deposit-based countries (particularly in the USA) has created a particular kind of bond finance; although, significantly, residential mortgage back securities, unlike conventional bonds, are *off balance sheet*. Further, a development that has affected nearly all of the formerly specialised banks analysed in this paper, is that they have become integrated parts of other banking structures, with commercial and universal banks having made major inroads into the mortgage business since the 1970s in most OECD countries.

Over time, then, the four-fold typology we propose here needs more nuance than can be achieved in one paper seeking to understand the emergence and subsequent diffusion of national housing finance systems. But also within space, the analysis at the level of nation states needs to be complemented by more fine-grained analyses of urban and regional mortgage markets. Particularly in federal states where several mortgage law jurisdictions co-existed until the early twentieth century. While this paper has mainly focused on the causal side of housing finance systems, the consequences of these various modes of housing finance system needs more research. The classical consequence studied in corporate finance research is economic growth: *what type of finance drives growth?* The consequence of mortgage finance is, obviously, housing. How housing form and tenure are affected by housing finance are thus natural follow-up questions. The consequences for mortgage volumes, house prices and mortgage interest rates and financial innovation also requires further study.

Interestingly, the development of housing finance systems in the nineteenth century still appears to be associated with the significant contemporary changes in housing finance: the degree to which countries developed (off balance sheet) securitization. Countries which did not develop a system of bond-based mortgage banking extensively during the nineteenth century, and who instead relied on deposits or direct finance, have tended to opt for securitisation as a strategy of mortgage origination, whereas countries that developed a bond-based housing finance system over the course of the nineteenth century are more likely to remain bond-based today. Indeed, using our 1900 mortgage bank share measure and conducting a simple bivariate correlation between this and the pooled levels of RMBS outstanding since the financial crisis (2008 to 2014) in 11 country cases produces a strong negative correlation ($r = -0.708$, significant at 0.01). Thus, the more a country was bond-based in 1900, the less likely it was to produce a housing finance system reliant on mortgage backed securities. As these remain firmly on banks' balance sheets these bonds proved to be significantly lower risk during the Global Financial Crisis. That the origins and subsequent developments in national housing finance systems over a century and a half ago could be linked to financial stability today, should intrigue and encourage scholars to take the historical institutional development of housing finance more seriously.

Endnotes

[1] Adapted from Boléat (1985) and Lea (2009), and generalised from a two-country comparison in Kohl (2015).

[2] Polillo recently refined the link between democracy and financial inclusion by using a financial elite argument: if liberal bankers ("wildcats") prevail over conservatives, more permissive lending practices can ensue (Polillo 2013). More within-country depth is needed, however, to include this elite dimension in the analysis of mortgage systems.

[3] "Estimates suggest that in 1900 traditional intermediaries were doing between 32 and 65 per cent of mortgage lending in Britain, Germany, and the United States" (Hoffman, Postel-Vinay, and Rosenthal 2015).

[4] In Scandinavian countries, the early cooperative housing associations served a similar purpose prior to the First World War (Sørvoll 2013: 106), whereas Central European countries rather relied on municipal and non-profit rental housing (Kuhn 2007).

[5] For example, credit unions and mutual savings banks, which followed the ideas of Schulze-Delitzsch and Raiffeisen.

[6] In cases such as Switzerland, mortgage banks also have a small share of mortgages based on centralised deposits, but legislators were usually inclined to separate these different finance mechanisms.

[7] Alternatively, the mortgage bank assets as share of all financial assets, whose 1900 level correlates at $r = 0.94$ with 1898 bond circulation per capita. The latter also correlates at 0.76 with a third alternative measure: the pre-WWI bond-based mortgages as share of all mortgages financed by banks.

[8] Whilst it is difficult to assess exactly how much urban mortgage lending was financed by mortgage banks, the mortgage-bank lending share backed by *urban* property became dominant during the early stages of the twentieth century (even up to 100 per cent in some town and cities). (see for country-specific sources: Blackwell and Kohl 2017).

[9] In other Asian economies, state involvement through developmental banks was even more staggering, however largely financed through the Treasuries, or centralised savings in state savings banks (Agus, Doling, and Lee 2002): Singapore established its Housing and Development Board in 1960, for housing and even the construction of complete towns, amounting to over 80% of all housing finance; In Hong Kong, the Hong Kong Housing Authority (1954) created a rental and owner-occupier stock amounting to 55% of all housing stock in 1999, while only 7% of all units constructed in Taiwan between 1955-99 were with private money only; The Korean Housing Bank (1969), also a bond emitter, and the National Housing Fund accounted for 32,2% and 48,1%, respectively, of all housing finance by 1996.

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