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Capital market development over the long run: The portfolios of UK life assurers over two centuries

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CAPITAL MARKET DEVELOPMENT OVER THE LONG RUN: THE PORTFOLIOS OF UK LIFE ASSURERS OVER TWO CENTURIES

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Capital Market Development over the Long Run: The Portfolios of UK Life Assurers over Two Centuries

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Abstract

What shapes and drives capital market development over the long run? In this paper, using the asset portfolios of UK life assurers, we examine the role of regulation, historical contingency and political reactions to events on the long-run development of the UK capital market. Government response to events such as war, hegemony-secured peace, and the wider macroeconomic environment was the ultimate determinant of major changes in asset allocation since 1800. Furthermore, when we compare the UK with the United States, we find that regulation played a limited role in shaping the asset portfolios of the UK life assurance industry.

JEL Classification: G11, G22, N20, N40

Keywords: Capital markets, asset management, life assurance, mutuals, mergers, regulation, United Kingdom, United States

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1. Introduction

An important driver of economic growth is capital market development. Well-functioning capital markets direct funds from those who have them but have no productive opportunities to those who lack the funds to finance productive opportunities. They also help allocate risk across time and space. Therefore, a pertinent question for economists is: what affects and shapes the development of capital markets over the long run? For some scholars, the answer is to be seen in deep-seated historical factors which persist over time, e.g., legal origins (La Porta et al., 1998, 2008), a society's historical religion (Stulz and Williamson, 2003), or a society's prior decision about the role of the State and protection from expropriation (Mahoney, 2001). For others, political economy, and how political regimes respond to major events such as wars, plagues, and economic depressions, is the most important determinant of financial development over time (Roe, 2006; Musacchio, 2008; Coyle and Turner, 2013). To what extent have these two - deep-seated historical factors or political economy - played a role in the UK's capital market, which has arguably been the most important capital market in the world over the past two centuries?

Investor demand and the supply of capital are critical factors in the success of capital markets (Albuquerque de Sousa et al., 2016). While previous studies have assessed long-run capital market development by examining changes in the overall size of markets, we examine one of the most important channels of supply of capital to markets over the long run – life assurance companies. Life assurance companies have a long history in the UK, stretching back more than 300 years. To perform their societally important function of pooling mortality risk, insurance companies have invested their premium income into capital markets. The sheer size of British insurance companies means that they have always played a very important role in

capital markets. Indeed, until the late 1970s, they were the largest grouping of institutional investors in the UK (Alborn 2002, ONS 2020).[1]

In this paper, we analyse the asset portfolios of these important asset managers over the past two centuries. In particular, we explore the role of historical contingency and political reactions to events in shaping and driving changes in portfolio composition over time. To this end, we consider how the following affected portfolio composition: the supply of financial assets, regulation, the general economic environment, firm-specific characteristics, and a major structural change in the insurance industry in the form of the merger movement at the turn of the twentieth century. In order to conduct this analysis, we have compiled large amounts of asset composition data from insurance archives, government publications and industry reports.

Our results reveal that there have been major changes to the composition of life assurance company assets over the last 200 years. One major change has been the switch away from government debt and relatively unmarketable assets, such as mortgages, towards financial assets traded in nascent capital markets. This switch had been largely completed by the 1920s. Notably, British government debt has at times been the largest asset class, but these occasions have coincided with abundant supplies of government debt having been issued to fight wars. Another major change has been the switch away from fixed-income securities towards equity, which started as far back as the 1890s, but accelerated rapidly after the 1920s.

What were the main drivers of changes in the asset portfolios of life assurance companies? The supply of different types of financial assets certainly played a major role in the nineteenth century, with the development of the share, debenture, and foreign government debt markets. The availability of these new markets expanded the options for portfolio managers and a sharp switch away from government debt during the *Pax Britannica* period

[1] By 1970, the assets of the insurance sector even exceeded the total assets of the UK banking system (Sheppard, 1971, pp.116-7, 158-8; Ryan, 1973).

facilitated investment in these assets by life assurance companies. In the twentieth century, changes in the wider economic environment appear to have been the main determinant of the changes in portfolios of life assurance companies. The wartime finance needs of governments and the resulting inflation, allied to a healthy equity risk premium, resulted in a move away from government bonds and towards equity. Overall, these findings suggest that historical contingency and political reactions to events played a very important role in the development of Britain's capital markets.

Human agency played a role in the evolution of asset portfolios as actuaries responded to political reaction to events. The seminal investment canons of the UK life assurance industry, which were articulated by Bailey (1862), favoured low-risk fixed interest assets such as mortgages and debentures in the nineteenth century. However, in the interwar period, the changing macroeconomic climate led to a re-evaluation of these actuarial canons by the likes of Smith (1924), Keynes (1927) and Raynes (1928). This re-evaluation was accompanied by an increased investment in equities.

To explore the role played by regulation in the evolution of asset portfolios, we compare the trends in the UK after 1870 to what was happening in the United States. This comparison is useful because although the general environment was somewhat similar in terms of wartime finance, inflation and the equity premium, the regulatory regime in the United States was much stricter in terms of restricting the types of assets that insurance companies could invest in. We suggest that the switch to equity occurred much later in the United States and U.S. life assurers tended to have less property in their portfolios than their UK counterparts because of this more stringent regulatory regime.

It is possible that changing firm characteristics and the pre-1920 merger movement were the main drivers of change in the asset management practices of UK life assurers. Using panel regression analysis, we explore the relationship between firm-specific characteristics of

life assurance companies and their asset portfolios. However, we find little evidence that change in firm characteristics over time was the main driver of changes in the composition of asset portfolios. Examining the portfolios of merged companies in the three years before and after their merger, we find that mergers had an imperceptible effect on the composition of asset portfolios. This suggests that the major change in industrial structure in the life assurance sector was not a major driver of changes in asset portfolios.

As well as contributing to our knowledge of what shaped British capital markets over the past 200 years, this paper contributes to the historiography of the asset management practices of UK life assurers. To date, this has consisted of studies of the practices of one company over short periods of time (Supple, 1970; Treble, 1980; Trebilcock, 1985, 1998), an analysis of the sector at one point in time (Johnston and Murphy, 1957), a study of the interwar period and the rise of the 'cult of equity' (Scott, 2002), and Baker and Collins (2003) decadal analysis of the portfolios of life assurance companies between 1900 and 1965. Our first contribution is to extend the period studied Baker and Collins (2003) by over 120 years. Our second contribution is to compare the long-term trends in the UK with those in the United States. Our third contribution is that we explore how firm-specific characteristics and the merger movement affected asset management practices of life assurers. Our final contribution to this literature is to note that the rise of the 'cult of equity' investment philosophy identified by Scott (2002) in the interwar period was preceded by an increasing propensity for assurance companies to invest in equity.

This paper also adds to the burgeoning literature on historical asset management practices (Rutterford and Hannah, 2016; Morecroft, 2017; Morecroft and Turnbull, 2019). This literature includes studies of the asset management practices of life assurance companies in other countries such as Australia (Keneley, 2006, 2012), Denmark, France, (West) Germany and the Netherlands (Bennet et al., 1984); research on the investment practices of banks (Baker

et al., 2009); research on pension funds (Avrahampour, 2015); studies on the investment practices of investment trusts (Huston, 1985; Rutterford, 2009; Chambers and Esteves, 2014; Rutterford and Sotriopoulous, 2016, 2017; Sotiropoulous et al., 2019); and research on the asset management style developed by influential figures such as John Maynard Keynes (Chambers and Dimson, 2013; Chambers et al., 2015).

The rest of the paper will proceed as follows. Section 2 provides some background and outlines potential drivers of change in the asset management practices of life assurance companies. Section 3 describes our data sources. Section 4 examines the asset portfolios of UK life assurance companies from 1830 until 2016. Section 5 examines the role of regulation in shaping asset portfolios by comparing the UK life assurance industry to that of the United States. Section 6 analyses the relationship between firm-specific characteristics and asset portfolios. Section 7 investigates the effect of the pre-1920 merger wave on asset portfolios. Section 8 is a brief conclusion.

2. Life assurance asset management

In life assurance a policyholder pays a series of premiums, so that when the policyholder dies, a beneficiary, will receive a payment. The policy could last until the policyholder dies (a whole-life assurance), or the policy could be a more temporary arrangement. Life assurance companies are then responsible for managing the premiums paid, so that when it comes to the point at which a policy must be paid out, which may be a long time after the policy was initiated, the company will be able to meet its obligations to the policyholder. Therefore, the way in which life assurance companies invested their assets is critical.

The first thing that affects the portfolio decisions of assurance companies will be the supply of financial assets. At the beginning of the nineteenth century, there was little to choose from apart from British government bonds. However, with the coming of the railways and

liberalisation of incorporation law, there was an increase in the supply of company shares by the early 1860s, such that government debt securities only constituted circa 53 per cent of the nominal value securities on the *Stock Exchange Official List* (Michie, 1999, p.88). The continued growth in company shares, the creation of corporate debentures and increased number of foreign governments raising bond finance in London increased the supply as well as the variety of financial securities which assurance companies could invest in (Grossman, 2002; Coyle and Turner, 2013). By 1893, only 18 per cent of the nominal value of securities was UK government debt or public bodies, 21 per cent was the debt of foreign and colonial governments, and 61 per cent was made up of the shares and bonds of companies (Michie, 1999, p.88). In other words, by the end of the nineteenth century, there was a wide choice of securities for assurance companies to invest in.

What assurance companies have invested in over time will ultimately have been determined by their actuaries and the investment canons of the actuarial profession. The articulation of such canons by early actuaries such as Bailey (1862), a president of the Institute of Actuaries, had a long-lasting influence on the profession. Undoubtedly, the most important of the investment canons articulated by the likes of Bailey (1862) was the security of capital. Given this focus of actuaries on the security of capital, one would expect that the nature of securities and the general economic environment would affect what life assurance companies invested in. For example, the risk associated with company shares may mean that investment in them is eschewed because of their lack of security of capital. As a result, insurance companies may invest in fixed-income instruments. However, once inflation rears its head, may prefer company shares because they act as a hedge against inflation.

Theoretically speaking, regulation can have a major effect on the asset management practices of life assurance companies. Up until 1870, the UK life assurance industry was largely unregulated. However, the Life Assurance Companies Act of 1870, introduced after the

collapse of the Albert Life in 1869, mandated annual revenue accounts and balance sheets to be provided to the *Board of Trade*. As a result of this new legislation, it became more difficult for such companies to give a false impression of the security of their business to the public. In addition, such disclosure meant that life assurers had to be seen to be investing policyholders' funds properly. This 1870 Act enshrined 'freedom with publicity' as the cornerstone of future regulation of the UK's life assurance industry. In other words, there was no regulation restricting what life assurance companies could invest in, which was in contrast with the approach taken in the United States.

Asset management practices may have differed across insurers because of different characteristics and these characteristics may have differed across time. Perhaps the most obvious difference was size – some companies were large conglomerates who could take advantage of economies of scale, whereas other companies were small provincial offices who were more limited in their choice of assets. Another important difference between firms and over time was that some life assurers were owned by the policyholders, e.g., mutuals, whilst others were owned by shareholders. Another characteristic that differed across time and space was that some companies only offered life assurance, while others offered other insurance products and were known as composite insurance companies. There was also a difference in the nature of the liability faced by owners in the event of failure. One would expect that the greater was this liability, the more conservative would have been the asset management practices.

One of the largest structural changes in the past two centuries of the UK insurance industry was the early twentieth century merger wave. Over 200 UK insurance companies disappeared either by absorption or merger between 1900 and 1920, leading to an increase in size of the average life assurance company, and the industry becoming more concentrated and

diversified across product lines (Pearson, 2013). As a result, these merged companies may have had to invest differently overall to allow for their new liability profile (Redington, 1952).

3. Data

In order to analyse the asset management practices of life assurance companies from 1830 to 2016, we construct a decadal time series of the share of broad asset classes in the portfolios of life insurers. Table 1 shows the years included in our decadal analysis and the data sources for each year.

<<INSERT TABLE 1 HERE>>

Until the Companies Act 1844, there was no centrally held summary of life assurance company accounts. Therefore, for 1830 and 1840, we used individual company accounts held by the *London Metropolitan Archives*.[2] From 1851 to 1960, data was collected from reports produced by the *Board of Trade* and other government bodies. However, it was not until the Life Assurance Companies Act 1870 that such information was available across the entire life assurance sector. Consequently, *Board of Trade* data from before 1871 does not capture the assets held in the entire life assurance sector, therefore for 1851 and 1861 we augment this data with individual company accounts held in the *London Metropolitan Archives*.[3]

After 1960, the *Board of Trade* stopped publication of its reports on life assurance companies. As a result, the *Life Offices Association*, the industry's own trade body, decided to collate and publish such data that had been previously been collated by the *Board of Trade*.[4] Consequently, it is from the *Life Offices Association* and its successor body, the *Association of British Insurers* (ABI), that post-1960 data has been obtained.

Whilst a decadal analysis enables us to identify long-run trends, one drawback of such an approach is that it does not capture year-on-year changes. However, we are constrained by

[2] Thanks to Ian Webster for sharing these accounts with us.
[3] Board of Trade reports containing 1851 and 1861 data only refer to companies registered under the 1844 Companies Act and not to those founded before 1844 unless they had registered under the Act.
[4] London Metropolitan Archives, Life Offices Association, L. O. A. Circular 15/1970.

our data sources in this regard because industry-level reports were not produced on an annual basis for most of our period, with annual reports only being produced from 1881 to 1915. To partially address this, we collected the annual *Board of Trade* reports from 1881 to 1915.

Our sources report the book value of assets. In terms of the categorization of asset classes, we ultimately rely upon that used in our data sources. There are eight asset classes reported in our data sources, and their definitions are reported in Table 2. Unfortunately, the asset classification used after 1960 does not map exactly to that used by the *Board of Trade*. The chief difference is that preference shares are included with debentures by the ABI and predecessor bodies, but were classified as stocks and shares by the *Board of Trade*. As we will see below, this definitional change had little effect on portfolio composition.

<<INSERT TABLE 2 HERE>>

In order to compare the asset portfolios of American and British life assurance companies over the long run, we obtained data on U.S. insurance companies from *The Historical Statistics of Life Insurance in the United States, 1759 to 1958*, and the American Council of Life Insurers (ACLI) *Life Insurers Fact Book.* Because these sources use a slightly different asset classification than in the UK sources, we had to map the UK asset classes onto those used in the United States – see Table 2.

4. Asset Portfolios, 1830-2016

Figure 1 shows the average composition of the asset portfolios of UK life assurance companies from 1830 to 2016 and Figure 2 shows annual data from 1881 to 1915. Figures 1 and 2 show that there have been marked changes in composition over the past 200 years. In order to understand the reasons for these changes, we will look at each asset class in turn.

<<INSERT FIGURES 1 & 2 HERE>>

Trebilcock (1985, p. 620) finds that nine major insurance companies in 1800 invested over 80 per cent in government bonds. Figure 1 shows that government securities still constituted nearly 80 per cent of the average portfolio in 1830. Notably, government debt issuance peaked following the Napoleonic Wars. Investment in government debt by life assurers fell sharply after 1830; by 1870, less than 10 per cent of the average portfolio was in government bonds. This figure remained low throughout the remainder of the century as the government focused on paying down the national debt during the *Pax Britannica* period and life assurers rebalanced their portfolios, channelling capital into mortgages and nascent asset markets. Bailey (1862) did not think that the undated nature and fluctuation in value of consols was consistent with his principle of security of capital. He instead favoured mortgages and other secured loans as their capital value did not fluctuate (Keneley 2006). The availability of new corporate security markets also expanded the investment options for life assurers. Low and falling yields around 1900 meant that British government debt remained a relatively unattractive investment (Morgan and Thomas, 1969, pp.278-9).

After 1911, we can see from Figure 1 that British government securities once again became the dominant asset class, only being surpassed by stocks and shares in 1960. This rise in the importance of government debt is largely explained by the outbreak of the two world wars. As with other financial institutions, during World War I, life assurance firms were persuaded to take on large amounts of British Government debt to help fund the war effort (Scott 2002). In doing so, they also had to sell off their other investments, particularly those based overseas (Morecroft, 2017). The yield on government bonds remained high into the 1920s, but when yields declined below 3 per cent in 1932, life assurance companies began to shift away from government bonds. However, during World War II, life assurance companies were once again required to do their bit to help the government finance the war effort. In addition, the nationalisation of certain British industries by the Attlee government from 1945

to 1951 led assurance companies, in some cases, to exchange private industry shares for government bonds (Chester 1975, pp.240-312).

As can be seen from Figure 1, mortgages on land and property were a popular asset choice in the nineteenth century, overtaking British government securities as the most popular asset between 1851 and 1861. Although they remained the most popular asset until 1911 the share of mortgages declined steadily and substantially from their high in 1861 and never again regained their importance (Figures 1 and 2). Supple (1970, p.337) suggests that this fall was largely down to a decrease in the interest rates available from these mortgages, associated with the declining value of land and the agricultural depression of the late nineteenth century. Notably, when life assurance companies moved away from mortgages in the twentieth century, building societies stepped in to fill the void (Casu and Gall 2016).

Figures 1 and 2 show that investment by life assurers in debentures grew rapidly in the decades prior to 1911, coinciding with the initial growth phase of this new market. There were three reasons for this shift into debentures. First, the supply of debentures expanded rapidly from an almost non-existent base in the four decades after 1860 (Jefferys, 1977, pp. 241-251; Coyle and Turner, 2013). Second, debentures provided a higher rate of return than other fixed income assets (Supple, 1970, p.337; Coyle and Turner, 2013). Third, the mild deflation of the era meant that the capital invested in debentures was secure. An inspection of individual company data contained within the *Board of Trade* reports attests to the popularity of investing in railway debentures rather than the debentures of other industries. Railway debentures paid handsome returns and were very safe. However, the popularity of debentures did not last. As can be seen from Figure 1, between 1911 and 1923, the proportion of debentures in portfolios fell substantially. The Railway Act of 1921 reduced the volume of railway debentures available and high wartime inflation made debentures unattractive as an investment (Coyle and Turner, 2013). Additionally, the obligation to hold more government bonds during the war may have

facilitated the shift away from other fixed income assets, such as debentures. Notably, the 1915 *Financial Times Insurance Supplement* forewarned that life assurers would face serious depreciation in their assets because of the war and its associated inflation.

Figure 1 also shows that the proportion of portfolio investment in foreign government securities rose steadily after the 1860s, peaked at 15 per cent in 1911 and then declined after 1931.[5] Harding (1894) points out that colonial mortgages and government securities earned a higher return than their UK equivalents and so recommended such investments as an antidote to the falling interest rates in the UK. Given that these were British colonies, it could be argued that these were stable polities, and so Bailey's main investment canons was kept intact by investing in these securities.

Figure 1 also shows that in the 50 years prior to 1911, the percentage of the average portfolio invested in company shares increased rather slowly from a very low base. Baker and Collins (2003) suggest that this reluctance to invest in equity was mostly attributable to the prevalence of family ownership. However, recent scholarship has revealed that far from being concentrated in family hands, company ownership was very diffuse even outside the largest public firms (Acheson et al., 2015; Foreman-Peck and Hannah, 2012).

The reluctance at this stage to invest large proportions in equities could be explained by the adherence to Bailey's investment principles. As well as the security of the capital being paramount, his second principle was that whilst "the highest practicable rate of interest be obtained", this was subordinate to the first canon (Bailey, 1862, p.144). Nevertheless, investment in equities increased rapidly between 1891 and 1901. As can be seen in Figure 2, there was a sharp increase in holdings of stocks and shares during the mid-1890s, increasing

[5] There was a steep increase in foreign government securities and loans on rates between 1910 and 1911 - see Figure 2. This was due to a reclassification of assets by the *Board of Trade*, which expanded the foreign government securities to include municipal and provincial securities for the first time. They had previously been recorded as loans on rates.

from 6.10 per cent of total assets in 1893 to 11.51 per cent of total assets in 1901.[6] This coincided with a collapse in yields on mortgages and bonds (Treble, 1980), but also a substantial stock-market promotion boom (Acheson, Coyle and Turner, 2016, Cheffins, 2008, p. 176; Cottrell, 1980, pp. 168-176, Quinn, 2019). However, life assurers did not invest in these types of shares. Looking at individual assurance company data from 1901, it appears that most shares in portfolios were railway stocks, which were stable blue-chip companies. Their popularity with life assurance companies also stemmed from their three per cent and above dividends (Alborn, 1998, p. 239), while railway debentures yielded less than 3 per cent in the 1890s (Klovland, 1994).

As can be seen from Figure 1, starting in the 1890s, stocks and shares had an inexorable rise in the portfolios of assurance companies, with a slight fall between 1911 and 1923.[7] By 1960 it was the largest asset class and the exposure to equity was no longer in railway securities because the railways had been nationalised. By 1991 stocks and shares were by some distance the dominant asset class in the portfolios of assurance companies – the cult of equity had triumphed.

To understand the rise of the cult of equity after the 1920s, one must first consider the economic conditions of the interwar period. After the Great Depression, the government's cheap money strategy led to falling bond yields. As such, assurance companies needed to move to an asset class that would provide a return in the presence of potentially high inflation rates. The American economist Edgar Lawrence Smith found that equities outperformed bonds in the period from 1866 to 1922 (Smith, 1924). He suggested that rather than viewing investment in equities as a form of speculation, it should be viewed as a credible long-term investment as part of a diversified asset portfolio. Similarly, J. M. Keynes, in a 1927 *Economist* article,

[6] In monetary terms, investment in stocks and shares increased from £13.6m to £34.6m in this period.
[7] This may be driven by the amalgamation of railways following the Railway Act of 1921. However, the individual investment level data for this period does not exist.

viewed investment in equities as a safeguard against inflation.[8] Then, in 1928, in a re-evaluation of Bailey's investment principles, the chief actuary of the Legal and General, H. E. Raynes, put forward the idea that investing in equities as part of the diversification of asset portfolios of life assurance companies would improve investment security (Raynes, 1928).

After 1960, stocks and shares continued to dominate, representing over half of the asset portfolio by the early 1990s and 2000s. Moody (1964) provides some insights into this phenomenon, noting that the inflation in the preceding 20 years had pushed up share prices and dividends. Indeed, in the view of Baker and Collins (2003), the fear of inflation was the decisive long-term factor driving the shift to equities in the post war period.

Were life assurance companies simply moving into equities because they were providing a more substantial return?[9] From Figure 3, we can see a positive but weak correlation between the previous decade's return on shares and their subsequent asset allocation, which suggests that changes in asset allocation were not just driven by previous returns. For example, the increased investment in equities that occurred in the 1960s and 1970s was despite relatively poor returns compared to previous decades, with some having little confidence in them and even viewing the cult of equity as being dead (Plender, 1982, p.38). Other factors beyond returns also help explain the sharp increase in equity investment from 1981 to 1991 (see Figure 1). This sharp increase coincided with the privatization of various state-owned industries, which increased the supply of high-quality equities available to invest in. In addition, there was an increase in investment in equities by institutional investors after the lifting of exchange controls in 1979 and deregulation of London security markets in the early 1980s (Cheffins, 2008, pp. 352-3).

<<INSERT FIGURE 3 HERE>>

[8] *The Economist,* 'Life Office Investments'*,* 28 October 1927.
[9] Avrahampour (2015) notes that after the Second World War, Ross Goobey, the chief actuary of Imperial Tobacco pension fund, changed the fund's investments depending on what type of asset gave the highest return, and shifted into equities as a result.

As can be seen from Figure 1, the 1960s and 1970s also saw the emergence of property as an important asset class for insurance companies. McIntosh and Sykes (1985, p. xv) note that institutional investors, such as life assurance companies, increased their investment in properties tenfold in the 25 years after 1960, and in their view, this was unique to the UK. Barras (1994) finds that whilst property outperformed equities in the 1970s, by the 1980s, the reverse was the case, which resulted in life assurance companies moving away from property, as seen in Figure 1.

Figures 1 and 2 reveal that loans on rates, which were loans to local authorities to finance infrastructure investment and secured on their rates, were a popular asset class from the 1870s until circa 1900. This period corresponds to a rapid expansion of public infrastructure investment by local authorities. It also corresponds to the period when larger local authorities began to issue their own debt securities on financial markets, which undoubtedly reduced their need to borrow from assurance companies. The disappearance of loans on rates after the 1950s is principally due to the centralisation of government in the UK and the removal of borrowing powers from local government.

The final category of assets in Figures 1 and 2 is loans on policies. These loans were made to policyholders on the security of their life assurance policy. These rarely constituted more than five per cent of the average portfolio and they had effectively disappeared as an asset class by the 1950s. Notably, there was competition for insurance companies in this sphere as banks also lent against the security of life assurance policies (Collins and Baker, 2003, pp.184-6).

The asset portfolios of UK life assurers have changed substantially over the past 200 years. The evidence thus far suggests that historical contingency and political reaction to events shaped this change in portfolios. However, it is possible that changes in portfolios were

principally driven by regulation of the life assurance industry or by changing firm or industry characteristics. We explore these alternative drivers of change in the next three sections.

5. Regulation and Asset Portfolios

As mentioned above, the UK life assurance industry was largely unregulated until the passage of the Life Assurance Companies Act of 1870. This Act shaped the philosophy of all future regulation of the UK life assurance sector, which was that assurers had to disclose on an annual basis the status and security of their business, but they were not subject to any regulation with respect to the assets that they could invest in. This would suggest that regulation was not a key driver of the change in asset portfolios over the long run. An interesting contrast can be made with another common law country - the United States - to show that regulation potentially can have a major effect on asset portfolios. Unlike the UK, the United States have had much more stringent regulations on what insurance companies could invest in. This contrast between the UK and United States is all the more helpful because the life assurance sectors in the two jurisdictions have had broadly similar environments over the past 150 years or so in terms of the supply of financial assets, the performance of financial assets and the wider macroeconomy.

<<INSERT FIGURE 4 HERE>>

Figure 4 compares the asset allocation of the U.S. life insurance sector from 1871 to 2016 with that of the UK life assurance sector. Perhaps the most striking difference in Figure 4 is that whilst the UK life assurance sector saw the emergence of equity as the dominant asset class after World War II, this did not happen in the United States until much later. This difference is largely because the investments of life assurance companies in the United States were regulated more stringently than their UK counterparts. Regulation of insurance companies in the United States depends on the state an insurance company is licensed in. New York State is the largest state with regard to life insurance, having the majority of US life assurance assets.

In addition, the Appleton rule meant that firms licensed in New York had to adhere to the regulations of New York, not just in New York, but for business carried out everywhere else (Pottier and Sommer, 1998). Historically, New York State has had some of the most stringent regulation of any state (Cummins and Sommer 1996). For example, New York State restricted the proportions of assets that could be held in equities, property and bonds not of investment grade quality (Kamen and Toppetta, 1989). Rutterford and Hannah (2016, p. 250) note that in New York, insurance companies were banned from holding equities in their general accounts until 1951, and the then 20 per cent restriction was only lifted in 1990. Only after the deregulation of the insurance market, and the removal of such restrictions, did the percentage holdings in equities substantially rise. The restriction on investment in property by U.S. life insurance companies also meant that they, unlike their UK equivalents, were unable to take advantage of buoyant property markets in the 1970s and 80s.

The fact that U.S. insurance companies were constrained in their ability to invest in equity, meant that by default they had to invest a greater proportion in mortgages and bonds. Indeed, Snowden (1995, p. 210) notes that insurance companies came to dominate the U.S. mortgage market by developing monitoring structures to assess such mortgages. He also noted that their dominance of the U.S. mortgage market after 1940 was maintained by being involved in mortgage programs provided by the federal government. However, there was a decline in investments in mortgages for US life assurance companies after 1970. Wright (1992) suggests that, due to higher returns available on shares in the 1960s and 1970s, the life insurance sector moved away from offering mortgage loans to individual homeowners.

This comparison with the United States reveals that the US regulatory environment shaped the investment portfolios of its insurance companies by delaying the shift into equity. Ultimately, the comparison reveals that regulation can shape capital market development and the supply of funds to different sectors in the economy.

6. Firm characteristics and asset portfolios

In this section we explore the potential differences between life assurance companies in terms of their asset management practices to see if changes in the average characteristics of life assurance companies were a major driver of the changes in their average portfolios over the long run. To do so, we analyse 10 important company-specific variables that might have had a bearing on an assurance company's asset portfolio.

First, firm size (*FirmSize*) may have affected portfolios. For example, larger firms may have invested differently from their smaller peers, or may have been able to take more risk or invest more in illiquid assets. Second, we create a binary variable (*LifeFire*) which distinguishes between companies offering life assurance and those offering fire insurance in addition to life assurance. The latter may have had to invest differently because of the different risk profile of fire insurance as opposed to life assurance. Our third explanatory variable is *London*, which is a binary variable which takes the value one if a firm's headquarters were in London, and zero otherwise. Firms based in London may have had more information on equities and bonds because they were closer to the London Stock Exchange.

The fourth explanatory variable we include is a binary variable (*Mutual*) which indicates whether an assurance company is mutually owned versus shareholder owned. Mutual companies, owned as they were by policyholders, may have taken less risk with their asset portfolios than a shareholder owned company. Our fifth explanatory variable is *Unlimited*, which is a binary variable which equals one if an assurance company had unlimited liability, and zero otherwise. A company with unlimited liability may have had a more cautious investment strategy because its shareholders were fully liable for losses. The sixth explanatory variable is *CalledCapitalRatio*, which is a variable which reflects the proportion of the company's subscribed capital that has been called up. The rationale of this variable is similar to the *Unlimited* one in that a company with a greater degree of uncalled capital may have had

a more cautious strategy due to having more capital to be called up in the event of a company failure.

The seventh explanatory variable is *Politicians*, which is a binary variable which equals one if the board of directors contains one or more Members of Parliament and zero otherwise. The rationale for including this variable is that studies have shown that British companies in this era which had politicians on their boards behaved differently than their peers (Braggion and Moore, 2013; Campbell and Turner, 2011). In the case of life assurance companies, having a politician on the board may mean, for example, that the company invests more in government bonds.

Our final set of explanatory variables are *PremiumsRatio*, *ClaimsRatio* and *FundsRatio*. These three variables reflect the nature of the business contracted by individual companies in terms of premiums raised, claims on the company and the proportion of the company's potential liabilities that were linked to life assurance and annuity products (FundsRatio). These factors may have influenced the composition of the asset portfolios in terms of the risk and liquidity of assets.

We have constructed cross-sectional data for UK life assurance companies for 1881, 1891, 1901, 1911, 1923, 1931, 1938, 1951 and 1960 to enable a panel regression analysis. We are constrained by data availability because several key explanatory variables are not available before 1881 and company-level asset portfolio data is not available after 1960. However, 1881 to 1960 is the period when most changes occurred to insurance company asset portfolios. The asset classes analysed are as in Table 2 with the exception of property, but we also examine two combined asset classes - corporate securities (debentures plus stocks and shares) and government securities (British government securities plus foreign government securities).

The definitions of and data sources for our explanatory variables are in Table 3 and Table 4 shows the summary statistics for our dependent and explanatory variables. Not every

life assurance company in our sample had information on all of the explanatory variables at each observation point.[10] We have 153 unique companies and 691 firm-years in our sample.

<<INSERT TABLES 3 AND 4 HERE>>

Table 4 shows wide variation in both the *PremiumsRatio* and *ClaimsRatio* variables, having high maximum values. This also occurs, to a much lesser extent, within the categories of assets that we are investigating. Whilst this shows that the investments of life assurance companies were highly varied, this also raises the question of outliers, and the potential for such outliers to affect the results. To address this issue, all variables that are not of a binary or logarithmic nature have been winsorised, at a tolerance of 1 per cent in each direction.[11]

With the caveat that this is a dataset across time, it is worth noting from Table 4 that the majority of companies in our sample were based in London and had MPs on their board. The majority of companies did not offer fire insurance in addition to life assurance, and the proportion of companies with unlimited liability was less than 10 per cent.

<<INSERT TABLES 5 AND 6 HERE>>

Tables 5 and 6 show regression results of percentage holdings in each asset against firm characteristics. At least three things are worthy of comment from these regression results. First, larger assurance firms invested marginally more in mortgages and loans on policies, but *FirmSize* overall is not significant for most asset classes.

Second, mutual companies invested in a different way to their non-mutual peers. Table 5 shows that mutual companies invested significantly more in debentures and stocks and shares than non-mutual companies, investing 13.5 per cent and 12.4 per cent more than non-mutual companies respectively. However, they invested substantially less in mortgages and loans on policies than non-mutual companies. At first glance, it seems surprising that it was mutual

[10] Where a life assurance company did not have all the information required for a given year, it has been dropped as a data entry for that year.
[11] This made little difference to our results.

companies that invested more in stocks and shares. However, Morecroft and Turnbull (2019) point out that a more sophisticated investment strategy originated in the mutual companies in the 1920s. Notably, in a 1922 speech, J. M. Keynes wanted the mutual life assurance company to lead the way in improving investment principles.[12] The nature of the with-profits life assurance policy that was associated with the mutual life assurance company may explain why they invested more in shares. Because profits were distributed to the policyholders rather than going to shareholders, there was a greater benefit to members from investing in higher yielding assets such as equities. The proportion of life assurance companies that were mutual did not change much over time, ranging from 25% in 1881 to 33% in 1960. Therefore, changes in the proportion of mutual companies over time cannot explain the changes in overall asset allocation in the life assurance industry.

Third, the results in Tables 5 and 6 indicate that unlimited liability and the amount of uncalled capital had little bearing on the asset portfolios of insurance companies. In other words, the downside risk faced by shareholders did not affect how companies invested their funds. This, however, is not to say that these features did not affect the riskiness of a life assurance company's business model.

Lastly, the ratio variables provide some interesting results. Table 6 shows that firms with a higher proportion of its liabilities in life and annuity products relative to its assets (*FundsRatio)*, invested significantly more in debentures. Tables 5 and 6 also show that companies with a higher proportion of premiums relative to assets (*PremiumsRatio*) invested more in equities and corporate securities. These tables also reveal that companies that had a higher (lower) proportion of claims relative to assets (*ClaimsRatio*) invested in relatively fewer (more) equities and debentures. However, the changes in these three ratios over time were either in the wrong direction in the case of the first two or, in the case of the third ratio,

[12] Report to the Annual Meeting of the National Mutual, 18 January 1922

inconsistent with timings in the changes of asset holdings to explain changes in asset portfolios over time.

Overall, these results suggest that while firm specific characteristics can explain some of the variation in asset allocation within life assurance firms, they cannot explain the observed shifts in the industry's asset allocation over time.

7. Mergers and Asset Portfolios

Figure 1 reveals that major changes took place in the composition of asset portfolios between 1880 and 1923. This period corresponds to a major consolidation of the life insurance industry. Therefore, we have to answer the question: did mergers affect asset portfolios? Indeed, given the different liability profiles of other types of insurance compared to life assurance, asset management may have had to be different for the new composite company. For example, the new composite company may have had to hold more liquid and less risky assets to cover sudden payouts in the event of a fire. Furthermore, larger companies with more economies of scale may have been able to diversify more than smaller companies.

To investigate this issue, we compiled a list of life assurance company mergers between 1881 and 1920 using *Board of Trade* reports, the *Register of Defunct Companies*, Raynes (1964) and Carson (2009). For each merger, the two or more companies involved in the merger are then found in the *Board of Trade* reports to identify the last occurrence of the companies having separate balance sheets and portfolio information. This is defined as t = 0 (pre-merger) and combined asset information for companies involved in the merger is collated. Then, asset information is collated for the merged company, three years after the merger (t = 3). The change in percentage invested in each asset class for each company between t = 0 (pre-merger) and t = 3 (post-merger) is then calculated. In total, 36 such life assurance mergers were analysed. Table 7 shows the average holdings in each asset class pre- and post-merger.

<<INSERT TABLE 7 HERE>>

As can be seen from Table 7, none of the differences in means are significantly different from zero. Therefore, we find no statistically significant evidence that pre-1920 mergers had an effect on the asset management practices of life assurance companies. One possible explanation is that three years is not long enough. Therefore, we repeated the above exercise and looked at asset portfolios five years after mergers, but it made no difference to our findings. Another explanation for our findings may be that if life assurance companies were just swallowing up similar life assurance companies, then there is no reason for investment practices to change. The nature of the customers and the product base may have been relatively unchanged, and therefore no change in asset allocation would have been needed.[13] This also supports our regression findings that size is not a main driver of asset allocation.

8. Conclusion

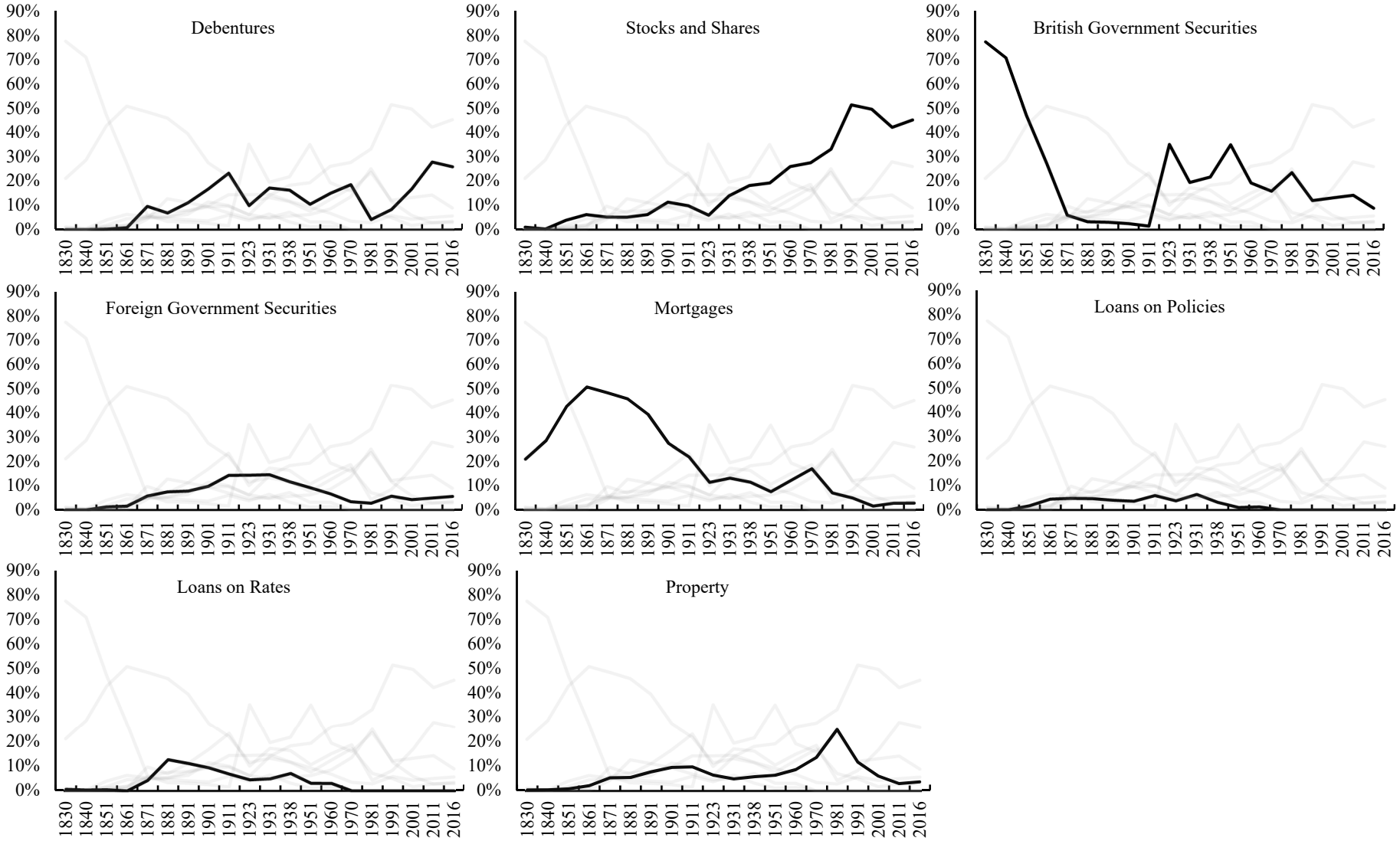
In this paper we explored the role played by historical contingencies and political economy in the evolution of the UK's capital market over the past two centuries through the lens of the most important institutional investor and asset manager – the life assurance industry. Our findings suggest that there have been four epochs in the development of the asset portfolios of UK life assurance companies and therefore in the development of capital markets. The first epoch from c.1800 to c.1850 was where government securities dominated portfolios. This was an era where government debt was in plentiful supply thanks to the Napoleonic Wars. The second epoch from c.1850 to c.1913 was one where mortgages were, by some distance, the principal asset in the portfolios of life assurance companies and where corporate securities, particularly debentures, were becoming increasingly important. Increased availability, as well

[13] Half of the mergers in our sample were of this nature. However, the difference in means test was repeated for life firms taking over other life firms, and for composite firms taking over other life assurance companies, whether they be life or composite and this made no difference to our findings either.

as the sharp switch of capital away from government debt, enabled investment in these burgeoning asset markets. The third epoch from c.1913 to c.1950 was marked by the reemergence of government debt, the fall in other fixed-income assets such as mortgages and debentures and the rise of the cult of equity. Government debt was issued in abundance to fund the effort of two world wars and moral suasion was used by the Treasury to encourage insurance companies to do their bit to support the war efforts. Inflation during World War I contributed to the diminution of investment in other fixed-income assets and made investment in equities much more attractive because they acted as a hedge against inflation. The fourth and final epoch from c.1950 to the present day was marked by the ascent of equity as the dominant asset class. High inflation in the 1970s contributed to this ascent, as did lifting of exchange controls, privatization and deregulation of security markets in the 1980s. Fixed-income assets such as company debentures only returned to favour once inflation had been tamed.

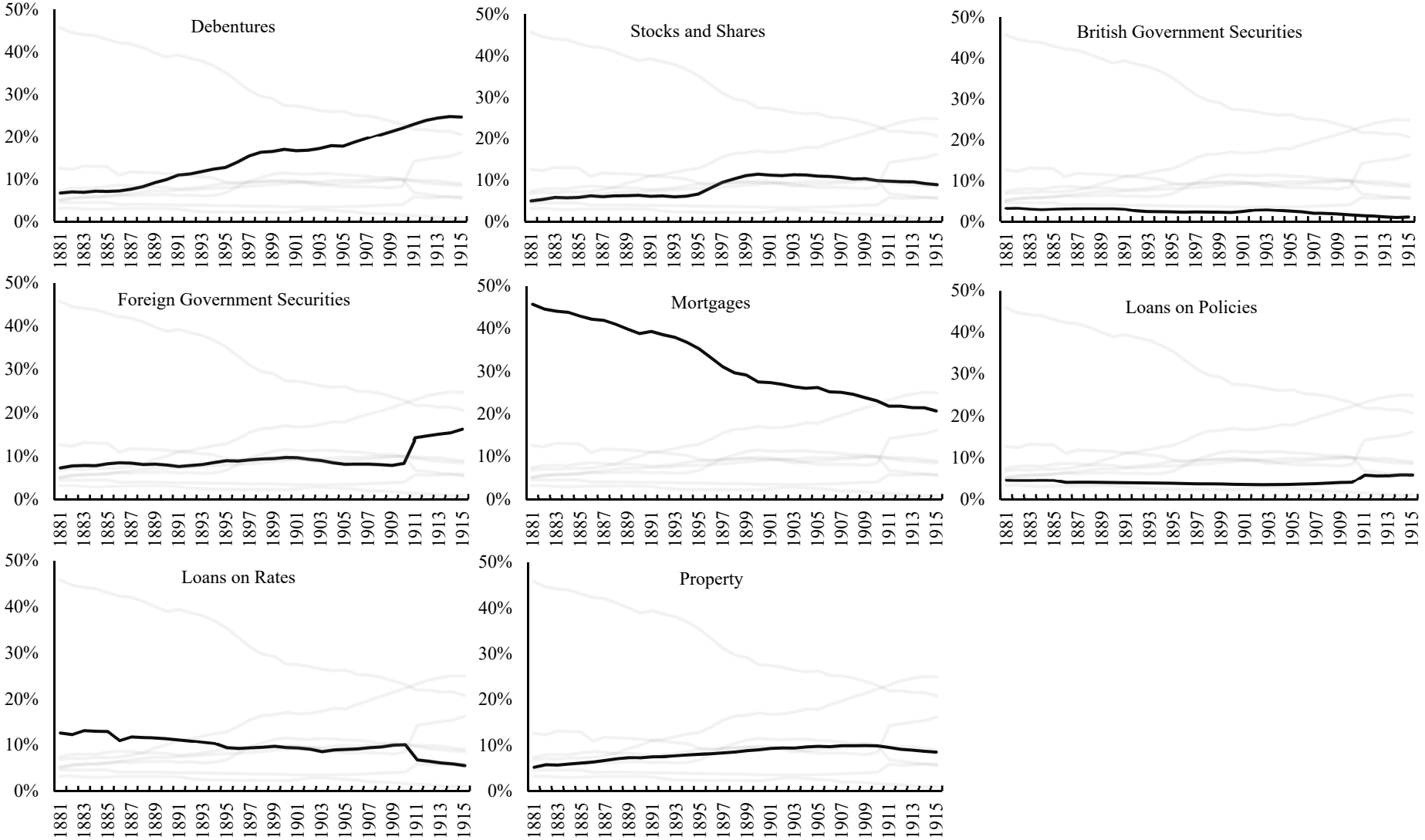
Our findings do not imply that deep-seated historical factors which persist over time played no role in the evolution of UK capital markets. Indeed, legal origin, historical religion or historical decisions about the nature of government may not only have had persistent effects on UK capital markets in and of themselves, but they may also have shaped how political systems responded to historical contingency.

Figure 1*: Asset portfolios of UK life assurance sector, 1830-2016*



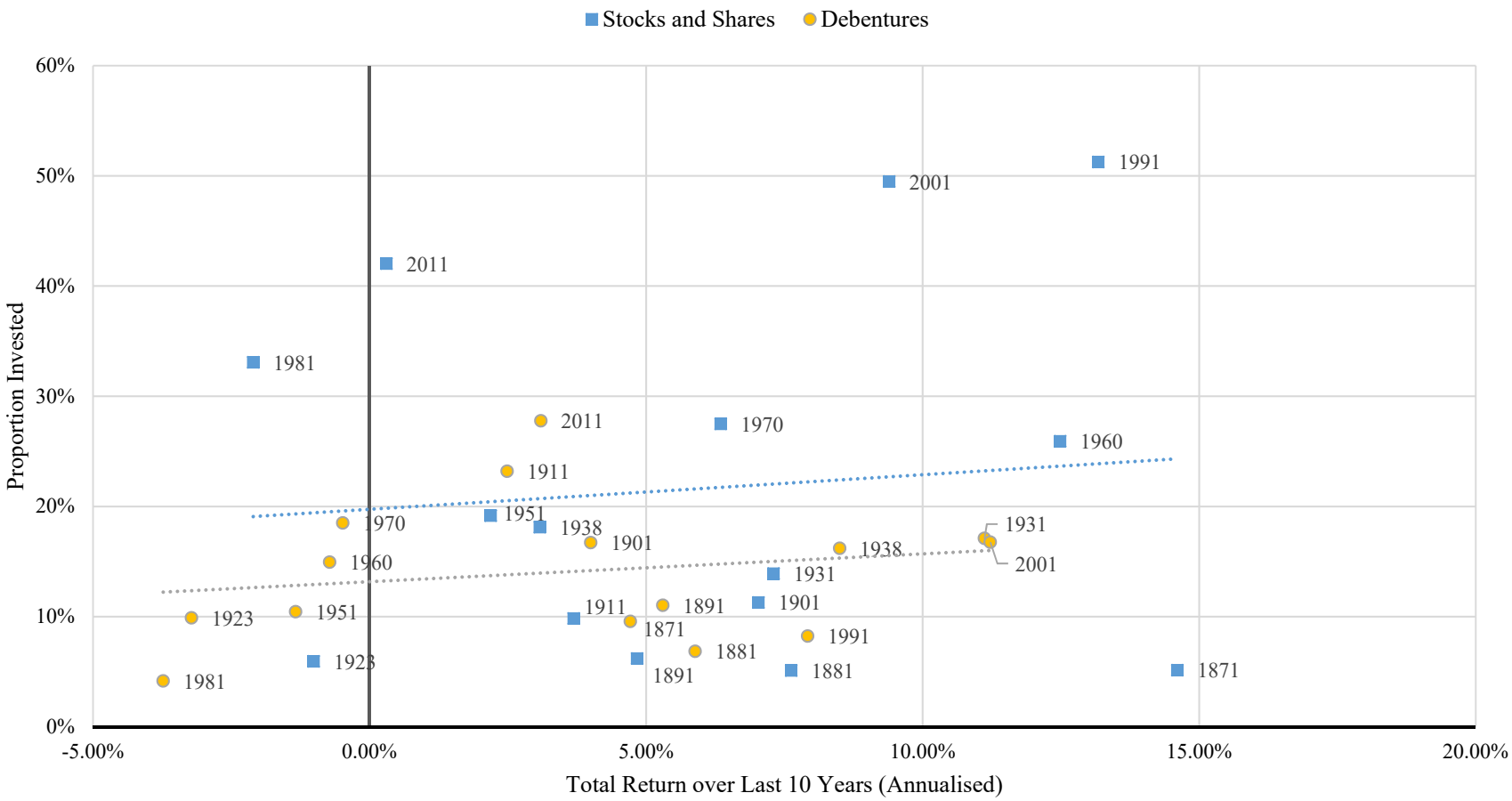
Sources: See Table 1.

Figure 2: *Asset portfolios of UK life assurance sector, 1881-1915*



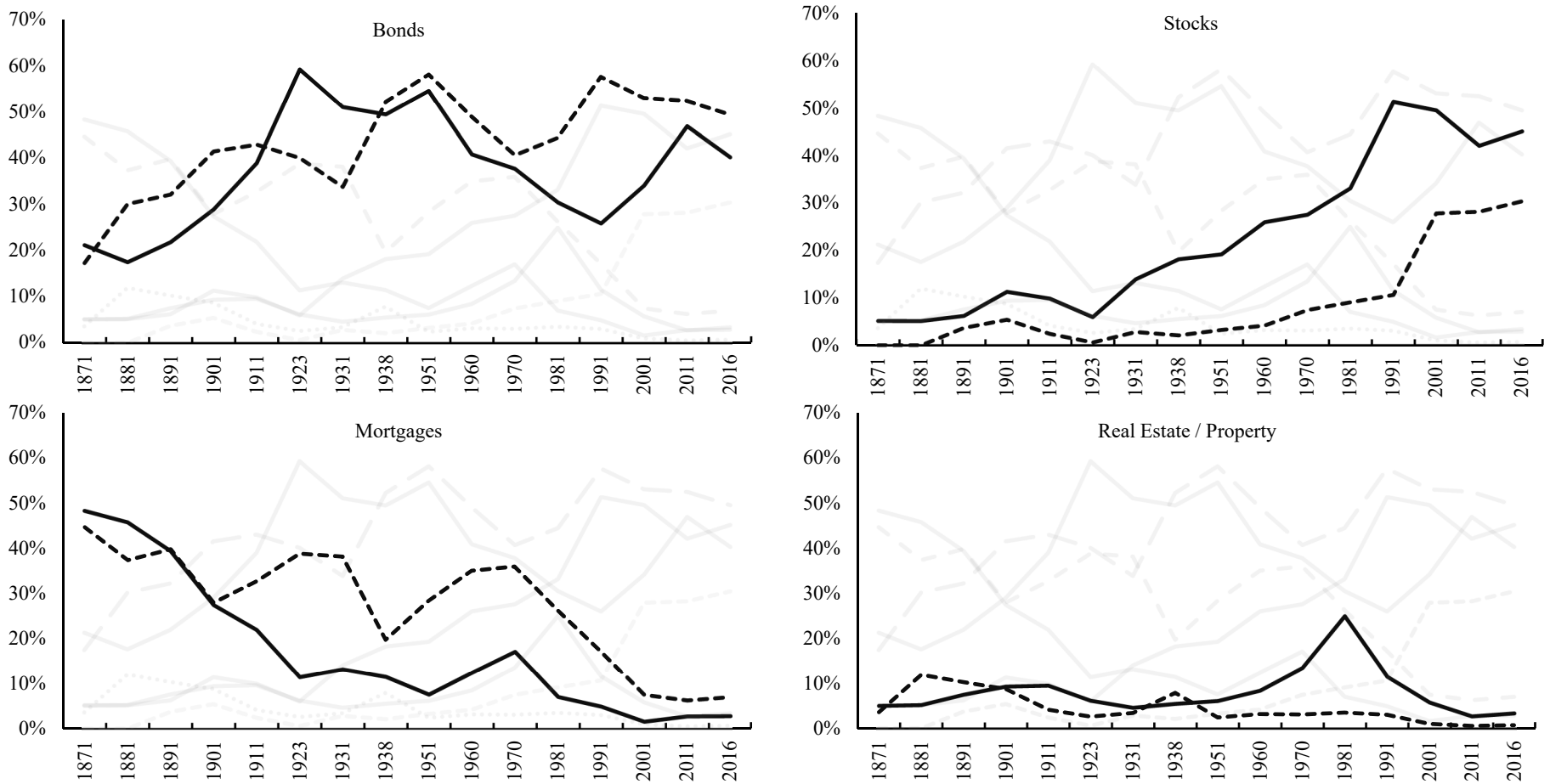
Sources: See Table 1.

Figure 3*: Ten-year average annual returns on debentures and equities compared to their percentage holdings by life assurance companies, 1871 to 2011*



Sources: Stocks and Shares: 1871 – 1899: Grossman (2002), 1900-2009: Dimson et al (2011) 2010: Barclays Equity Gilt Study.
Corporate Bonds: Coyle and Turner (2013).

Figure 4*: Asset portfolios of UK and US life assurance sectors, 1871-2016.*



Note: Solid line refers to UK and dashed line to US.
Sources: UK data: see Table 1.US data: 1871 to 1958: *The Historical Statistics of Life Insurance in the United States, 1759 to 1958*, 1960 to 2016: *American Council of Life Insurers (ACLI) Life Insurers Fact Book*.

Table 1: *Data sources for insurance company asset portfolios, 1830-2016*

Year(s)	Sources
1830 and 1840	Individual company accounts held at the London Metropolitan Archives (Rock Life, London Life, Equitable Life, Guardian, Mutual Life, Metropolitan Life, National Provident, Legal and General).
1851	*Assurance Companies: Abstract of Return to an Order of the Honourable House of Commons*, 1852, and individual company accounts held at the London Metropolitan Archives (Rock Life, London Life, Equitable Life, Guardian, Mutual Life, Metropolitan Life, National Provident, Legal and General).
1861	*Assurance Companies: Abstract of Return to an Order of the Honourable House of Commons*, 1863, and individual company accounts held at the London Metropolitan Archives (Rock Life, London Life, Equitable Life, Guardian, Mutual Life, Metropolitan Life, National Provident, Legal and General).
1871, 1881, 1891, 1901, 1911, 1923, 1931, 1938, 1951 and 1960	*Statements and Abstracts of Reports deposited with the Board of Trade*, under the Life Assurance Companies Act 1870/Assurance Companies Act 1909 during the year ended 31 December.
1970 and 1981	*Life Assurance in the United Kingdom*, 1966-1970/1977-1981, Life Offices Association.
1991	*Insurance Statistics 1987-1991*, Association of British Insurers.
2001, 2011 and 2016	*Invested Assets 2017*, Association of British Insurers.

Table 2: *Asset class definitions*

UK Asset Class	Definition	U.S. Asset Class
Debentures	Holdings in corporate bonds.	Bonds
Stocks and Shares	Holdings in equities, be they ordinary or preference shares.	Stocks
British Government Securities	Securities issued by HM Government, gilt-edged.	Bonds
Foreign Government Securities	Securities issued by Indian, Colonial or Foreign governments. From 1911, this also included provincial and municipal securities.	Bonds
Mortgages	Holdings in mortgages, a form of loan on property.	Mortgages
Loans on Policies	Loans issued by life assurance companies to their policyholders, on their own policies, acting as a form of collateral.	Other
Loans on Rates	Loans issued by local authorities, on rates payments and other public works.	Other
Property	Holdings in property, either as an investment or offices.	Real Estate

Notes: Asset classes are taken from the *Board of Trade* reports (UK) and *The Historical Statistics of Life Insurance in the United States* (US). The *Board of Trade* data from 1871 to 1960 does not distinguish between domestic and foreign investment with the exception of government securities.

Table 3*: Definitions of explanatory variables*

Variable Name	Definition	Data Source
FirmSize	Natural log of the life assurance company's assets.	*Board of Trade* reports.
LifeFire	Dummy variable, set to 1 if the company also offered fire insurance, 0 otherwise.	*Board of Trade* reports and *The Stock Exchange Yearbook*.
London	Dummy variable, set to 1 if the company had its head office in London, 0 otherwise.	*Board of Trade* reports and *The Stock Exchange Yearbook*.
Unlimited	Dummy variable, set to 1 if the company had unlimited liability, 0 otherwise.	December *Investor's Monthly Manuals* and *The Stock Exchange Yearbook.*
Mutual	Dummy variable, set to 1 if the company was a mutual, 0 otherwise.	*The Stock Exchange Yearbook.*
CalledCapitalRatio	Ratio of called up capital to total capital.	December *Investor's Monthly Manuals* and *The Stock Exchange Yearbook.*
Politicians	Dummy variable, set to 1 if the company had MPs, 0 otherwise.	*The Stock Exchange Yearbook.*
PremiumsRatio	Ratio of premiums to company assets.	*Board of Trade* reports.
ClaimsRatio	Ratio of claims to company assets.	*Board of Trade* reports.
FundsRatio	Ratio of life and annuity funds to company assets.	*Board of Trade* reports.

Table 4: *Summary statistics*

	Minimum	Maximum	Average	Std. Dev.	Number of Observations
Debentures	0.00%	60.43%	12.43%	10.38%	691
Stocks and Shares	0.00%	58.18%	12.33%	11.23%	691
British Government Securities	0.00%	90.24%	12.92%	14.87%	691
Foreign Government Securities	0.00%	72.14%	10.20%	8.88%	691
Mortgages	0.00%	88.20%	22.07%	19.67%	691
Loans on Policies	0.00%	36.14%	3.94%	4.09%	691
Loans on Rates	0.00%	81.35%	6.36%	9.76%	691
Corporate Securities	0.00%	81.95%	24.77%	16.88%	691
Government Securities	0.00%	92.34%	23.12%	17.39%	691
Total Assets (£m)	0	1,035	21	61	691
FirmSize	6.88	20.76	15.14	2.01	691
LifeFire	0.00	1.00	0.41	0.49	691
London	0.00	1.00	0.63	0.48	691
Unlimited	0.00	1.00	0.08	0.27	691
Mutual	0.00	1.00	0.27	0.44	691
Called Capital Ratio	0.00	1.00	0.34	0.37	691
Politicians	0.00	1.00	0.56	0.50	691
PremiumsRatio	0.02%	220.03%	13.65%	24.57%	691
ClaimsRatio	0.00%	137.28%	7.17%	10.42%	691
FundsRatio	0.00%	99.84%	73.50%	27.92%	691

Sources: *Statements and Abstracts of Reports deposited with the Board of Trade,* under the Life Assurance Companies Act 1870/Assurance Companies Act 1909, *Stock Exchange Yearbooks*, 1881, 1891, 1901, 1911, 1923, 1931, 1938, 1951 and 1960, and *Investors Monthly Manuals*, December 1871, December 1881, December 1891, December 1901 and December 1911.

Table 5*: Panel regression on life assurance asset portfolios, excluding called capital*

	Debentures	Stocks Shares	Brit. Gov.	Foreign Gov.	Mortgages	Loans on Policies	Loans on Rates	Corporate	Government
FirmSize	-0.004	-0.009	-0.022	0.001	0.038**	0.009***	-0.012	-0.014	-0.021
	(0.008)	(0.010)	(0.015)	(0.007)	(0.018)	(0.002)	(0.011)	(0.009)	(0.015)
LifeFire	0.020	0.017	0.027	-0.025	-0.008	-0.006	0.007	0.037	0.002
	(0.016)	(0.016)	(0.019)	(0.017)	(0.033)	(0.006)	(0.021)	(0.023)	(0.021)
London	-0.012	0.057**	-0.001	-0.027	0.047	-0.016*	-0.086*	0.045	-0.026
	(0.022)	(0.028)	(0.032)	(0.044)	(0.035)	(0.009)	(0.046)	(0.046)	(0.050)
Unlimited	-0.037	-0.001	0.005	0.011	-0.005	0.000	-0.030	-0.037	0.017
	(0.033)	(0.022)	(0.021)	(0.019)	(0.036)	(0.005)	(0.029)	(0.050)	(0.028)
Mutual	0.135***	0.124***	-0.063*	0.011	-0.185***	-0.038***	0.062*	0.259***	-0.054*
	(0.028)	(0.017)	(0.034)	(0.012)	(0.017)	(0.006)	(0.033)	(0.029)	(0.030)
Politicians	-0.013	0.011	-0.009	0.011	0.011	-0.004*	-0.004	-0.001	0.002
	(0.009)	(0.012)	(0.013)	(0.008)	(0.019)	(0.003)	(0.010)	(0.014)	(0.014)
PremiumsRatio	0.041	0.128**	-0.097	-0.025	-0.220	0.032	-0.205**	0.177**	-0.123
	(0.050)	(0.063)	(0.073)	(0.044)	(0.163)	(0.021)	(0.097)	(0.082)	(0.096)
ClaimsRatio	-0.268*	-0.517**	-0.151	-0.005	0.708	-0.122*	0.550**	-0.813***	-0.157
	(0.144)	(0.212)	(0.240)	(0.135)	(0.474)	(0.066)	(0.252)	(0.253)	(0.302)
FundsRatio	0.039	0.038	0.005	-0.009	0.107*	0.047***	0.091**	0.080	0.001
	(0.030)	(0.038)	(0.035)	(0.044)	(0.061)	(0.011)	(0.044)	(0.053)	(0.051)
Constant	0.076	0.090	0.375*	0.087	-0.194	-0.084***	0.238	0.175	0.462**
	(0.113)	(0.128)	(0.209)	(0.087)	(0.218)	(0.025)	(0.153)	(0.112)	(0.221)
Comp Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs	691	691	691	691	691	691	691	691	691
R^2 (within)	0.380	0.510	0.668	0.249	0.488	0.380	0.213	0.534	0.660

*** - significant at a 1% level, ** - significant at a 5% level, * - significant at a 10% level

Notes: This table shows the results of various panel OLS regressions with fixed effects and robust standard errors. The years included in the analysis are 1881, 1891, 1901, 1911, 1923, 1931, 1938, 1951 and 1960. The dependent variables are shown across the top row of the table and percentage holdings in the respective asset class. Please see Table 2 for more information. The explanatory variables used are in the first column of the table, and are defined in Table 3. Mutual companies do not have uncalled capital and so the CalledCapitalRatio variable has been excluded. A Hausman test was conducted and it was determined that company and time fixed effects should be used.

Table 6*: Panel regression on life assurance asset portfolios, excluding mutual companies*

	Debentures	Stocks Shares	Brit. Gov.	Foreign Gov.	Mortgages	Loans on Policies	Loans on Rates	Corporate	Government
FirmSize	-0.004	-0.002	-0.020	-0.007	0.045**	0.007***	-0.020**	-0.006	-0.027
	(0.011)	(0.013)	(0.018)	(0.008)	(0.021)	(0.002)	(0.009)	(0.010)	(0.020)
LifeFire	0.026	0.029	0.025	-0.036*	-0.039	-0.005	0.029	0.055*	-0.011
	(0.020)	(0.019)	(0.023)	(0.020)	(0.037)	(0.006)	(0.022)	(0.028)	(0.024)
London	-0.020	0.053	0.017	-0.065	0.040	-0.006	-0.028	0.034	-0.047
	(0.024)	(0.034)	(0.029)	(0.046)	(0.044)	(0.006)	(0.035)	(0.049)	(0.053)
Unlimited	-0.037	-0.002	0.002	0.002	-0.021	0.003	-0.005	-0.038	0.006
	(0.040)	(0.024)	(0.026)	(0.021)	(0.041)	(0.005)	(0.025)	(0.057)	(0.032)
Called Capital Ratio	-0.004	-0.001	0.062**	0.039	-0.114***	0.003	0.001	0.003	0.100***
	(0.026)	(0.025)	(0.030)	(0.025)	(0.043)	(0.006)	(0.029)	(0.035)	(0.037)
Politicians	-0.012	0.020	0.002	0.003	0.005	-0.006**	-0.001	0.008	0.005
	(0.013)	(0.014)	(0.015)	(0.010)	(0.022)	(0.003)	(0.009)	(0.016)	(0.016)
PremiumsRatio	0.076	0.159**	-0.038	-0.066	-0.278*	0.032*	-0.299***	0.246**	-0.103
	(0.050)	(0.078)	(0.095)	(0.061)	(0.147)	(0.016)	(0.085)	(0.097)	(0.128)
ClaimsRatio	-0.342**	-0.590**	-0.276	0.072	0.838*	0.101*	0.754***	-0.967***	-0.206
	(0.154)	(0.272)	(0.301)	(0.175)	(0.472)	(0.055)	(0.274)	(0.312)	(0.379)
FundsRatio	0.069**	0.060	0.003	-0.018	0.114	0.049***	0.063	0.133**	-0.010
	(0.035)	(0.041)	(0.040)	(0.055)	(0.069)	(0.012)	(0.040)	(0.053)	(0.062)
Constant	0.088	0.008	0.308	0.235**	-0.296	-0.084***	0.311**	0.106	0.544*
	(0.149)	(0.165)	(0.255)	(0.116)	(0.251)	(0.027)	(0.125)	(0.128)	(0.293)
Comp Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs	505	505	505	505	505	505	505	505	505
R^2 (within)	0.344	0.443	0.627	0.236	0.430	0.425	0.230	0.464	0.637

*** - significant at a 1% level, ** - significant at a 5% level, * - significant at a 10% level

Notes: This table shows the results of various panel OLS regressions with fixed effects and robust standard errors. The years included in the analysis are 1881, 1891, 1901, 1911, 1923, 1931, 1938, 1951 and 1960. The dependent variables are shown across the top row of the table and percentage holdings in the respective asset class. Please see Table 2 for more information. The explanatory variables used are in the first column of the table, and are defined in Table 3. Mutual companies do not have uncalled capital and so mutual companies have been excluded. A Hausman test was conducted and it was determined that company and time fixed effects should be used

Table 7: *Summary statistics, pre- and post-merger*

	Average pre-merger	Average post- merger	Std. Dev. pre-merger	Std. Dev. post-merger	Difference in means p value
Debentures	14.55%	16.47%	10.07%	10.69%	0.4359
Stocks and Shares	7.62%	7.70%	5.74%	5.87%	0.9558
British Government Securities	3.79%	2.68%	5.65%	4.12%	0.3448
Foreign Government Securities	9.64%	10.26%	7.28%	7.09%	0.7135
Mortgages	29.98%	28.64%	12.61%	13.24%	0.6607
Loans on Policies	3.65%	3.82%	2.11%	2.06%	0.7198
Loans on Rates	5.09%	4.23%	5.63%	3.70%	0.4489

Sources: See Table 1.

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