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THE AUSTRALIAN CORPORATE BOND MARKET BEFORE CREDIT RATINGS,  
1915-83

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# *The Australian corporate bond market before credit ratings, 1915-83*

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## Abstract

Very few long-term studies exist of corporate bond markets. We analyse the Australian domestic corporate bond market, 1915-83, measuring how and why it changed, and which companies and sectors commonly drew upon this form of finance. This was a time before credit ratings agencies and when evolving legal and regulatory requirements and financial advice provided few protections for investors. Using unique data for over 4,900 individual bond issuances by 436 private sector and regulated government entities, we investigate whether certain firm characteristics were associated with superior pricing and/or shorter maturity, thereby reflecting their lower perceived risk by investors.

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## Abstract

Very few long-term studies exist of corporate bond markets. We analyse the Australian domestic corporate bond market, 1915-83, measuring how and why it changed, and which companies and sectors commonly drew upon this form of finance. This was a time before credit ratings agencies and when evolving legal and regulatory requirements and financial advice provided few protections for investors. Using unique data for over 4,900 individual bond issuances by 436 private sector and regulated government entities, we investigate whether certain firm characteristics were associated with superior pricing and/or shorter maturity, thereby reflecting their lower perceived risk by investors.

Foreign investment funded economic expansion in nineteenth-century Australia. The highest recorded standard of living in the world relied on government bonds and private sector debt and equity raised mostly in London, while the Australian economy hosted multinational enterprises from Britain, U.S.A. and Europe (Hall 1963; Bailey 1958; Davis and Gallman 2001; Ville and Merrett 2020). Most of these funds supported the natural resource industries and their infrastructure and supply chains that drove economic expansion, particularly pastoralism and mining (McLean 2013, pp. 80-112). The local capital market counted for little; most small domestic firms and family farms relied on their own resources, short-term trade credit, and bank accommodation (Merrett 1997, p. 183). Domestic investors formed a small, closely-knit elite. Much of this changed in the twentieth century. An expanding domestic capital market actively supported the diversification of the Australian economy into manufacturing as local

stock exchanges established in the late nineteenth century began to find their feet. A growing new equity issues market, centred on Sydney and Melbourne, had emerged by the 1920s (Merrett and Ville 2009; Fleming et al, 2021). While multinational enterprises also helped to shape the changing industrial landscape in Australia, they drew relatively little of their equity from the domestic capital market (Wheelwright and Miskelly 1967, pp. 75-156; DTI 1966).

This pivot from foreign to domestic sources of corporate capital requires explanation. Given the prior absence of an extensive local capital market, inexperienced investors received very little risk guidance through the regulatory and disclosure requirements of corporations. Neither was there a well-established class of specialist intermediaries, nor investment media, able to advise wary investors. A growing historical literature, mostly focussed on equity markets, has suggested that investors in various countries found ways around the absence of legal protection, such as through voluntary self-regulation by companies and the use of informal markets (Acheson, Campbell and Turner 2019; Cheffins, Bank and Wells 2013; Musacchio and Turner 2013). In Australia, investors in equity issues demonstrated a strong interest in preference shares since, ‘dividends and manager commitments to future payouts are a partial substitute for weaker investor protection’ (Fleming *et al.* 2021).

Bonds may also have been attractive to investors in early stage capital markets for similar reasons of greater certainty of return along with creditor priority in the event of the winding up of a business. A small number of long-term studies of national bond markets, including those of U.K. and Brazil, have drawn attention to their popularity by the later nineteenth century and explained their fluctuating progress through political and economic contingencies such as inflation, trade cycles, fiscal policies, and war (Coyle and Turner 2013; Musacchio 2008; Ho and Li 2014; Brown and Burdekin 2002; Oosterlinck 2003; Waldenström and Frey 2008). However, unlike the U.S.A., where bond credit ratings were first introduced by John Moody in 1909, Australia had no ratings system to guide investors until the 1980s

(White 2010, p. 211). Nonetheless, and in contrast to several other national studies, Australia's bond market expanded in real terms in the course of the twentieth century.

Therefore, the purpose of the paper is to understand how the Australian corporate bond market developed in the absence of the legal and informational support structures commonly available to investors in other nations and in modern capital markets. We examine the Australian corporate bond market using unique, individual data for over 4,900 bond issuances by 436 private sector and regulated government entities between 1915 and 1983. We begin with an overview of the development of the market, how and why it changed over time, and which companies and sectors commonly drew upon this form of corporate financing. We then analyse the strategies investors adopted to overcome the legal and informational obstacles of the early market, particularly whether they favoured what Bassino and Lagoarde-Segot (2015) have called 'the most dependable information available to them'. For example, we investigate whether corporate leaders and regular issuers experienced superior pricing and/or shorter maturity reflecting their lower perceived risk from reduced information asymmetries and reputational benefits. The paper adds to the small number of studies that have examined the long-term trends and drivers of national bond markets. It also analyses firm characteristics associated with the bond spread over the risk-free rate and maturity of bond issuances to throw closer light on how investors overcame legal and informational obstacles.

## THE DEVELOPMENT OF BOND MARKETS

Active corporate bond markets existed in a number of leading economies by the later decades of the nineteenth century. In the second half of that century bond holding received a major stimulus from railway building given the heavy costs, long investment gestation, and unpredictable profits of the industry. Americans invested heavily in railroad bonds in the

knowledge that investment bankers like J. P. Morgan provided a degree of certification through their active governance roles (Frydman and Hilt 2017). In a rare long-term study of a national bond market, Coyle and Turner (2013) traced the development of the U.K. market, 1860-2002. The expansion of the rail system drove the growth of corporate bonds up to the late 1880s as railway companies accounted for 75 per cent of issues, after which breweries and a variety of commercial and industrial enterprises became increasingly important. However, in what they term the great reversal, the twentieth-century U.K. narrative is largely one of the decline of bonds after 1909 in terms of real value, as a share of securities trading, and in relation to GDP. Musacchio's (2008) study of Brazil's bond market, 1885-2003, also identifies a long-term decline in the twentieth century from a peak of 1915. Both studies argue that weak legal protection for investors did not discourage these growing markets and that macroeconomic and policy factors often explained their fluctuation and ultimate decline. Post World War Two U.K. tax incentives initially encouraged debt finance but from the late 1960s inflation eroded the value of bonds. In Brazil, bond markets were adversely affected in the 1930s to the 1950s by a mix of inflation, the development of preference shares as a competing investment, and the reduction of legal protection for creditors.

#### TABLE 1

#### ABOUT HERE

Table 1 estimates the size of bonds markets for a selection of countries across much of the twentieth century. France, the U.K., the U.S.A. and Belgium are estimated to have had among the largest bond markets relative to the size of their economies by 1913. The Australian market was smaller than these but similar in size to several European countries including Germany, France, Italy, Denmark, and Canada. All of these bond markets exhibited significant volatility

in response to the changing political economy of the twentieth century. However, while the larger group of bond markets were mostly in secular decline, as the UK study details, the smaller latter group, of which Australia was part, remained relatively buoyant.

Beyond the U.K. and Brazilian studies of decline, research on the bond market has concentrated on particular eras and events, particularly the disruptive effects of World War Two in France, Germany, Denmark and Sweden (Brown and Burdekin 2002; Oosterlinck 2003; Waldenström and Frey 2008). In a similar fashion, Ho and Li (2014) find that trends in the Chinese bond market in the interwar period were largely shaped by diplomatic-military developments. Bassino and Lagoarde-Segot's study of the Japanese share market in the highly volatile 1930s compares different investment classes (industrials, utilities, bonds) and investor types, focussing on their response to a series of 'significant events'. They conjecture, but do not test, the notion that the mass of investors who were not zaibatsu-owning insiders, 'had little choice but to select assets on the basis of the most dependable information available to them' (Bassino and Lagoarde-Segot 2015, p. 1246). In the current paper, we will investigate and test whether Australian investors opted for particular bond issues based on dependable information about the firm.

Australia did not share in the booming national corporate bond markets of the late nineteenth century. As noted in the introduction, it drew largely upon foreign sources of investment to fund its economic development before 1914. In place of the domestic railway company bonds that dominated the British market, the Australian rail network was funded by colonial government bonds issued on the London Stock Exchange. In a similar fashion, pastoral expansion in Australia after about 1860 was funded in significant part by bonds raised in London by companies like Australian Mercantile Loan and Finance Company (1863), the New Zealand Loan and Mercantile Agency Company (1865) and Dalgety (1884). Interest rate differentials between the two nations made this approach especially attractive to such lenders

(Ville 2000). The London market offered many attractions to investors in terms of the size of loans it could accommodate, the liquidity of trading, and the existence of specialist institutions (Merrett 1997, 191). This was supplemented by informal bond markets such as those facilitated by Scottish lawyers and accountants drawing on the savings of ‘widows, spinsters, clergy and retired gentlemen’ seeking profitable outlets (Bailey 1958, p. 287; Bailey 1959).

By the 1890s, the speculative failure of many Australian mining ventures and the economic crisis of 1893, which included many bank failures, created circumspection among British equity investors and bond holders. As a result, State, local and semi-government bodies began to turn to the domestic market to fund infrastructure works. The Melbourne and Metropolitan Board of Works, for example, drew heavily on the local exchanges in the first decade of the twentieth century. As Merrett (1997, p. 189) concludes, “[t]he issuance and trade in fixed interest securities altered the character of the market in important ways, and laid the foundations for the ease with which governments turned to the market after 1914”.

Further impetus to the development of a domestic bond market was provided by the issue of a series of ten War and Peace Loans from 1915 to 1921 to help fund the enormous military expenditure of World War One. These were similar to the American wartime Liberty Bonds, which substantially increased household savings and participation in financial markets (Hilt and Rahn 2016). The War and Peace Loans were heavily publicised and promoted, attracting 833,000 applications, mostly individuals rather than institutions, from a population of around five million (Waller 1995, p. 85). The disruption to international capital flows arising from World War One and its aftermath, together with the growth of domestic incomes and population in Australia in the 1920s provided further reasons for a pivot towards a domestic bond and equity market (Michie 2006, p. 167; Butlin, Dixon and Lloyd 2015, p. 558). Alongside the demand for loans from the public sector, the expansion and diversification of



the Australian economy after World War One ensured that monies would also flow into the corporate sector (Black et al 2013).

## SOURCES AND DATA

The aggregate features of the Australian bond market were first examined by Black *et al.* (2013) using a dataset compiled by the Reserve Bank of Australia (RBA) from official gazettes of the Sydney Stock Exchange (SSX), the Melbourne Stock Exchange (MSX) and the *Australian Stock Exchange Journal*. The RBA granted permission to use their dataset, which recorded the name of issuer (company), issue and maturity date of the bond (debenture), the par value of the bond raised, and the interest rate (hereafter RBA Dataset). Our primary interest is to understand how the bond market cleared by investigating the characteristics of bond issuers, their issuing behaviour over time, bond interest rates and maturity. Therefore, we collected company financial variables from balance sheets and cashflow reports published in the *Australasian Insurance and Banking Record (AIBR)* (1915-1920), *Jobson's Investment Digest (Jobson's)* (1920-50) and the Australian Graduate School of Management *Annual Report Record Database* (1951-83). The AIBR began publication in 1877 and by the 1890s provided financial information and statements for investors on a broad set of firms. *Jobson's*, also periodically known as *Australian Investment Digest*, was published monthly (later fortnightly) from 1920 and provided summaries of “all Australian company reports published...up to the latest moment”.<sup>1</sup> It included aggregated data and regular updates on financial performance. The Australian Graduate School of Management *Annual Report Record Database* contains the full annual reports of Australian firms since 1950. We excluded bonds raised by banks as these were typically issued to bolster deposit levels and, like deposits, were

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<sup>1</sup> *Australian Investment Digest* Volume 1, Number 1, January 1920, p. 3.

lent to households and companies. Black *et al.* (2013) categorised bond issuers into three groups – private non-financial companies (PNFC); public trading enterprises (PTE); and non-bank financial institutions (NBFI). We use the PNFC and NBFI categories and define “regulated companies” as private utilities, private telecommunications companies and public trading enterprises (PTEs above). The inclusion of NBFIs (typically, hire purchase and consumer credit companies) reflects the emergence and growing importance of these companies in post-1950 finance markets in Australia (Runcie and Burke 1969; Van der Eng 2008). The dataset comprises 4,907 bond issuances made by 436 companies between 1915 and 1983. Bond issuances were predominantly by regulated companies (PTEs; utilities; telecommunications) and NBFIs, which together accounted for 63 per cent of bond issuances and 59percent of real par value between 1915 and 1983. NBFI bond issuances overwhelmingly took place after World War Two.

In order to ascertain whether the RBA Dataset was representative of bond issuances over the period, we cross-checked the RBA Dataset for select years against new bond issuances reported by *Jobsons*. Our analysis revealed a high overlap between the RBA Dataset and bond issuance reported in *Jobsons*, with two exceptions. First, the RBA Dataset underreported the number of utilities which issued bonds, especially gas companies in Australian States other than New South Wales or Victoria. We surmise that local (smaller) utilities tended to raise bonds on their local state exchange and these issuances were not recorded on the SSX or MSX. Second, *Jobsons* reported a number of small, private companies which issued bonds, typically to existing shareholders. These bond issuances were not included in the RBA Dataset or in our analysis.

Our study finishes in 1983, which is a natural juncture in several respects. As we will see below, credit ratings agencies were only beginning to take root in Australia in the 1970s and 1980s. Major changes to Australian macroeconomic policy from the 1980s included

extensive deregulation of the finance sector. An array of controls on foreign exchange, interest rates and bank lending were removed. The floating of the Australian dollar, allowing 16 foreign banks to operate in Australia, and access to Eurobond markets were other relevant changes in financial settings (Borland 2015, p. 424). Finally, capital gains tax was introduced in 1985 and dividend imputation two years later. These shifts created a new set of conditions and impacts on the bond market including a large growth of offshore debt, which require a separate analysis (Davis 1993, p. 251).

### THE AUSTRALIAN BOND MARKET, 1915-1983

#### *Key trends*

Companies can choose among alternative forms of corporate finance, most notably retained earnings, debt, and/or equity. Retained earnings were the primary source of finance for companies throughout most of the twentieth century (Forster 1964, pp. 195-209; Ma and Mathews, 1974; Fleming *et al.* 2004; Hall 1956). For external financing, equity was favoured over debt, as was the case in the U.K. where the value of debentures peaked at 15 percent of all domestic corporate securities in 1913 only to decline thereafter (Coyle and Turner 2013, p. 819). Bond financing in Australia averaged 18 percent of total external financing between 1915 and 1939 (peaking at 25 percent in the 1920 and again in 1932), declining to an average of 11 percent between 1945 and 1983 (Figure 1).

The domestic bond market did not increase substantially in size relative to the Australian economy throughout the period under review. The stock (par value of outstanding securities) of bonds as a percentage of GDP shows that the bond market was on average 4.7 percent pre-1940 and 4.4 percent between 1950 and 1983 (Figure 1). While the bond market's absolute size peaked during the 1960s, it was larger in the 1930s relative to GDP.

FIGURE 1  
ABOUT HERE

We can analyse trends in the bond market more closely through annual bond issuances (in 2019 real terms) in Figure 2. Annual issuances were relatively cyclical, rising in the 1930s and then more strongly from the late 1950s to the late 1960s. A fitted moving average indicates that the annual issuance of bonds began to decline from the late 1960s. The number of issuances and distinct number of issuers also bears this out – there is a decline in the number of distinct issuers from the early 1960s, although the number of issuances does not start to fall off until the late 1960s. This confirms that the heyday of the bond market in terms of expansion and growth was the 1950s and 1960s, with the relative size of the market declining in the 1970s. This trend is similar to that found by Coyle and Turner (2013) who charted a decline in the real size of the U.K. bond market from the 1970s onwards. However, while the decline in the U.K. bond market was permanent, that of Australia was only temporary.<sup>2</sup>

FIGURE 2  
ABOUT HERE

The initial expansion of the Australian bond market in the interwar period was explained in an earlier section of the paper, primarily through the growth of a new investing class and funding opportunities in new manufacturing industries. The rapid growth of the Australian bond market to the late 1960s followed by decline in the following decade requires explanation. The demand for corporate finance boomed in post-World War Two Australia. Pent

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<sup>2</sup> Data from Mathews (2019) indicates that bonds as percentage of GDP increased from 1.83% in 1982 to 51.2% in 2018.

up demand for funds existed after the sacrifices of wartime, particularly as the curtailed growth of the consumer industries in the 1930s resumed its expansion. Government's decision to reduce its new borrowing and focus on utilising tax revenues may have contributed to this expansion by lessening a source of competition for fixed interest funds. Monetary policy instruments used by the central bank also mattered by restricting the ability of banks to provide corporate credit. Controlling bank credit and keeping interest rates low and stable were policy targets that were achieved by tight control over the level and purpose of banking lending and restrictions on the growth of their balance sheets, a process of financial repression which lasted into the 1970s (Grenville 1991).

However, it was the long-term debt market that expanded most rapidly in the decade and a half after World War Two (Fleming *et. al.* 2004, p. 141). In particular, the share of new company funds in the form of bonds and notes rose from 7 to 20 per cent between 1956/7 and 1960/1 (Mathews and Harcourt 1964, p. 422). There was a growing tendency among major companies to increase their gearing and benefit from tax relief on borrowed funds. However, the expansion of bond markets was concentrated on the retail trade whose share of total funds rose from 8.5 percent to 45.4 percent over the same period, which reflected the growth of consumer credit as we will see below (Mathews and Harcourt 1964, p. 422). The bond share of corporate securities fell back slightly thereafter for several years after a temporary tax change that removed the tax deductibility of interest (Mathews and Harcourt 1964, p. 422).

Tax is often presented as a reason for changes in the amount of leverage employed by companies. Companies may enjoy a "tax shield" when interest on debt is treated as an expense, thus allowing the company to deduct the cost of debt from accounting profits. The tax system may influence financing decisions if the tax on company profits is high, it taxes distributed profits and not retained profits, has preferential rates for dividends over interest and/or if capital gains are taxed in the hands of the investor. The growth in the U.K. bond market after 1945 has

been attributed to taxation policies penalising distributed profits (equity dividends) in favour of debt finance (Coyle and Turner 2013, pp. 829-31). From 1915 Australian companies were taxed on retained profits after deducting dividends. From 1922 all company profits were taxed. The company tax rate was set at 7.5 percent from 1915 until 1940 when the rate rates rose substantially, around 46 percent at which it remained for the rest of our period (Reinhardt and Steel 2006, table 1). From 1940 to 1986, “Australia maintained a classical tax system, under which profits were taxed at the company rate and at a personal rate when distributed” (Reinhardt and Steel 2006, p. 16). As Reinhardt and Steel note, the Australian tax system over this period resulted in “distorted corporate financing decisions by providing a bias towards debt and, combined with the absence of a capital gains tax, provided an incentive for companies to retain profits” (p. 16). Therefore, while the 1940 tax increase may have made debt more attractive, unlike the U.K. bond market (Coyle and Turner 2013, pp. 828-31), there were no other substantive changes to tax laws during our period under review that would have shaped fluctuations of the bond market in Australia.

The decline in the U.K. bond market from the 1970s has been attributed to negative real returns during a period of high inflation at a time when equities performed much better (Coyle and Turner 2013, pp. 824-26). Australia also experienced high rates of price inflation, while bonds’ share of external corporate finance dropped. Rising interest rates made it increasingly difficult for firms to raise loans, while expanding bonds spreads (Figure 3) revealed the rising costs of debt (Ma and Mathews 1974, pp. 76-79). The major area of expansion of the bond market in the previous two decades – consumer credit from NBFIs – began to dry up with the growing cost of credit and increasing competition from personal bank loans as the era of financial deregulation commenced (Van der Eng 2008, pp. 245, 256).

*Issuers and investors*

Four industries accounted for 84 percent of issuances by number and 81 percent by real par value: financials (NBFIs), utilities, consumer discretionary and materials (mining). The industry composition reflects the growth of the Australian economy during the twentieth century, as it developed from natural resources, infrastructure development and a limited range of manufacturing before World War Two to a broader range of major consumer durables after 1945 often purchased on credit (van der Eng 2008, p.254). Pre-1950s, the distribution of issuers by industry was concentrated in utilities (gas companies) (50 percent of the 200 bonds issued between 1915 and 1949), with materials (mining), industrials and financials each constituting approximately 12 percent of the number of issuances. There were also a smaller number of bond issuances by companies located in new industries in the 1920s and 1930s such as consumer durables and apparel (8 percent), food, tobacco and beverage (7 percent).

## TABLE 2

### ABOUT HERE

NBFIs rose to prominence as bond issuers in the 1950s and 1960s. They were responsible over the period under review for 45 percent of all corporate bonds by number and 40 percent by real par value. These companies had an impact on the bond market by introducing shorter maturity bonds to finance consumer and hire purchase loan books. The average tenor (or “currency” in earlier parlance) of bonds issued (equally weighted and par value weighted) declined after World War Two. Tenors trended downwards from 1945 to 1983, so that from the mid-1950s the average tenor was less than ten years. Runcie and Burke (1969) identified fifty-one ‘hire purchase’ companies by the early 1960s, all of whom were issuing debentures. Van der Eng notes that “the hire-purchase sector increased quickly and by the early 1960s they were sometimes referred to as Australia’s ‘second banking system’” (2008, p. 251). NBFIs

could offer higher interest rates on bonds to finance their lending, as they were not subject to interest rate restrictions on their loan book in the same way banks were. While NBFIs certainly dominated, issuances by industry were more dispersed compared with before 1950. Industries where more than 100 bonds were issued were energy (1010), materials (1510), capital goods (industrials) (2010), transportation (2030), consumer durables and apparel (2520), retailing (2550), food, tobacco and beverage (3020), and utilities (5510).

In spite of their prominent position in the Australian corporate economy (Fleming et al 2004, pp. 17-18), multinational enterprises (MNEs) did not constitute a large proportion of locally issued bonds. In total, 21 MNEs issued 257 bonds out of 4,907, which represented 5.2 per cent by number and 0.7 per cent of total issuances by real par value. They likely did not need to raise debt locally given their ability to draw on the parent's internal capital market for positive net present value investments. ICI Australia and New Zealand was much the largest overseas user of the bond market with 53 bond issues, which was 21 per cent of MNE bond issuances and 33 per cent of their value. For example, the company raised a £3m bond issue in April 1952 at 4.5%, at 20 years with the option to redeem after 15 years. The issue was underwritten by E. L & C. Baillieu and Ian Potter (*The Herald*).

The investors in Australian bonds during the interwar period were primarily households and individuals, the same investors who subscribed to equity raisings during the period (Fleming *et al.* 2021). Bonds were typically issued at below par (e.g. 97 cents; 98 cents) or, in the case of regulated companies such as utilities, through auctions. Bonds could be oversubscribed quickly so companies provided existing bond holders and/or shareholders with a first option on new bond after which the issue would be open to the public.<sup>3</sup> Larger issuers such as BHP used ballots to decide which investors would be issued with bonds, while in other

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<sup>3</sup> For example, the Metropolitan Gas 1945 issue by auction was oversubscribed in five minutes (*The Western Australian*, 7 February 1945, p.2).



cases associated entities would fully underwrite a bond issuance as well as guarantee principal and interest.<sup>4</sup> Some were brokered in a similar way to equity issuances, through securities and brokerage houses such as J.B. Were and E.L & C. Baillieu.

Institutional investors such as life companies or investment trusts were not regular investors in company bonds in the interwar period, preferring to focus on residential and land mortgages. Keneley (2006; 2012) notes that unlike the U.K., Australian life insurers did not have a wide choice of assets, resulting in a “perennial problem...where to invest funds” (2006, p.15). Investment in shares remained a small proportion of total assets (2012, p. 275, Table 2); bond holdings in corporations were in a similar category. This is not to suggest that life insurance companies were absent from financing company bonds before the Second World War. There are several examples of life insurance companies investing in bonds, sometimes fully financing the issuance. Hobart Gas refinanced its existing bonds maturing in July 1936 with £20,000 from retained earnings and a new £60,000 loan from National Mutual Life Association of Australia. In other cases, life companies underwrote issuances. AMP Life agreed to take up any bonds not subscribed when Australian Gaslight repaid its existing £750,000 6.5 percent bond in October 1939 with a new issue of £750,000 bonds at 5 percent for 10 years, open only to existing maturing bond holders.

Households remained important financiers of corporate bonds after World War Two. Black *et al.* (2013) show that between 1954 and 1960 (earliest data points), 45 percent of bonds were purchases by households, with 34 percent purchased by managed funds, defined at that time as life insurance companies and public trusts. Household share fluctuated somewhat in the following decades – 27 and 40 per cent – but remained important (see Table 3). Upturns in the rate of bond issuances in Australia, particularly in the 1950s and early 1960s, correspond

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<sup>4</sup> For example, the debenture to finance Western New South Wales Electric Power Pty Ltd was fully underwritten by owners Broken Hill South, North Broken Hill and Zinc Corp (*Sydney Morning Herald*, 31 January 1931, p.15).

closely to increases in the domestic savings rate, which McLean attributes to shifts in the age distribution and size of the Australian population (McLean 1994)

TABLE 3  
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Keneley (2012) notes that the rise of institutional investment in Australia from the 1950s was partly due to a decision by life insurance companies to diversify their investment portfolios into asset classes other than mortgages and government securities. By 1960, bonds and notes were 9.5 percent of assets held by Australian life offices; an increase from negligible levels prior to the 1950s. AMP's holding of debentures increased from 4.5 percent of total assets in 1952 to 11.2 percent of total assets in 1965. As life offices gained greater knowledge of companies through share investments, they became more comfortable investing in bonds and short-term notes. Life offices also moved into sub-underwriting equity and debt issuances, working with brokering firms such as J.B. Were (Keneley 2012, pp. 281-83).

*Evaluating investor risk*

Investors evaluated the return and risk of a bond issue based on information made available from the company or from securities firms and brokers that placed bonds with their clients. Credit rating agencies were not regularly active in Australia until the early 1970s. Moody's Investor Services and Standard & Poor's issued ratings on Australian government and large corporations from the 1970s, although did not establish Australian offices until 1988 (Moody's Investor Services) and 1990 (Standard & Poor's) (Creighton, Gower, and Richards 2007, p.4). During the 1980s domestic rating firm Australian Ratings (established 1981) published the Australian Ratings Monthly Bulletin, "mailed to subscribers in the middle of

each month” with ratings of domestic bond issuances (Matolcsy and Lianto 1995, p. 895 footnote 8).<sup>5</sup> This stands in stark contrast to the U.S.A. where legislative change in the 1930s (for example, regulations made by the Treasury Department in 1936) provided support for bond rating agencies, with the “recognised rating manuals” of Moody’s, Poor’s, Standard and Fitch essentially attaining “the force of law” (White 2010, p.213). Credit ratings in Australia had a “more limited regulatory role” than in the United States such that while “the portfolio of large U.S. investors are directly affected by the decisions of rating agencies,...there is no similar role for most large Australian investors” (Creighton *et al.* 2007, pp. 4-5). Ratings agencies came much later than the U.S.A. in many other countries that had smaller less developed bond markets, including Canada (1972) and Japan (1975), but also in the U.K. (1978) whose market was extensive (Cantor and Packer 1975, p. 12; Sylla 2002).

Prior to the arrival of credit ratings in Australia, the main institutional buyers of bonds (insurance companies; trust companies) may have had a limited need for the services of agencies. Often, they could demand information from issuers on a case-by-case basis especially when they were the principal subscriber in an over-the-counter issuance (see Davis and Gallman 2001. However for households, the major investor class for most of our period, seeking to assess the worthiness of an issuance, particularly a public offering, presented greater challenges of asymmetric information. Until at least 1945 limited company disclosure requirements and weak accounting standards hindered investors in assessing the riskiness of bond issues (Gibson 1971; Morris and Barbera 1990). The disclosure of an audited balance sheet and a profit and loss account were not required in New South Wales until 1936 and even then compliance deficiencies persisted, for example by posting highly aggregated accounts (Hutchinson and Lee, 2006). Similar legislation was not passed in Victoria until 1938, Western

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<sup>5</sup> Standard & Poor’s acquired Australian Ratings “barely a day after...[it] opened its doors for business in Australia.” (*Canberra Times*, Tuesday 6 March 1990, p.17).

Australia in 1943 and Tasmania in 1959. Moreover, there was considerable variance in the degree of protection offered to shareholders and bond holders between the States; of the two largest States, New South Wales relied on the weak United Kingdom Act of 1929 while Victorian legislation was based on the much improved reformed United Kingdom legislation passed in 1947. The passage of the Uniform Companies Act 1961-62 provided stronger protections to both shareholders and bond holders, the harmonization of stock exchange listing requirements, and an overhaul of the governance of exchanges. This culminated in the establishment of the Australian Stock Exchange in 1987 with the amalgamation of the six state exchanges (Ford 1962, pp. 134, 139, 149, 155-56; Carew 2007, chapters 1-4). It was not until after the Second World War that professional bodies, including the Australian Society of Accountants, offered guidance on accounting standards. Investors were similarly confounded by the inadequate reporting required by stock exchanges for listed companies.

There was a sharp increase from 3 to 53 percent in the proportion of listed companies which traded as holding companies between 1920 and 1952 (Whittred 1987, Table 2, p. 84). This rising trend, which may have been particularly notable for Australia, further complicated the efforts of investors to identify the riskiness of different bond issuances. Disappointingly, consolidated financial reporting came 10 to 20 years after the UK and as much as 30 to 40 years after American practice (Whittred 1986, p. 104). It was not until the 1950s that most holding companies submitted consolidated financial accounts (Whittred 1986, p. 109). Legislation, accounting standards and stock exchange listing requirements were often slow to recognise these changes in the corporate landscape or react in a consistent manner across State jurisdictions. Even then, consolidated statements frequently provided limited insights into the performance of individual companies or the extent and nature of intra-group transfers through lending and borrowing.

Alternatively, a growing financial press and underwriting industry provided sources of advice for bond investors – including our main sources identified in the previous section – although both were in an early stage of development before 1939 (Fleming *et. al.* 2021). American credit reporting agencies, Dun and Bradstreet, had offices in Sydney and Melbourne by 1915 but appear to have focussed on providing news of the American bond and equity markets, including the performance of Australian dollar bonds issued by State governments, rather than looking at the small local corporate capital market.<sup>6</sup>

The limited liquidity of the Australian bond market in the absence of regular exchange trading of most issues denied investors another route to risk assessment through price information. Most bonds were either unlisted, rarely traded, or listed on only one exchange. In 1930, 84 percent of the outstanding bonds in our sample (48 out of 57 bonds issued by 24 companies) were traded on the MSX or SSX. There were only two companies whose bonds were listed on both exchanges – Broken Hill Proprietary (BHP) and Australia Gas Light. Sydney companies tended to list on the SSX, while Victorian and South Australian companies are quoted on the MSX. High listing costs and a lack of uniform trading rules between exchanges before the 1950s limited broader trading. In spite of subsequent advances, liquidity declined in the post-World War Two period with the growth of the over-the-counter market selling to wholesale investors in place of listings. In 1950 for example 14 of 70 outstanding bonds in our sample received quotations on the SSX, although they were not necessarily traded (20 percent).

## FIRM CHARACTERISTICS, BOND SPREADS AND TERM TO MATURITY

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<sup>6</sup> For example, *Daily Standard* (Brisbane) 14 Oct 1933, p. 1; *The Brisbane Courier* 30 August 1933, p. 10.

We seek to understand whether, in the absence of more detailed and specific information and advice, investors sorted the risk profiles of bond issuing firms by broad features, using ‘dependable information available to them’ (Bassino and Lagoarde-Segot 2015). Our dependent variables are the corporate bond spread (*CBS*) and term to maturity (*Maturity*), where a lower bond spread and shorter maturity are regarded as lower risk investments. We chose PNFC as our base group and employ a number of dummy variables to account for company characteristics such as regulated companies (*Regulated*), the new non-bank financial companies (*NBFI*), companies regularly issuing bonds (*Repeat Issuer*), and corporate leaders (*Corporate Leader*). We control for macroeconomic, regulatory and firm financial variables.

We calculate a corporate bond spread by matching each PNFC, regulated and NBFI bond issuance to a government bond (risk free rate) which was issued in the same year and has the same (or similar) maturity. For bonds issued between 1915 and 1969, we have access to annual government bond issuances which varied by maturity. We matched each corporate bond to the government bond issued in the same year and of similar duration. If the corresponding year-maturity government bond rate is missing, then we linearly fit (via interpolation) a government bond of the same maturity to that year and use that government bond rate as the risk-free rate. For bonds issued after 1969 we used the government standard issuances of 5- or 10-year bonds. If the maturity of the corporate bond is less than 5, then we use 5-year rate, otherwise the 10-year rate.

FIGURE 3  
ABOUT HERE

Average nominal bond rates ranged between 4 percent and 8 percent per annum up to 1960s, increasing to greater than 8 percent per annum in the 1970s and early 1980s. Inflation was a factor in higher nominal rates, as accelerating inflation from 1969/70 resulted in higher inflationary expectations (Keating 2015, pp. 443-45; Pagan 1987, p. 109). Bond spreads averaged 1.05 percent per annum between 1915 and 1955, increasing to 4.01 percent per annum between 1955 and 1983. During the early post-war period, the central bank (the Commonwealth Bank of Australia until 1959) manipulated the government rate to preserve the capital value of the bonds. Term to maturity fell from 11 years (value weighted average) before 1955 to 6 years thereafter to 1983. Maturity term also became less volatile. Therefore, bond spreads were (on average) lower and term to maturity longer during the pre-1950 period when there were fewer issuers, typically larger companies and/or regulated entities.

#### FIGURE 4

#### ABOUT HERE

To analyse which firm characteristics are associated with the corporate bond spread and the term to maturity of bond issuances we use a multinomial ordinary least squares regression. Our regression models are estimated on a sample of 2,322 bonds used by 139 companies for which we could match bond issuances information to firm financial variables. Several studies have shown that regulated companies enjoy lower borrowing costs and longer maturity as compared with unregulated firms. Management of regulated companies have less discretion over future investment decisions, reducing adverse incentive effects of long-term debt (Smith 1986; Guedes and Opler 1996). It may also be the case that investors treated NBFIs in a different way from private non-financial companies. As we discussed earlier, NBFIs were large issuers of bonds to finance their hire purchase and consumer loan books. NBFIs had diversified loan books, which could lead to lower default risk. NBFIs likely adopted a form of the matching

principle, whereby debt maturity is a function of the maturity length of their asset base. By matching bond maturity to assets, managers were less likely to pass up positive net present value projects (pools of loans) and maintain flexibility of cost of funds to lend to consumers (Barclay and Smith 1995; Guedes and Opler 1996).

For a repeater issuer or corporate leaders, we expect that bond spreads are lower and maturity shorter than non-corporate leaders. Repeat issuers (whether a NBFI, Regulated or a PNFC) provide current information (including the performance of bonds outstanding) to the market, which allows investors to evaluate default risk, reducing the level of asymmetric information between lender and borrower. A similar information asymmetry argument may be in play for companies which were corporate leaders, defined by Fleming *et al.* (2004, pp. 45-50) as the largest companies by total assets which displayed longevity by maintaining a top 100 ranking throughout much of the twentieth century. The best example of a corporate leader, by ranking and longevity, is BHP, Australia's largest mining and steel producing company in the twentieth century. Signalling and agency cost theories suggest that higher quality firms will issue shorter maturity debt, as higher quality firms subject themselves to bond investors scrutiny and renegotiation of bond terms (Flannery 1986; Barclay and Smith 1995). However, we note that in a younger, less liquid market (such as the Australian bond market), the ability of high-quality firms to signal via short term debt may be confounded by market size and stage of development (Alcock et. al. 2012).<sup>7</sup>

The regressions include several macroeconomic and political factors, which may have impacted borrowing costs and maturity of bonds. We control for the uncertainty and potential lack of liquidity associated with the two world wars, using a dummy variable (*War*) if the

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<sup>7</sup> Conversely, in a small, illiquid market high quality firms might raise longer term debt because raising debt is difficult and expensive (Titman and Wessels 1988). Firms will therefore trade off the tax shield benefits of raising longer maturity debt against bankruptcy risk. We recognize that high quality firms decisions to raise shorter or longer maturity debt could have changed throughout the period under review. For a summary of maturity debt theories and their application to Australia, see Alcock et. al. (2012).



company raised a bond during 1914 – 1918 and 1939 – 1945. Stock market conditions impact corporate financial policy and the firm’s decision to issue bonds (Erel et al 2012; Graham, Leary and Roberts 2015). Companies issuing bonds during a more buoyant stock market have to offer a higher interest rate on their bond to encourage investors to subscribe to the bond. The variable *Stock Acc Index* measures the buoyancy of the stock market at the time of issuance. Finally, we control for the stock of government bonds on issue at the time of the company bond issuance (*Govt Bond/GDP*). It is possible that a larger bond issuance program by the government results in private sector companies being crowded out of the bond market. Alternatively, the government sector may help the market develop by creating infrastructure and confidence in bonds, bringing new investors into the market (Fan, Titman and Twite 2012).

We include a set of company financial variables that the finance literature has found to be associated with variations in bond spreads and maturity. Larger companies (*Size*) are associated with a lower probability of default and therefore lower spreads, and longer maturity. Bonds issued by larger companies, if listed, have higher liquidity leading to lower liquidity risk (Longstaff, Mithal and Neis 2005; Chen, Lesmond and Wai 2007; Bai, Bali and Wen 2019). Larger issuers are also better able to bear the issuances costs of a bond, as a substantial proportion of issuances costs are fixed (Barclay and Smith 1995). The probability of default has also been found to be negatively related to profitability (*Profitability*), and asset tangibility (*Tangibility*) (Smith 1995; Guedes and Opler 1996).<sup>8</sup> The definitions of our regression variables and summary statistics are provided in the Appendix.

## RESULTS AND DISCUSSION

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<sup>8</sup> Alcock, Finn and Tan (2012) show that there is positive relationship between leverage and maturity. We calculated book leverage (total debt) and net leverage for a subset of companies, mainly those which issued bonds after World War Two. Our results were substantially similar to those reported, albeit the regressions were estimated on smaller datasets.

Regulated companies and NBFIs were associated with lower bond spreads as compared with PNFCs. These companies also issued shorter maturity debt. Investors in bonds of regulated companies accepted a lower nominal coupon rate (and spread over government bonds) on the basis that issuers had tangible assets, a degree of contracted (or recurring) revenue, local monopolies for supply of services and oversight by state and federal governments. In addition, for many regulated companies there was an implicit guarantee of government support should a company have difficulty paying interest or principal. NBFIs issued bonds at the shorter end of the market, likely maturity-matching their source of funds to the shorter nature of their consumer loan books. Corporate leaders' bond spreads were significantly lower than non-corporate leaders, suggesting that salience and longevity in the market impacted the cost of borrowing. When we examine the bond issuances of corporate leaders as a separate cohort (columns 1 and 3), BHP was able to borrow at lower bond spreads than other corporate leaders. We also note that corporate leader repeat issuers issued shorter maturity bonds at a lower bond spread, as compared with non-repeat corporate leaders. This is consistent with agency cost and signalling theories relating higher quality firms to shorter maturity debt.

#### TABLE 4

ABOUT HERE

War, stock market conditions and the size of the government bond market all had a significant relationship with the bond spread but little or no association with term to maturity. Bonds issued during war periods had significantly higher spreads than during other periods, although bonds were not significantly shorter or longer in maturity. Periods of higher stock

market prices were associated with higher bond spreads. We find no suggestion that the size of the government bond market crowded out corporate issuers; indeed, the negative relationship between government market and bond spreads, and positive relationship with maturity is consistent with the view that government bonds and corporate bonds were complements (rather than substitutes) in investors' portfolios. The size of issuers had a significant association with bond spreads (lower) and maturity (shorter). Other financial variables were not, in general, significantly related with either dependent variable.

Overall, therefore, our first set of results using the full sample of issuances between 1915 and 1983 point to the possibility that bond investors distinguished investment risk by identifying certain dependable features of issuers, particularly those issuers that were regulated, NBFIs, corporate leaders, especially BHP, and to some degree repeat issuers. Such firms were thus able to borrow at lower cost and shorter maturity. These low-risk choices are largely consistent with the conceptual literature on bond markets. However, while 'types' of firms were given risk 'ratings' by investors, the financial attributes of issuers counted for little, with the exception of size. This is somewhat at odds with the finance literature where variables such as profitability and tangibility have been found to be associated with variations in capital structure (Harris and Raviv 1991; Frank and Goyal 2009). It may be the case that some investors (especially households) either did not have sufficient access to company financial information or were not well informed about its relevance to assessing risk and return in a market before credit ratings.

The Australian domestic bond market increased in size in terms of the number of annual issuances and the real par value of issuances during the seventy years of this study. While there were no credit ratings of domestic bonds prior to the 1980s, the nature and structure of the bond market certainly changed over the period leading to the possibility that investors refined their approach to assessing risk and return. We stratify our sample into three time periods to assess

whether the associations we identified between firm characteristics and bond spreads and term to maturity vary across time. The first time period 1915 – 1955 reflects a smaller debt market spanning two world wars and the Great Depression. There was an average eight bond issuances per year at an average real par value of \$9 million. The second time period 1956-1974 is one of rapid growth in market size as Australian companies sought to finance growth following the slowdown in economic activity during the 1952-53 recession. According to Ma and Mathews (1974) between 1955 and 1971 Australian companies' use of long term debt doubled and the main source of this debt was the domestic bond market. Trading banks restricted lending to working capital (Forster 1964, p. 198; Ma and Mathews 1974, pp. 58-59). During the 1956-1974 period there was an average 199 bond issuances per year at an average real par value of \$282 million.<sup>9</sup> The third time period, 1975-1983, marked a slowdown in the number of issuances although average issuance size increased. Rising yields on the 10-year government bond and 90-day commercial bills, inflation and rising unemployment made bonds an unattractive financing option for most companies, not too dissimilar to the U.K. in the 1970s (Coyle and Turner 2013). There was an average 87 bond issuances per year between 1974 and 1983 at an average real par value of \$533 million. The changes in the bond market as reflected by number of issuances and real par value were concomitant with an increase in number of distinct issuers, the types of investors (as shown in Table 3), and infrastructure matching issuers with investors (merchant banks; brokers; financial information providers). The second time period 1956 – 1974 in particular saw the emergence of merchant banks; initially four promoted by long established broking firms such as J.B. Were and Ian Potter.<sup>10</sup> In 1965 there were 12 merchant bank groups, increasing to 35 merchant banks by 1973.<sup>11</sup> There was also the rise of

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<sup>9</sup> In 1956 there was 101 issuances as compared with an average 35 issuances between 1953 and 1955.

<sup>10</sup> There initial four merchant banks were Australian United Corporation (Ian Potter); Capel Court (J.B. Were) Darling & Co; and Development Finance Corporation. See Wallace (1993, p. 220).

<sup>11</sup> In 1972 the Accepting Houses of Australia and the Issuing Houses of Australia were established. In 1979 these two organisations merged to form the Australian Merchant Bankers' Association (Wallace 1993, pp. 218-221; 228-229)

institutional investment in bonds, particularly by life insurance companies and pension funds (Keneley 2006; 2012).

TABLE 5  
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Table 5 shows the regression results for multivariate regressions using the three time period sub-samples. The use of firm characteristics as dependable features of company risk varies across the periods, most notably with repeat issuers and corporate leaders. Regulated companies were associated with lower bond spreads than PNFCs in all periods, but issued shorter maturity bonds between 1956 and 1973, and longer maturity bonds between 1975 and 1983. NBFIs lower bond spreads were only significantly different to PNFCs prior to 1956; after this period bond spreads between NBFIs and PNFCs were not significantly different although NBFIs bonds were shorter in maturity. Repeat issuers and corporate leaders are not associated with higher or lower bond spreads or term to maturity as compared with newer companies issuing bonds during the three distinct periods. The exception is that a corporate leader issuing a bond between 1956 and 1974, or 1975 and 1983 was likely to face a higher bond spread than a non-corporate leader, controlling for other factors. We conjecture that higher spreads could reflect a perception of higher risk as corporate leaders increased the use of debt to finance growth via unrelated diversification (Fleming *et. al.* 2004, chapters 6 and 7). Several of the macroeconomic and firm financial control variables also vary in association with bond spreads and term to maturity.

We now examine the bond spread and term to maturity for three sectors, which accounted for the majority of the remaining issuances – materials and energy; consumer; and industrials. The multivariate regression results for each sector are shown in Table 6.

TABLE 6  
ABOUT HERE

Material and energy companies, including Australia's mining companies, issued 14 percent of all bonds between 1915 and 1983 (Table 2) constituting 23 percent of the total real par value of bonds. The bond spread and term to maturity of repeat issuers or corporate leaders was not significantly different to the rest of the sector's issuers. Rather, issuers with higher tangible assets were able to issue bonds at lower spreads than less asset rich companies. The association between tangible assets (and thus security) and bond spread points to investor concern with recovery of capital in the light of default as opposed to serviceability and a focus on profitability. Asset tangibility could also be a convenient screening mechanism for investors during a period when new mining ventures often sought capital for exploration (as opposed to production) purposes. Risky, asset light, companies had long been financed by overseas investors, predominantly in London, along with booming stock trading in the mining districts of Victoria then Western Australia. Local investors would have been aware of the notoriety of the sector where most ventures had failed, taking investors money with them but sometimes enriching promoters (Harvey and Press 1990; van Helten 1990).

Consumer and industrial sectors comprised companies in many growing industries in the Australian economy such as consumer durables, entertainment and leisure services, and fast-moving consumer goods. Companies in the consumer (and healthcare) sector raised 15 percent of all bonds, representing 13 percent of total real par value. Corporate leaders or repeat issuers in the consumer sector were associated with lower bond spreads and longer term to maturity, significantly so in most cases. This was also the case for industrial companies (6 percent of all bonds; 3 percent of real par value). Repeat issuers were associated with lower bond spreads, as was the size of the company (as measured by total assets). Bond term to maturity was significantly lower for industrial repeaters and corporate leaders. In summary, the

use of firm characteristics as ‘dependable information’ to proxy creditworthiness and risk varied by sector, with the pricing and term of bonds for consumer and industrial companies depending on their longevity (leadership) or regularity to market (repeater).

## CONCLUSIONS

Bonds play an important role in modern capital markets. However, our understanding of them is blunted by the paucity of long-term studies. While smaller than that of the U.K., the Australian bond market was in growth mode for much of the twentieth century, both facets of which raise important research questions that have not been adequately addressed elsewhere. We deploy unique data for over 4,900 individual bond issuances by 436 private sector and regulated entities. We began by measuring the development of the market, what were the principal drivers, and who were the main players. While the Australian equity market remained larger than that of bonds, the latter helped to supply Australia’s major growth industries and its leading firms in both the private and public sectors. After World War Two, in particular, issues by non-bank financial institutions dominated the bond market and facilitated the growth of consumer industries through credit-based sales.

Most investors remained household rather than corporate throughout our period, which raises important questions of how they distinguished risk in the absence of ratings agencies and with limited legal, regulatory and advisory support on which to draw. Our empirical strategy tested whether particular firm characteristics provided ‘dependable information’ on which investors might rely and enable bonds markets to clear successfully in the absence of more detailed risk information. Using narrower bond spreads (superior pricing) and/or shorter maturity as measures, we found that regulated companies, NBFIs, corporate leaders and some

repeat issuers were generally perceived as lower risk by investors. Financial characteristics, though, were rarely significant except for firm size or in particular industries.



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TABLE 1

## STOCKS OF BONDS AS PERCENTAGE OF GDP, SELECT COUNTRIES 1913-1978

	<b>1913</b>	<b>1929</b>	<b>1939</b>	<b>1950</b>	<b>1965</b>	<b>1973</b>	<b>1978</b>
Australia	1.0	6.0	5.0	1.0	6.4	6.0	3.2
U.K.	37.0	25.5	25.8	6.3	10.3	8.9	8.8
U.S.A.	36.6	38.9	33.6	13.7	16.5	18.8	18.8
Belgium	25.0	4.4	9.6	2.1	3.9	4.5	4.9
Switzerland	18.0	18.1	17.3	6.0	12.7	12.3	15.8
Canada	9.6			3.9	3.1	3.4	2.9
Germany	7.0	4.9	2.7	1.6	2.1	3.2	2.4
France	5.4	3.0	3.9	2.4	8.8	5.5	5.8
Italy	4.7	0.4	0.3	1.5	7.1	7.2	6.0
South Africa	4.1				11.4	13.5	13.0
Norway	3.6	5.9	4.8	4.2	19.2	9.8	17.3
Denmark	3.0	3.9	2.7	3.3	4.5	5.8	6.2
Japan	1.8	18.7	10.0	7.4	24.8	21.5	25.0

*Sources:* Data ranked by size of stock of bonds as at 1913. Mathews (2019); Musacchio (2008, Table 3, p.102).

TABLE 2  
BOND ISSUANCES BY INDUSTRY, 1915-1983 (REAL, 2019)

	1915-1949				1950-1983			
	Number	Percent	Total Dollars (Real)	Percent	Number	Percent	Total Dollars (Real)	Percent
Energy				0%	151	3%	3,604,063,053	4%
Material	24	12%	619,710,234	12%	498	11%	17,729,159,862	20%
Industrials	25	13%	357,392,636	7%	276	6%	2,856,071,164	3%
Consumer Disc.	15	8%	484,487,242	9%	543	12%	8,972,503,790	10%
Consumer Staples	14	7%	139,917,783	3%	169	4%	3,087,499,049	3%
Healthcare				0%	8	0%	71,428,612	0%
Financials	23	12%	1,018,675,830	19%	2,207	47%	36,978,585,813	42%
Information Tech.				0%	27	1%	315,679,952	0%
Communication				0%	68	1%	6,236,757,931	7%
Utilities	99	50%	2,767,443,819	51%	733	16%	8,800,198,695	10%
Unknown				0%	27	1%	156,156,791	0%
<b>Total</b>	<b>200</b>	<b>100%</b>	<b>5,387,627,544</b>	<b>100%</b>	<b>4,707</b>	<b>100%</b>	<b>88,808,104,711</b>	<b>100%</b>

*Sources:* RBA Dataset. We use the RBA calculator to convert pre-decimal and decimal nominal values into real (2019) terms. The calculators can be found at: <https://www.rba.gov.au/calculator/annualPreDecimal.html> and <https://www.rba.gov.au/calculator/annualDecimal.html>

TABLE 3  
 INVESTOR PURCHASES OF AUSTRALIAN CORPORATE DEBENTURES  
 (% TOTAL), 1954-1990

	1954-60	1961-70	1971-80	1981-90
Households	45	27	40	22
Non-financial corporations	3	7	11	4
Authorised deposit-taking institutions	17	27	20	16
Managed funds	34	36	20	21
Non-residents	-1	11	7	36
Government	2	3	2	2

*Notes:* Managed funds are largely life insurance offices, superannuation funds, public unit trusts and cash management trusts

*Sources:* Black *et. al.* (2013, p. 309).

TABLE 4  
REGRESSIONS ON CORPORATE BOND SPREAD AND TERM TO MATURITY

	CBS (1)	CBS (2)	Maturity (3)	Maturity (4)
<i>Firm Characteristics</i>				
Regulated	-0.84*** (0.16)	-0.52* (0.22)	-0.21** (0.068)	-0.13 (0.089)
NBFI	-1.05*** (0.14)		-0.12* (0.06)	
Repeat Issuer	-0.04 (0.10)	-0.39* (0.19)	0.13** (0.04)	-0.21** (0.077)
Corporate Leader	-0.66*** (0.12)		0.05 (0.05)	
BHP		-1.40*** (0.32)		0.37** (0.13)
<i>Macro &amp; Regulatory</i>				
War	2.68*** (0.55)	1.92 (1.22)	0.37 (0.23)	0.82 (0.49)
Stock Acc Index	1.53*** (0.16)	0.98*** (0.28)	-0.12 (0.07)	0.08 (0.12)
Govt Bond/GDP	-0.05*** (0.00)	-0.04*** (0.00)	0.004*** (0.00)	0.002 (0.00)
<i>Firm Financials</i>				
Size	-0.06* (0.03)	0.30*** (0.08)	-0.05*** (0.01)	-0.06 (0.03)
Profitability	-2.98 (2.17)	-0.06 (4.84)	2.00* (0.91)	1.35 (1.96)
Tangibility	-0.22 (0.19)	-0.03 (0.24)	-0.02 (0.08)	-0.20* (0.10)
Maturity	0.085 (0.05)	0.53*** (0.09)		
CBS			0.02 (0.01)	0.09*** (0.02)
Constant	7.78*** (0.56)	-0.43 (1.50)	2.21*** (0.24)	2.65*** (0.60)
Observations	2322	697	2322	697
Adjusted $R^2$	0.30	0.32	0.05	0.08

*Notes:* Multinomial ordinary least squares regression with Corporate Bond Spread or Maturity as the dependent variable.

Standard errors in parentheses; \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

*Sources:* Corporate Bond Spread and Maturity from the RBA Dataset. Annual stock accumulation index, as calculated by Brailsford *et. al.* (2008; 2012). Government/GDP from Mathews (2019). Firm financial variables from *Australasian Insurance and Banking Record (AIBR)* (1915-1920); *Jobson's Investment Digest* (1920-50); Australian Graduate School of Management *Annual Report Record Database* (1951-83).

TABLE 5  
REGRESSIONS BY TIME PERIOD

	1915 – 1955		1956 – 1974		1975 – 1983	
	CBS	Maturity	CBS	Maturity	CBS	Maturity
<i>Firm Characteristics</i>						
Regulated	-0.69* (0.32)	0.10 (0.28)	-1.38*** (0.11)	-0.23** (0.08)	- 2.20*** (0.52)	0.54** (0.16)
NBFI	-1.07* (0.52)	-0.45 (0.46)	-0.01 (0.09)	-0.19** (0.07)	0.38 (0.38)	-0.42*** (0.12)
Repeat Issuer	0.22 (0.26)	-0.27 (0.23)	-0.02 (0.06)	0.11* (0.05)	0.01 (0.30)	0.15 (0.09)
Corporate Leader	0.29 (0.32)	0.02 (0.28)	0.19* (0.08)	-0.10 (0.06)	0.92** (0.30)	-0.07 (0.10)
<i>Macro &amp; Regulatory</i>						
War	-0.059 (0.35)	0.54 (0.29)				
Stock Acc Index	0.63 (1.09)	0.13 (0.95)	-0.77*** (0.11)	0.084 (0.08)	1.36** (0.43)	0.06 (0.14)
Govt Bond/GDP	0.01 (0.01)	0.00 (0.00)	-0.04*** (0.00)	0.01*** (0.00)	0.39*** (0.07)	0.05* (0.02)
<i>Firm Financials</i>						
Size	-0.11 (0.13)	0.060 (0.11)	-0.25*** (0.02)	-0.01 (0.02)	- 0.38*** (0.08)	0.10*** (0.03)
Profitability	-20.1** (5.87)	9.20 (5.37)	8.24*** (1.49)	-3.71*** (1.05)	-18.3** (5.77)	3.59 (1.83)
Tangibility	-0.96 (0.55)	-0.24 (0.49)	0.27* (0.12)	-0.10 (0.08)	0.18 (0.65)	0.37 (0.20)
Maturity	-0.33* (0.13)		0.31*** (0.03)		0.61*** (0.15)	
CBS		-0.25* (0.10)		0.15*** (0.02)		0.06*** (0.02)
Constant	4.33* (2.02)	1.36 (1.80)	8.37*** (0.38)	1.27*** (0.30)	0.48 (2.81)	-2.69** (0.87)
Observations	86	86	1811	1811	425	425
Adjusted $R^2$	0.424	0.189	0.325	0.069	0.316	0.342

Notes: Multinomial ordinary least squares regression with Corporate Bond Spread or Maturity as the dependent variable

Standard errors in parentheses; \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

Sources: Corporate Bond Spread and Maturity from the RBA Dataset. Annual stock accumulation index, as calculated by Brailsford *et al.* (2008; 2012). Government/GDP from Mathews (2019). Firm financial variables from *Australasian Insurance and Banking Record (AIBR)* (1915-1920); *Jobson's Investment Digest* (1920-50); Australian Graduate School of Management *Annual Report Record Database* (1951-83).

TABLE 6  
REGRESSIONS BY SELECT INDUSTRIES

	Materials & Energy		Consumer		Industrials	
	CBS	Maturity	CBS	Maturity	CBS	Maturity
<i>Firm Characteristics</i>						
Repeat Issuer	0.11 (0.23)	0.03 (0.09)	-0.38 (0.23)	0.19* (0.09)	-1.20*** (0.30)	-0.29* (0.14)
Corporate Leader	-0.31 (0.30)	-0.12 (0.12)	-0.85*** (0.25)	0.26** (0.10)	0.66 (0.40)	-0.40* (0.18)
<i>Macro &amp; Regulatory</i>						
Stock Acc Index	0.67 (0.41)	0.19 (0.16)	3.84*** (0.43)	-0.20 (0.19)	0.082 (0.54)	-0.33 (0.24)
Govt Bond/GDP	-0.05*** (0.01)	-0.00 (0.00)	-0.04*** (0.01)	0.00 (0.00)	-0.08*** (0.01)	-0.01 (0.01)
<i>Firm Financials</i>						
Size	-0.09 (0.09)	0.06 (0.04)	-0.05 (0.10)	-0.07 (0.04)	-0.40*** (0.10)	-0.07 (0.05)
Profitability	-3.06 (6.00)	-0.48 (2.35)	-0.05 (5.38)	-0.98 (2.06)	1.97 (4.85)	0.24 (2.14)
Tangibility	-1.50*** (0.43)	-0.14 (0.17)	-0.01 (0.47)	0.32 (0.18)	-0.03 (0.50)	0.19 (0.22)
Maturity	0.14 (0.13)		0.30* (0.15)		-0.42* (0.18)	
CBS		0.02 (0.02)		0.04* (0.02)		-0.08* (0.04)
Constant	8.93*** (1.76)	0.69 (0.71)	6.47*** (1.85)	2.33** (0.71)	15.6*** (2.07)	3.73*** (1.03)
Observations	393	393	321	321	156	156
Adjusted $R^2$	0.24	0.02	0.36	0.07	0.41	0.18

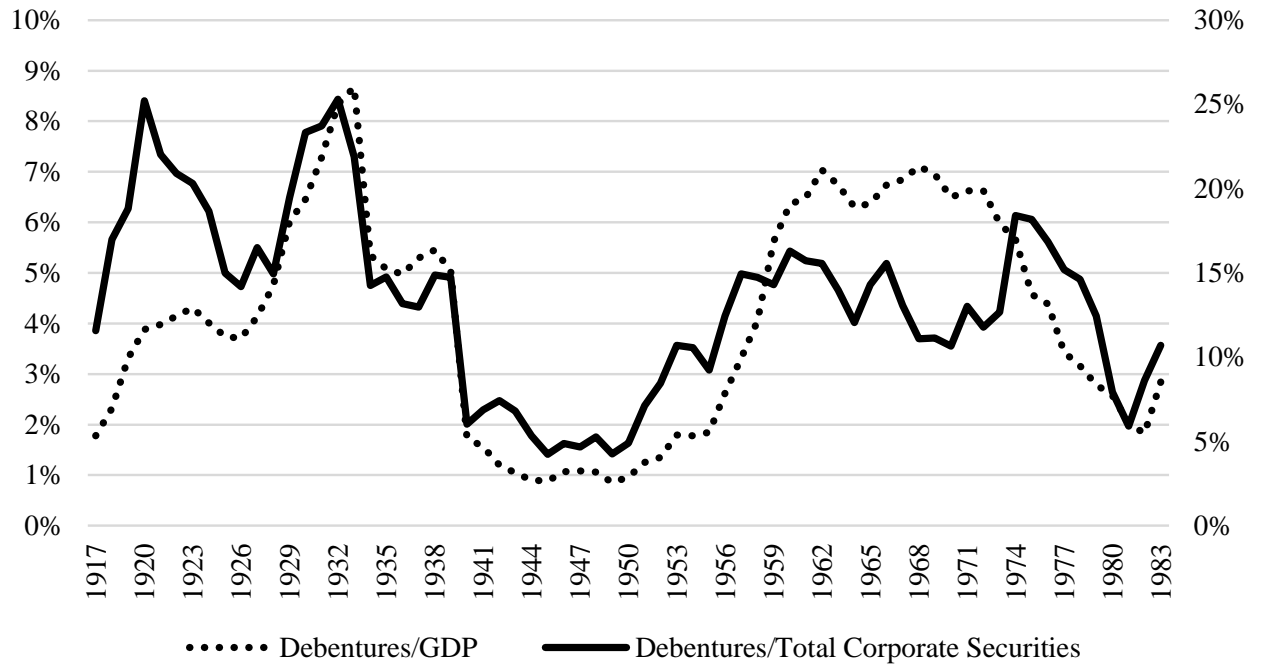
Notes: Multinomial ordinary least squares regression with Corporate Bond Spread or Maturity as the dependent variable

Standard errors in parentheses; \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

Sources: Corporate Bond Spread and Maturity from the RBA Dataset. Annual stock accumulation index, as calculated by Brailsford *et. al.* (2008; 2012). Government/GDP from Mathews (2019). Firm financial variables from *Australasian Insurance and Banking Record (AIBR)* (1915-1920); *Jobson's Investment Digest* (1920-50); Australian Graduate School of Management *Annual Report Record Database* (1951-83).

FIGURE 1.

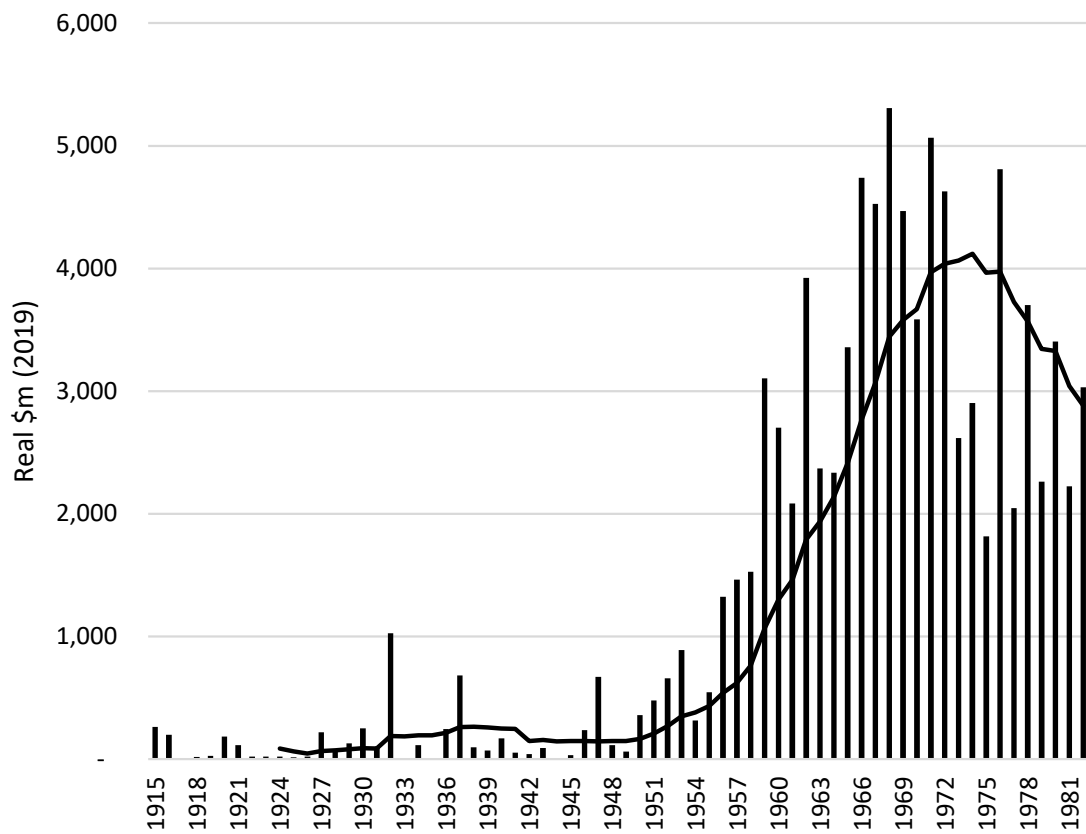
THE STOCK OF CORPORATE DEBENTURES, 1915-83



Notes: percent of gdp LHS, percent of total corporate securities RHS  
Sources: RBA Dataset. Mathews (2019).

FIGURE 2

ANNUAL BOND ISSUANCES, 1915-1983 (REAL, 2019)

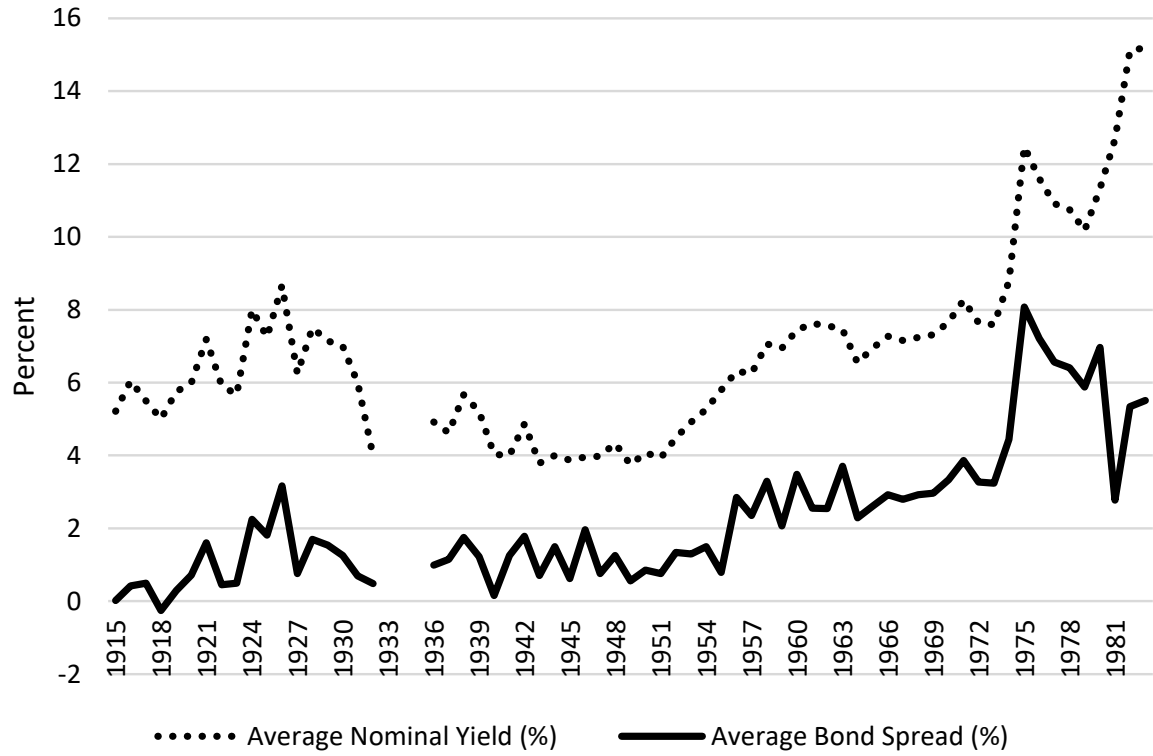


Sources: RBA Dataset. We use the RBA calculator to convert pre-decimal and decimal nominal values into real (2019) terms. The calculators can be found at: <https://www.rba.gov.au/calculator/annualPreDecimal.html> and <https://www.rba.gov.au/calculator/annualDecimal.html>



FIGURE 3

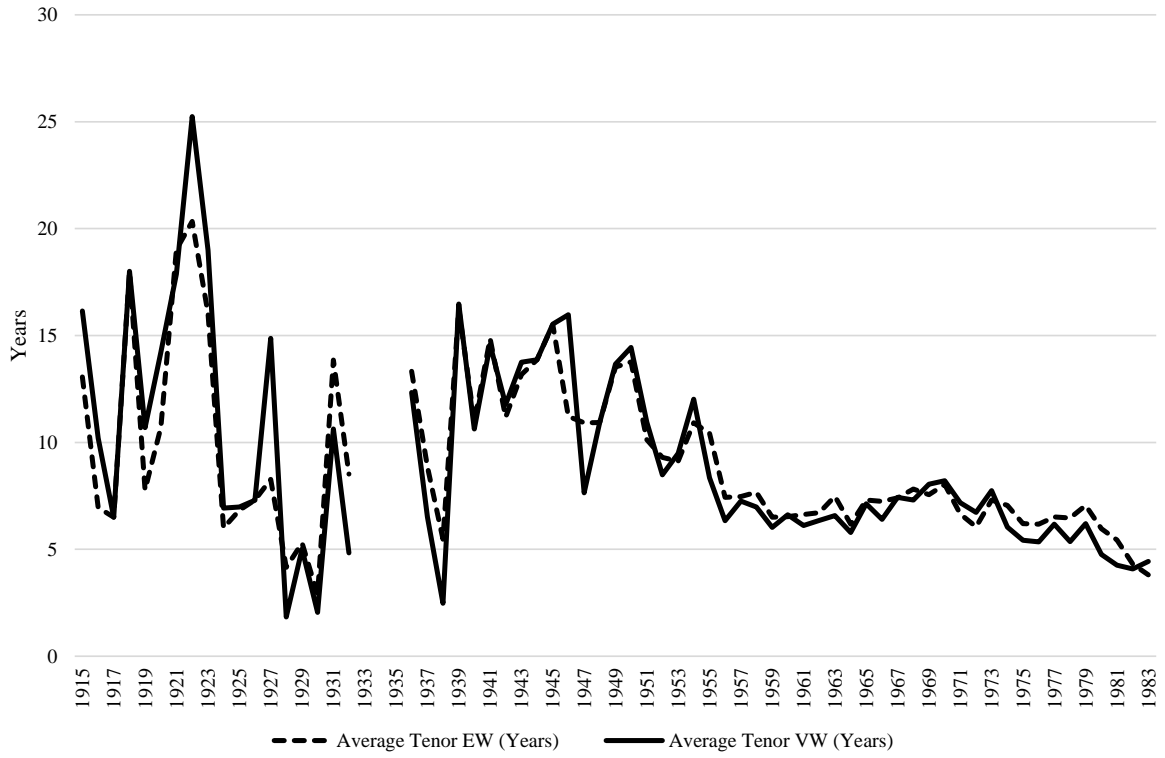
AVERAGE NOMINAL YIELD AND BOND SPREAD, 1915-1983



Sources: RBA Dataset.

FIGURE 4

AVERAGE EQUALLY WEIGHTED AND VALUE WEIGHTED TENOR, 1915-1983



Sources: RBA Dataset.

APPENDIX TABLE 1  
DEFINITION OF VARIABLES

Variable	Definition
<i>Corporate bond spread</i>	Corporate bond spread is the difference between the nominal corporate bond coupon rate and the nominal government bond coupon rate
<i>Maturity</i>	The number of years from year of bond issuance to year of maturity
<i>Corporate Leader</i>	Corporate leader is a dummy variable that equals one if the company was a corporate leader as defined by Fleming, Merrett and Ville (2004)
<i>Repeat Issuer</i>	Repeat is a dummy variable that equals one when a bond issuance is made when the company has an outstanding bond(s)
<i>Regulated</i>	Regulated is a dummy variable that equals one if the bond issuer was a public trading enterprise or operating in a regulated industry (utilities; telecommunications)
<i>NBFI</i>	NBFI is a dummy variable that equals one if the bond issuer was a non-bank financial institution
<i>BHP</i>	BHP is a dummy variable that equals one if the bond issuer was BHP
<i>War</i>	War is a dummy variable that equals one if the bond was issued between 1915 – 1918 or 1939 – 1945
<i>Stock Acc Index</i>	Annual stock accumulation index, as calculated by Brailsford <i>et. al.</i> (2008; 2012)
<i>Govt Bond/GDP</i>	The nominal amount of government bonds outstanding divided by gross domestic product
<i>Size</i>	Natural log of Total assets
<i>Profitability</i>	Return on assets defined as Net profit / Total assets
<i>Tangibility</i>	Net property + Plant & equipment / Total assets

APPENDIX TABLE 2  
SUMMARY STATISTICS

	N	Mean	Median	Std Dev	Min	Max
Corporate bond spread (%)	4,873	3.39	3.25	1.97	-4.02	12.15
Maturity (Years)	4,906	7.11	6.02	4.82	0.00	47.58
Corporate Leader	4,906	0.17	0.00	0.38	0.00	1.00
Repeat Issuer	4,906	0.79	1.00	0.40	0.00	1.00
Regulated	4,906	0.18	0.00	0.39	0.00	1.00
NBFI	4,906	0.43	0.00	0.49	0.00	1.00
BHP	4,906	0.01	0.00	0.10	0.00	1.00
War	4,906	0.01	0.00	0.11	0.00	1.00
Stock Acc Index	4,906	0.12	0.10	0.21	-0.30	0.64
Govt Bond/GDP (%)	4,878	54.34	50.24	26.51	27.24	207.83
Size	2,392	17.02	17.24	1.62	8.75	21.53
Profitability	2,410	0.03	0.03	0.02	-0.07	0.33
Tangibility	2,341	0.26	0.05	0.31	0.00	1.13

*Sources:* Corporate Bond Spread and Maturity from the RBA Dataset. Profitability, tangibility and size from *Australasian Insurance and Banking Record (AIBR)* (1915-1920); *Jobson's Investment Digest* (1920-50); Australian Graduate School of Management *Annual Report Record Database* (1951-83). Annual stock accumulation index, as calculated by Brailsford et. al. (2008; 2012).