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IN THE UK BEFORE 1920

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Working Paper 2018-04

QUEEN'S UNIVERSITY CENTRE FOR ECONOMIC HISTORY
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March 2018

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Abstract

Using a hand-collected dataset, we examine share trading activity over the period 1882 to 1920 for the North British and Mercantile Insurance Company, one of the largest UK companies of the time. Our main finding is that the steady flow of rentiers into the shareholding constituency of this company stymied share trading activity. Another important finding is that share trading still occurred during the closure of the Stock Exchange in 1914, but on a much-reduced scale. We also find that there was a substantial boom in share trading and in insurance stock prices after World War I.

JEL codes: G12, N23, N24, N83, N84

Keywords: Share trading, London Stock Exchange, Insurance, Investor, Rentier, World War I

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[#] Research assistance was provided by Stephen Billington. Thanks to the British Academy (award no. SG090281) for financial support. We would like to thank the Aviva Archive, Surrey House, Norwich, and particularly Anna Stone, for access and assistance.

1. Introduction

After the Napoleonic Wars, the British stock market was dominated by government debt securities and only a few companies had their shares traded on the market. One century later, at the onset of World War I, the equity market had become a global one with over 4,000 companies having their equity listed on the London and various provincial stock exchanges. Scholarship to date has focussed on the performance, size, organisational structure, ownership structure and investor base in this market (Acheson et al., 2017; Foreman & Hannah, 2012; Grossman, 2002, 2015; Michie, 1999; Rutterford et al., 2011; Rutterford & Maltby, 2006, 2007). However, we know very little about how actively shares were traded on this market and the factors that affected the trading of shares. This paper aims to shed some light on this issue by looking at the trading of the shares of a major insurance company over the 1882-1920 period.

Share tradability is anything but an arcane subject. The tradability of shares in modern capital markets is viewed as a vital characteristic of financial systems, because it enables investors to liquidate and diversify their assets at a low cost (Bhide, 1993; Chordia et al., 2001; Woodward, 1985). This, in turn, creates incentives for companies and entrepreneurs to invest in long-run projects, which increases productivity, and, ultimately economic growth (Levine & Zervos, 1998; Rousseau, 2009). However, too much trading may have a deleterious effect on corporate governance by giving rise to very diffuse ownership, passive investing and high shareholder turnover (Bhide, 1993; Kay, 2012).

From an historical perspective, share tradability may have been the main rationale for the creation of the company organisational form and its widespread adoption in the second half of the nineteenth century (Ekelund & Tollison, 1980, 1983). Indeed, opposition to share transferability had held up the legal development of the company in the UK (Cooke, 1950;

Harris, 2000; Williston, 1888). Given the alleged importance of this feature, it would be insightful to know the frequency with which investors in the past traded their ownership stakes.

One of the major changes in the British equity market during the 1882-1920 period was the move of rentiers into the market (Acheson et al., 2017; Jeffreys, 1946; Rutterford et al., 2011; see also Davis & Huttenback, 1988). In particular, the number of female investors grew substantially in this era (Acheson et al., 2017; Green & Owens, 2003; Newton & Cottrell, 2006; Rutterford et al., 2011; Rutterford & Maltby, 2006, 2007). This influenced the types of securities companies offered shareholders, share denomination, and their dividend policy (Acheson, Turner, & Ye, 2012; Campbell & Turner, 2011; Jeffreys, 1946, 1977; Rutterford et al., 2011). In this paper, we ask whether the rise of rentiers also affected share tradability. Jefferys (1946, 1977) argues that marketability made shares attractive to the new breed of middle-class investors who emerged in the 1880s. However, these middle-class rentiers may have been buy-and-hold investors who held a diversified portfolio and subsequently traded infrequently, with the result that trading activity was dampened by the emergence of this new breed of investor. Notably, Chavaz and Flandreau (2017) suggest that there was a close connection between the liquidity of colonial government bonds and the types of investors in such bonds. We therefore investigate in this paper whether, in the instance of our case-study company, the rise of rentiers adversely affected share trading activity.

As well as enabling us to see how the rise of rentiers affected share tradability, our dataset enables us to explore how share trading activity was affected by the closure of the UK stock market between 31 July 1914 until 4 January 1915, and the limitations on trading for the rest of the War. Our case study helps us understand for the very first time how share trading in the UK was affected during World War I.

To explore the above issues, we use the *Share Transfer Books* of the North British and Mercantile Insurance Company (NBMIC) which was one of the largest insurance companies

traded on the UK stock market in the late nineteenth and early twentieth centuries. These transfer books record details on the buyer, seller, number of shares transferred, and price of each transfer in the company's shares. One potential reason for the rich detail within the company's books is that the NBMIC had uncalled capital, i.e., its shares had a nominal value of £25, but only £6.25 had been called up, leaving the remainder to be called in the event of company failure. This feature meant that unlike many other companies, the company secretary was fastidious in recording the flow of shareholders in and out of the company, so that the company could assess the ability of shareholders to meet calls and know exactly who was liable for calls at a particular point in time.

This rich dataset allows us not only to explore the trading of NBMIC shares, but it also enables us to see the socio-occupational status of buyers and sellers, so that we can observe the flow of investors in and out of the company's shares. Furthermore, the share transfer books record when a shareholder died. Using probate records, we are able to determine the proportion of their wealth portfolio which was invested in NBMIC shares, thus revealing additional information on the types of investors in this market.

How representative is the NBMIC of share trading in this era? Are we able to generalise from this case study to the broader stock market? The focus of this paper is principally on two things – (a) how the change in the composition of a shareholder constituency affects tradability and (b) the effects of the closure of the stock exchange during World War I. The findings for the NBMIC will provide generalisable insights into these two issues for other large companies in the era. The NBMIC was ranked the 30th largest UK firm by market capitalisation in 1890 and 65th in 1913.¹ Apart from the large railways, the NBMIC had a similar number of shareholders in 1911 (c.5,000) to the average company in the top 300 largest companies (c.6,300) (Foreman-Peck & Hannah, 2012, online appendix).

¹ Based on data from *Investor's Monthly Manual*.

In terms of levels and, perhaps fluctuations, of tradability, we suspect that the NBMIC may not be representative of many non-insurance companies for three reasons. First, as we document in this paper, insurance company shares were popular and became increasingly popular with long-term investors, which may have meant that their shares traded less than other companies which were not as attractive to buy-and-hold investors. Second, the uncalled capital attached to the shares may have meant that they traded less frequently (Acheson et al., 2012). Third, many insurance companies (the NBMIC included) had more diffuse ownership structures than other types of companies, due to restrictions on the number of shares any one individual could own and graduated voting rules, which favoured small shareholders and discouraged the building of large ownership stakes (Acheson et al., 2015, p.924; Hannah, 2007, pp.413-4).²

We find that despite an increase in the number of shares in the late 1880s, share trading plateaus or diminishes over the period until just after World War I. Our evidence suggests that the change in the shareholder constituency towards buy-and-hold investors helps to explain this finding. We also find that trading still occurred during the World War I closure of the stock exchange, but at a much-reduced level. Overall, the war had a detrimental effect on the trading of shares. Finally, our study documents a large boom in insurance company stocks in 1919-20. This boom, which has not been studied by previous scholars, appears to have been driven by speculative fever and optimistic projections that the insurance sector's post-war performance would continue.³

This paper contributes to the historiography of British capital markets in several ways. First, it contributes to the literature which has examined shareholder constituencies in the late

² The voting scheme of the NBMIC was one vote for each share up to 10 shares, one for every additional five up to 100 shares, and one for every 10 beyond 100.

³ The only mention we can find to it is one sentence in Thomas (1973, p.248).

Victorian and Edwardian eras and has identified the rise of women shareholders and the rise of rentier shareholders (Acheson et al., 2017; Doe, 2010; Green and Owens, 2003; Maltby and Rutterford, 2006, 2009; Newton and Cottrell, 2006; Rutterford et al., 2011; Rutterford and Maltby, 2006, 2007; Turner, 2009). This paper augments this literature by examining the effect of this rise upon share trading. In a similar vein to this paper, Chavaz and Flandreau (2017) suggest that clientele effects affected the liquidity of colonial and foreign bonds in the period 1880 to 1910.

Second, it contributes to the literature which has examined the closure of the stock exchange during World War I. The extant literature focuses on how the City adjusted to its closure and the reasons for the closure (Michie, 1999; Roberts, 2013). However, we do not know how trading of company shares was affected and how companies and their shareholders coped with the closure. Silber (2005, 2007) has examined this very issue for the New York Stock Exchange (NYSE), but we know nothing about this issue from a UK perspective. Interestingly, Silber (2005, 2007) suggests that the closure of the NYSE had a limited effect upon share trading. Our case study suggests that this was not the case for the UK.

Third, this paper contributes to the very thin literature which has examined share trading in the UK from an historical perspective (Acheson and Turner, 2008; Campbell, Ye & Turner, 2017; Pitts, 1998). This literature has focused on the nineteenth century and has generally made inferences about tradability based on share returns and sticky share prices. Our study extends the time horizon by covering the period up to 1920 and looking in depth at the trading in the shares of one large company.

The rest of the paper is structured as follows. The next section provides some background regarding our case study and describes our data sources. Section three documents trading activity in NBMIC shares over the sample period. Section four investigates how the Stock Exchange closure in 1914 and World War I affected trading activity. Section five

analyses how the changes in trading activity correlate with changes in the shareholder constituency. Section six concludes.

2. The case study and data sources

The data for this study is taken from the *Share Transfer Books* of the North British and Mercantile Insurance Company (NBMIC). The origins of this company stretch back to the first decade of the nineteenth century, which witnessed great change in the British insurance market. In that decade, nineteen insurance firms were formed on the joint-stock principle, including the NBMIC's forerunner, the North British Insurance Company (NBIC) (Raynes, 1964, p.224). The NBIC was formed in 1809, headquartered in Edinburgh, and aimed to give Scotland an insurance firm that would rival those based in England (Raynes, 1964, p.227).

The NBIC's initial capitalisation was £500,000, with shares valued at £200, of which only £20 was paid when shareholders subscribed (NBMIC, 1909 p.59). It gained a Royal Charter in 1824, and over the next half-century it expanded by moving into both fire and life insurance, opening branches throughout Britain and the colonies (aided by an Act of Parliament), and taking over several smaller insurance firms, such as the Newcastle Fire Office (NBMIC, 1909). In 1862, the NBMIC was created as a result of a merger between the NBIC and the London-based Mercantile Fire Insurance Company, with capital of £2 million and 40,000 shares, and listed on both the Edinburgh and London stock exchanges (NBMIC, 1909, p.48; Supple, 1970, p.217). At this stage in its history, the nominal value of its shares was £50 and £12.50 was paid up on those shares, leaving £37.50 callable in the event of bankruptcy.

After 1862, the NBMIC continued to expand, chiefly by acquiring some smaller insurance firms. In September 1882, the company had a 2:1 stock split, with the result that it had 80,000 shares with a nominal value of £25 and a par value of £6.25 per share. In April 1883, the company issued 20,000 additional shares to fortify their position, following premium

growth which brought with it additional risk (NBMIC AGM Minutes, 1883). Then in 1889, the acquisition of the Scottish Provincial Assurance company was facilitated by the issuance of a further 10,000 shares (NBMIC, 1909, p.59). For the rest of our sample period, the NBMIC's capitalisation remained at 110,000 shares. Throughout our sample period, the nominal value of NBMIC's shares was £25 and their paid-up value also remained constant at £6.25.

The NBMIC also obtained Parliamentary power for the creation of £3 million of non-voting preference stock in 1908 for financing acquisitions. In 1908, £525,000 was issued to Ocean Marine shareholders for the acquisition of their company and in 1910 a further £1,225,000 was issued in the purchase of the Railway Passengers Assurance Company, which became a subsidiary of NBMIC.⁴

As can be seen from Table 1, by the beginning of the twentieth century, the NBMIC was a large and profitable firm within a mature insurance sector. Its size meant that it could survive large pay-outs, such as the 1906 San Francisco earthquake, which cost the firm £666,083, equivalent to 24 per cent of its total market capitalisation (*Bankers' Magazine*, 1907, July, p.101). Table 1 also reveals that the company was able to pay a high and (slowly) increasing dividend from the 1890s onwards, which no doubt would have made it popular with rentiers.

[INSERT TABLE 1 HERE]

Over our sample period, the average annual total return (capital gains plus dividend yield) on NBMIC shares was 6.4 per cent, which was very attractive for an investment which would have been perceived as a blue-chip company. By way of comparison, government consols, the traditional investment of rentiers, had an average annual total return of 1.1 per cent

⁴ See NBMIC (1909, p.59) and NBMIC AGM Minutes, 1906

over this same period.⁵ The returns on NBMIC shares were also attractive relative to the average annual total return on corporate debentures and the overall equity market of 3.7 and 5.7 per cent respectively.⁶

The share transfer books of the NBMIC contain a substantial amount of detail, which makes them ideal for understanding how different types of investors engaged in the equity market. The registers include the date of each transaction; the seller's name, address and occupation; the number of shares traded; the price of the shares traded; and the buyer's name, address and occupation. Prices were recorded in pounds, shillings and pence, while a notation of 'no price' or 'nominal' was used when shares were transferred from a deceased person to the executors of their will, when shares were transferred from executors to other individuals, or when shares were transferred as *inter vivos* gifts.⁷ This type of transaction is easily identified and can easily be excluded from any analysis of share trading.

The earliest surviving transfer books date from 1 November 1882, and Aviva archives kindly gave us access to the books through until 31 December 1920, with access beyond this point restricted due to a 100-year rule protecting the personal information contained therein. Digitisation of the transfer books created a database of 33,850 individual transfers. Share prices were recorded for 8,131 days out of a possible 13,940, equal to 58.3 per cent; and for 7,935 trading days (Monday to Saturday) out of a possible 11,949, equal to 66.4 per cent. A small

⁵ Based on data collected from the annual *Statistical Abstract for the United Kingdom* for 1882-1913 and Dimson, Marsh, and Staunton (2010) for 1914-1920.

⁶ The returns on the equity market are based on data collected from Grossman (2002) for 1882-1913 and Dimson et al. (2010) for 1914-1920. The debenture returns are from Coyle and Turner (2013).

⁷ We cannot be certain if the price recorded was a bid, ask or a midpoint price. When we cross-referenced our prices with the *Stock Exchange Daily Official List*, we were unable to tell what our prices represented because the bid-ask price recorded was from one point in the day, which did not necessarily correspond to when the share was actually sold in the day.

discrepancy arises due to 196 trades occurring on a Sunday, which suggests a small market outside of the normal business week. Our sources are unclear as to why these Sunday trades happened and there is no clear pattern in Sunday trading, but they are low in number, consisting only 0.58 per cent of total trades in our sample period. To create a daily price series, the average price for each day was calculated and is shown in Figure 1.

[INSERT FIGURE 1 HERE]

As can be seen from Figure 1, in November 1882, the share price of the NBMIC was around £30, before falling to a low of around £25 in 1884, followed by a steady upward trend through the remainder of the 1880s to a high of almost £60 in 1891. A rapid downward fall in the price followed, to £35 in 1894. This fall occurred at the same time as losses were announced across different parts of NBMIC's business (*Financial Times*, 1893, May 13), and the discovery of financial irregularities associated with an NBMIC employee (*Financial Times*, 1893, Oct. 30). The share price remained stable in the range £36-£44 through until 1914. This was followed by a fall during World War I, to close to £30, before a rapid increase as the War ended, to an overall high of almost £65 in 1920, but this rally subsequently receded, and the share price fell back to £40 by the end of 1920.

In order to compare the performance of NBMIC shares against the wider insurance market, a capital appreciation index was constructed for the UK insurance sector between 1882 and 1922. To construct the insurance market index, monthly price information for all UK insurance firms was collected from the *Investor's Monthly Manual*.⁸ The performance of the NBMIC compared to the insurance market index is shown in Figure 2. The NBMIC begins to significantly outperform the insurance market index from 1884 until the early 1890s, when it

⁸ Using the database created by the ICF at Yale School of Management.

experiences a rapid decline. Both indexes then follow a similar pattern through until 1904, when the overall insurance sector index begins to outperform the NBMIC. This trend continues throughout the war, although both the insurance market and NBMIC follow a similar pattern. The insurance sector significantly outperforms the overall equity market from 1918 onwards.

[INSERT FIGURE 2 HERE]

Using the NBMIC share registers at the beginning and end of our time period, we are able to reconstruct the list of shareholders and their ownership for 1882 and 1921. As can be seen from Table 2, between 1882 and 1921, the number of shares increased from 80,000 to 110,000, and the number of shareholders increased from 1,210 to 5,526. This led to the average proportion of shares held by a shareholder falling from 0.08 per cent to 0.02 per cent, suggesting a greater dispersion in ownership.⁹ This increase in ownership dispersion is reflected in the percentage held by the top five, ten and twenty shareholders falling by more than half between 1882 and 1921, while the percentage held by the single (twenty) largest shareholder fell from 2.93 (21.22) per cent in 1882 to 0.95 (9.55) per cent in 1921. From these measures of the ownership structure of the NBMIC, we can conclude that there was a substantial increase in ownership dispersion over the four decades of our analysis.

As a point of comparison, Acheson et al. (2015, p.920) report that for the average public company in their late-nineteenth-century sample, the percentage of shares owned by the largest and top twenty shareholders was 10.5 and 47.2 per cent. Acheson et al.'s (2015) equivalent figures for the top 350 UK firms in 2013 were 17.5 and 72.5 per cent. This suggests that the ownership of the NBMIC was very diffuse both from historical and modern perspectives.

⁹ There were already c.5000 shareholders by 1911. See Foreman-Peck and Hannah (2012, online appendix).

[INSERT TABLE 2 HERE]

3. Trading of NBMIC shares

Because ownership dispersion and the number of shareholders increased over our sample period, we hypothesise *ceteris paribus* that there should have been an increase in trading activity.¹⁰ Furthermore, given that our sample covers a period when the UK capital market was growing both in size and value (Grossman, 2002), we have an additional reason to expect trading activity to increase over time.

In this paper, we use three measures of trading activity. Our two main measures of trading activity are modifications of those used by Chordia et al. (2001). These are (1) share turnover, which is the number of shares traded as a percentage of total outstanding shares and (2) trade frequency, which is the number of transactions as a percentage of total outstanding shares. Both measures of trading activity are calculated for trading days (Monday to Saturday), and take into account new shares being issued. Our third measure is a measure of inactivity is from Lesmond et al. (1999), and is the proportion of trading days when no trades took place. This does not mean that jobbers on the stock market did not quote a bid-ask spread; it simply means that no trade occurred in that day. If our hypothesis of increased share trading holds, then we would expect trading activity to increase over time, as measured by share turnover and trade frequency, while a fall in the proportion of days when no trades took place should also be apparent.

Our measures of market activity could be construed as measures of liquidity, i.e., the ability to make large trades quickly, at low cost, and at any time chosen by a market participant

¹⁰ See Bhide (1993) and Demsetz and Lehn (1985) on the relationship between ownership concentration and share tradability.

(Harris, 2003, p.394). Low trading activity is not necessarily indicative of low liquidity, but the two are usually correlated.

Monthly trading activity is shown in Figure 3. Monthly trade frequency is given in Panel A, with an average of 0.06 per cent, while Panel B gives monthly share turnover, with an average of 0.47 per cent. There is substantial month-to-month variation in both measures. Spikes in trade frequency and share turnover occur throughout. However, trade frequency remains below 0.05 per cent for most months, and similarly share turnover remains below 0.50 per cent. Both measures present a picture of trading activity remaining flat over time, where the only notable change was a decrease during World War I, and a dramatic increase in the post-war period.

[INSERT FIGURE 3 HERE]

These monthly measures of trading activity for the NBMIC can be compared to modern-day markets, albeit with the obvious limitation that the NBMIC is only a single company. Trading activity in NBMIC shares was much lower than for modern markets. The average monthly share turnover for the New York Stock Exchange (NYSE) / American Stock Exchange was 1.09 per cent between 1976 and 2011 (Chordia, Subrahmanyam, & Tong, 2014). The modern-day FTSE-100, between 1995 and 2011 had 24 times greater average monthly share turnover than the NBMIC (Dey, 2005). This suggests that trading activity was relatively low at the turn of the twentieth century compared to today.

In terms of monthly movements in trading activity, we examine the years in which the NBMIC experienced a loss on its underwriting business to see if the months in which this loss was announced had unusual trading activity. As can be seen from the final column of Table 1,

there are five years where this is the case - 1892, 1893, 1901, 1906 and 1917.¹¹ Losses in 1892 and 1893 were not directly attributable to any large single events – the AGM minutes make reference to an increase in small fires, with losses in Liverpool and the United States in 1892, and losses in France, Austria and the United States in 1893. As can be seen from Table 1, the losses in 1892 and 1893 are accompanied by the largest dividend cuts in our sample period. Losses in 1901 also do not seem to be directly attributable to any large event. The publication of these results does not appear to have adversely affected share trading activity.

The largest annual loss in our sample period was in 1906, the year of the San Francisco earthquake. Along with a number of other British insurance companies, the NBMIC was directly exposed to this catastrophe.¹² In the days following the disaster, there was considerable speculation in the financial press as to the total potential liabilities and losses amongst British insurance companies. The *Financial Times* (1906, April 21, p.5) noted that potential loss figures quoted in the *Daily Mail* were ‘considerably exaggerated’, highlighting that the NBMIC’s liability covered a maximum insured amount of £1,000,000 in the event of total loss and not £2,000,000. At its AGM on the 11 May 1906, the Chairman announced that the NBMIC would be able to meet its commitments without drawing on its fire reserve fund (*NBMIC AGM Minutes*, 1906). The final pay-out by the NBMIC to policyholders was £666,083, which is reflected in the 1906 accounts which were published in 1907 (*Bankers’ Magazine*, 1907, July,

¹¹ During our sample period, these years also rank as the top five years by loss rate on the Fire account (total losses/ total premiums) - 68, 73, 69, 81 and 67 per cent respectively. The average loss rate of the Fire business over our sample period was 58 per cent.

¹² The fall in stock prices two days after the earthquake, as reported by the *Financial Times* (1906, April 21, p.5), were as follows: Atlas (20 per cent); Commercial Union (10 per cent); Liverpool and London and Globe (17 per cent); London (18 per cent); London and Lancashire Fire (19 per cent); NBMIC (10 per cent); Northern (5 per cent); Norwich Union (2 per cent); Phoenix (23 per cent); Royal (21 per cent); Royal Exchange (5 per cent); Sun (14 per cent); Union (14 per cent).

p.101). During this period there was a small, but notable increase in trading frequency in May 1906 (see Figure 3). However, any increase in activity appears to have been short-lived with share trading returning to normal levels very quickly.

The final major insurance loss was in 1917 on account of the Salonika fire on 18 August 1917, when a small fire developed into a serious conflagration because of limited water supply as a consequence of a large number of allied troops in the Greek city. From the perspective of the NBMIC, it produced very severe losses of about £1 million (Trebilcock, 1985, p.391), which ranked ahead of the losses incurred in 1906. Despite the size of the loss, this episode did not have any noticeable effect on the trading of NBMIC shares.

Figure 4 shows annual trading activity, with annual trade frequency in Panel A and annual share turnover in Panel B. Average annual trade frequency was 0.70 per cent across the full-time period, but this is influenced by the dramatic post-war increase, meaning that for much of the four decades annual trade frequency was around 0.60 per cent. Prior to 1900, there were a number of years where trade frequency was above average, while there is also an obvious dip during World War I. In Panel B, average annual share turnover was 5.68 per cent, and follows the same overall pattern as trade frequency. However, the post-World War I spike in share turnover is even more pronounced than for trade frequency, suggesting that the average number of shares per trade increased during this period.

[INSERT FIGURE 4 HERE]

Our other measure of share trading, the proportion of trading days per year when no trades took place, is calculated on an annual basis and shown in Figure 5. While there was a high percentage of trading days with no trades at the beginning of the 1880s, this rapidly fell, and generally remained between 30 and 35 per cent through until 1897. A step change appears

in 1898, with the proportion of days with no trades increasing to 45 per cent, followed by a slow fall to 35 per cent prior to 1914. World War I saw an increase in inactivity, with a high in 1916 of 65 per cent, before returning to the pre-war level in 1918. The period after World War I witnesses the number of trading days with no trades falling dramatically, to beneath 20 per cent in both 1919 and 1920. However, overall, there is no consistent increase in trading activity until after the war. In terms of modern stock markets, it is common for many stocks not to trade for days or weeks (Easley, Kiefer, O'Hara, & Paperman, 1996, p.1405).

[INSERT FIGURE 5 HERE]

When shareholders died and their shares were not passed on to their heirs, the executors of the estate sold the shares on the open market. To what extent did the death of shareholders drive trading activity and does this vary over time? On average, 28.2 per cent of annual trade frequency and 31.2 per cent of annual share turnover was due to sales arising out of the death of shareholders each year, and there is little variation across the years of our sample. Therefore, trading activity and changes in trading activity were primarily driven by normal sales.

The main finding which emerges from the above is that there was no increase in trading activity over our sample period, despite a substantial increase in the number of shareholders and ownership diffusion as well as a general growth in the overall equity market. This is something of a puzzle. The second finding which has emerged from the analysis above is that there was a dramatic increase in share trading in 1919 and 1920, which cannot be explained by new capital being issued or a stock split. In sections four and five, we will attempt to explain these two puzzles by looking at the determinants of share trading.

4. Trading activity, stock exchange closure and World War I

The London Stock Exchange announced its closure for the first time in its history on 31 July 1914. After learning that war was inevitable, the decision to close the exchange was taken by the Stock Exchange Committee in order to prevent panic and widespread failures (Michie, 1999, p.145). The closure of foreign bourses and the postponement of settlement had made debts due to London Stock Exchange members from foreign clients irrecoverable. In addition, as members of the stock exchange financed so much of their operations on credit, the situation was exacerbated by falling security prices. It was feared that banks would increase the margin cover required on loans or call in loans altogether, which would lead to the immediate failure of a large number of exchange members (Keynes, 1914; Michie, 1999; Roberts, 2013).

Despite the closure of the exchange, J. M. Keynes (1914) stated that unofficial transactions in cash took place by 13 or 14 August, or possibly earlier. Our dataset shows that trades in NBMIC shares took place on each day from 4 to 14 August 1914, amounting to 196 shares across 31 trades. During the closure of the stock exchange, trading generally took place in Throgmorton Street, and was therefore subject to the elements. Adverse weather typically led to a lower attendance of stock exchange members and reduced business (*Western Mail*, 1914, Aug. 27; *Financial Times*, 1914, Sept. 12). Alternatively, some business was done under the archways of Shorter's Court and in the entrance to Drapers' Gardens (*Financial Times*, 1914, Sept. 12). Trading also took place in brokers' offices or other convenient meeting places; Durlachers, the jobbers, dealt in the shares of rubber plantation companies at the Savoy hotel (Michie, 1999, p.147). However, these attempts to transact business outside the stock exchange were suppressed to a great extent, and by the end of August dealings had 'practically come to a standstill' (*Financial Times*, 1914, Aug. 25, p.1). The Stock Exchange Committee actively discouraged dealings for cash in the street on the grounds that they may have the effect of 'unduly depreciating values', and therefore defeated the purpose of the exchange closure

(*Western Mail*, 1914, Aug. 27, p.8). Members of the public who did not sell shares were described as ‘supporting the stock exchange’ and ‘patriotic’ (*Financial Times*, 1914, Sept. 3, p.1), whereas jobbers who sold Consols were depicted as irresponsible, and, ‘coming from outside financial houses with German connections, whose object is to attack British credit’ (*Financial Times*, 1914, Sept. 4, p.1). The reduction in activity is reflected in our dataset with just eight trades taking place from 15 to 31 August 1914, with no trades occurring on six of these trading days.

During the stock exchange closure, there was also use of the Exchange Telegraph’s ‘challenge system’ to facilitate trading, previously used for only the most inactive securities (Michie, 1999, p.147). Subscribers to the challenge system broadcasted security prices over the telegraph and waited for a response. First advertised on 1 September 1914, this method of trading was also met with opposition. Jobbers petitioned the committee to cancel the use of the challenge system stating that it, too, defeated the object for which the stock exchange was closed and facilitated dealings at ‘knock-out’ prices (*Financial Times*, 1914, Sept. 3; *Financial Times*, 1914, Sept. 5, p.1). By September 8, no business was done on the challenge system.

Auctions of securities also appeared, especially in the interests of solicitors, who had difficulty in valuing or settling estates (Michie, 1999, p.147). These auctions were advertised by circular in early September 1914 (*Financial Times*, 1914, Sept. 9), yet these, too, were condemned in the financial press as they would also ‘defeat the efforts of the stock exchange commission to prevent undue depreciation’ (*Financial Times*, 1914, Sept. 10, p.1). Just 11 trades in NBMIC shares took place in September 1914; five of these were trades by executors of wills, accounting for over 70 per cent of share turnover.

By November 1914, a number of provincial stock exchanges were conducting informal sessions, while the New York Stock Exchange officially reopened in December (Michie, 1999, p.147). On 4 January 1915 the London Stock Exchange reopened after over five months of

closure. Between the dates of closure, 111 trades in NBMIC shares took place with a total share volume of 1,205, equating to 0.65 per cent of total shares outstanding. Comparing these figures to the same period during the previous year, the total number of trades in NBMIC shares fell by 58.1 per cent, and the total volume of NBMIC shares traded on the market fell by 52.2 per cent.

Despite the reopening of the exchange, severe restrictions on trading remained in place throughout the war. These included a shortened trading day to between 11am and 3pm, minimum price levels, and cash only transactions with immediate payment. The use of options was banned, as was arbitrage, while non-UK investors could not sell their holdings. These restrictions were mostly maintained for the duration of World War I (Michie, 1999, pp.148-149). As can be seen from Figure 3, the months after August 1914 up until late 1917 were the most inactive months in our sample period in terms of share trading. Figures 4 and 5 suggest that 1915, 1916 and 1917 were the most inactive years. The war and its restrictions on official trading had a demonstrable effect upon share trading.

Interestingly, the end of the war is associated with a remarkable boom in the price and trading of NBMIC shares.¹³ As can be seen from Figure 2, this boom in NBMIC shares was reflected in the wider insurance sector. Why did it occur? The war provided significant opportunities for British insurance companies.¹⁴ Insurance companies by and large emerged from the war in a stronger financial position than when they had entered (Clayton, 1971). Losses in continental Europe were offset by gains in the North American market, which came

¹³ There was a boom in new issues in 1919 and boom in activity for popular industrials (Thomas, 1973, p. 247).

¹⁴ The *Financial Times* (1918, April 5, p.5) in its annual insurance supplement stated that ‘if the war has imposed considerable hardships and immensely increased the responsibilities of insurance companies, it has also afforded them many new opportunities for advancing their status and enlarging their sphere of operations’. See also Supple (1970, pp.413-27).

largely with the entry of the United States into the War in 1917 and the cessation of enemy insurance activities in the United States (Clayton, 1971, pp. 151-2). Total premium income from fire business increased by 95 per cent for British insurers between 1915 and 1920.¹⁵ Table 1 shows that the business of the NBMIC grew substantially from 1917 onwards.

The headline of the *Financial Times Insurance Supplement* in April 1920 described 1919 as ‘a remarkable year: business booming and profits substantial’ (p.7). In addition, it noted that the expansion of operations, and the removal/ reduction of uncalled capital, and the introduction of share splits which improved the marketability of stock were all contributing factors behind the recent growth in prices. However, the broadly positive article included a number of cautionary notes; specifically that fire companies would not do so well as in 1918-19, the pressure of taxation would remain burdensome, and the inrush of new undertakings would increase competition markedly. A follow-up piece in the *Financial Times* (1920, July 9, p.8) referenced *Savory’s Insurance Share Annual*, noting that three things would contribute to the diminution in insurance share prices: (a) the diversion of funds to new capital issues of existing insurance companies and the creation of a large number of new companies, (b) a reduction in profits in 1919 as a consequence working expenses and taxation, and (c) an expectation that insurance losses would rise when the process of deflation began. This prediction duly happened, with insurance share prices and NBMIC trading activity falling back to normal levels by 1920.

5. The investor base and share trading

Above, we identified a puzzle whereby the trading activity in NBMIC shares plateaued despite an increase in the share issuance and an increase in ownership diffusion. Then, after World War I, there was a huge jump in trading activity despite there being no change in share issuance.

¹⁵ Calculations based on figures quotes in Clayton (1971, pp. 151-2).

One possible explanation for the plateau in trading activity was that there was a change in the shareholder constituency over the time period, whereby shares were increasingly held by long-term buy-and-hold investors, who were much less likely to trade shares on a frequent basis. Jefferys (1946, 1977) argues that a new breed of middle-class investors emerged in the 1880s. These investors were pure rentiers who were uninterested in firm governance and were very much focussed on the dividends paid by such stocks. The rise of this middle-class rentier after the 1870s has been documented in a series of recent studies, with a particular focus on the rise of female shareholders (Acheson et al., 2017; Green & Owens, 2003; Newton & Cottrell, 2006; Rutterford et al., 2011; Rutterford & Maltby, 2006, 2007). Maltby and Rutterford (2006) found that female investors were long-term holders of their investments, while Green, Owens, Maltby, and Rutterford (2009) argue that female investors were most concerned with a steady income stream. A higher proportion of female investors would therefore be expected to affect trading activity because these rentier investors would buy and hold NBMIC shares to receive income rather than seeking profits from capital appreciation. This would ultimately suppress trading activity.

A further change in the shareholder base which could have affected trading activity is that there could have been an increase in the home bias of NBMIC investors. Home bias exists in modern equity markets, with investors having a preference for the equity of companies located in close proximity (Coval & Moskowitz, 1999, 2001). Home bias also existed in the UK equity market in the era of this study (Campbell and Turner, 2011; Cottrell 1980, pp.90-3; Franks, Mayer, & Rossi, 2009; Rutterford et al., 2017). This bias may have existed because of information asymmetries or behavioural biases which overweight the familiar. Irrespective of the reason for the presence of home bias, if the flow of investors into and out of a firm's shares is in part determined by geographic proximity, this would limit the potential pool of investors who participate in the market, which restrains trading activity. Therefore, an increase in the

home bias present in those investing in the NBMIC shares may explain why trading activity failed to change substantially over our time period.

The *Share Transfer Books* record the socio-occupational status of sellers and buyers of NBMIC shares. All women are identified as widows, spinsters or wives. The occupations of nearly one half of all men are blank, which could suggest that they are rentiers or gentlemen or simply that their occupation was not recorded. In order to see if the NBMIC's shareholder constituency became more skewed towards buy-and-hold investors, we use the net change in shares held by female shareholders as a proxy. We also look at the net change of shares held by financial professionals who were not designated as executors or trustees in the NBMIC's share transfer books (e.g., stockbrokers, bankers and actuaries). We do so for two reasons. First, these investors were less likely to be buy-and-hold investors. Second, we want to see if some of our trading patterns can be explained by trading by such investors.

Figure 6 shows the cumulative change in the NBMIC's investor base over our sample period. Two things are worthy of comment. First, the plateau in trading activity which we observe from the mid-1890s onwards corresponds to the growth in shares held by female investors. Thus, the growth in the number of stereotypical buy-and-hold investors coincides with the stalling and decline in trading activity. Second, the rapid increase in trading activity after World War I coincides with a substantial decline in the shares held by women and an increase in shares held by financial professionals. The rapid price increases in 1919 appears to have induced women shareholders to sell their shares, and financial professionals, not inexperienced investors, were those buying shares during the market frenzy.

[INSERT FIGURE 6]

To gain further insight into the investors in NBMIC shares during this era, we utilise a feature of the share transfer books which enable us to identify when a shareholder died. Using the shareholder's name and address, we searched probate records available on Ancestry.co.uk to obtain the value of the deceased shareholder's probated estate.¹⁶ Using this approach, we located the wealth of 562 shareholders. Table 3 reports the probated wealth of NBMIC shareholders as well as the proportion of their wealth invested in NBMIC shares at time of death.

[INSERT TABLE 3]

From Table 3, we can see that over the time period there was a trend towards less wealthy (relatively speaking) shareholders in the NBMIC. This is consistent with the rise of the middle-class investor. We can also see that the median shareholder had 4.9 per cent of their wealth in the NBMIC shares when they died and the distribution of probated wealth in NBMIC shares did not change much over time.¹⁷ Given that nearly 50 per cent of the average individual's probated wealth in this era consisted of shares and government securities (Rutterford et al., 2011, p.180), it appears that the median NBMIC shareholder had about one-tenth of their financial portfolio in NBMIC shares. This evidence is consistent with the idea

¹⁶ Prior to 1898, the probated estate value only included unsettled personalty i.e., property other than land such as stocks and shares. From 1898, unsettled realty (i.e., land) was also included in the value of estates. From 1926, settled realty is also included in the value of estates.

¹⁷ Rutterford and Sotiropoulos (2016) analyse portfolio holdings across 263 male and 245 female investors in the last three decades of the nineteenth century, and they found that male and female investors had 7.8 per cent and 16.6 per cent respectively of their wealth invested in a single security.

that the holders of NBMIC shares were part of the new breed of middle-class investors holding a diversified portfolio.

In order to see if the home bias of investors changed over the period and potentially affected the trading of shares, we examine the cumulative change in the location of shareholders. Figure 7 focuses on the four major cities where NBMIC shareholders lived, two of which were operational headquarters and the main stock markets where the company's shares were traded according to the *Investor's Monthly Manual* and *Stock Exchange Yearbook* (i.e., London and Edinburgh), and then everywhere else.¹⁸ Figure 7 shows that the shares held in London dropped over our sample period, but this was counterbalanced by an increase in shares being owned by Liverpoolians and investors living elsewhere in the UK. In addition, there was a slight reduction in the number of shares being held by investors in Edinburgh. Notably, the two cities which experienced falls in the number of shares being owned by investors living in them, were the two cities where the firm was headquartered and where NBMIC shares were chiefly traded. In other words, instead of there being an increase in home bias, there was a reduction in it, with investors coming from further afield. Thus, we cannot attribute the stagnation in trading to an increase in home bias and consequently smaller pool of investors.

[INSERT FIGURE 7]

Figure 7 also reveals a remarkable change in the residence of shareholders after 1918, which coincided with the substantial jump in share trading in 1919. First, there was a substantial

¹⁸ This, of course, is not to say that their shares were not listed on other provincial stock exchanges. However, the *Stock Exchange Yearbooks* and *Investor's Monthly Manual* report that London and Edinburgh were the two markets where NBMIC shares were chiefly traded.

drop in the number of shares being held by Edinburgh residents, but an increase in shares held by Glaswegians and Londoners. The rise of Londoners is consistent with the increased interest in NBMIC shares from financial professionals. However, the rise of Glasgow and fall of Edinburgh may suggest that investors living closest to the company's headquarters got out when the price was high.

6. Conclusions

Using a hand-collected dataset, we examine the share trading of one of the largest UK insurance companies over the period 1882 to 1920. We have three main findings. First, despite an increase in capital, shareholder numbers and ownership diffusion, we find that share trading activity did not increase over our sample period. Our evidence suggests that the entrance of rentiers into the shareholding constituency is largely responsible for this dampening of share trading. This is somewhat ironic given that the marketability of equity was one of its features which attracted rentiers in the first place. This finding has major implications for our understanding of the development of the UK equity market and corporate governance. Further research should examine the effect of the entrance of rentiers on the rise of the UK's corporate economy and financial markets. In particular, was reduced tradability a price worth paying for better corporate governance and a stable shareholder constituency?

The second major finding is that trading of NBMIC shares still occurred during the closure of the Stock Exchange in 1914, but on a much-reduced scale. A further novel finding is that there was a boom in share trading and in insurance shares after World War I. Future scholarship should examine the extent of this stock-market boom in other sectors and the role the removal of war-time trading restrictions had on investor behaviour.

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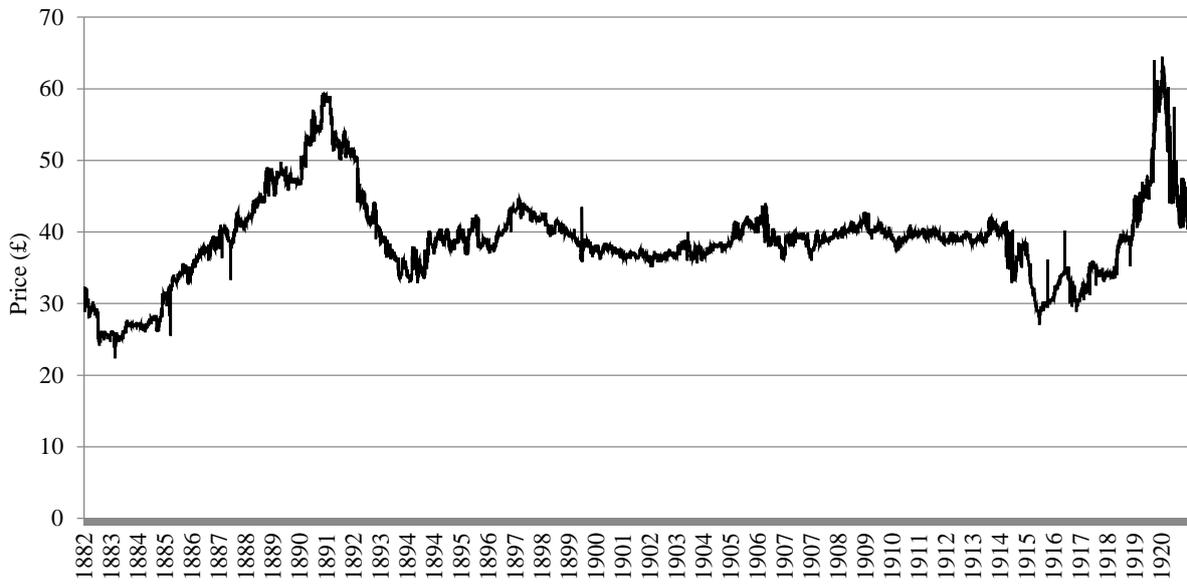


Figure 1. *NBMIC average share price (daily), Nov. 1882- Dec. 1920*

Notes: The NBMIC average daily share price is calculated from the average price of all trades in the company's shares each day from 1 November 1882 to 31 December 1920 inclusive. If no trades occurred on a particular day, the previous day's average price was used.

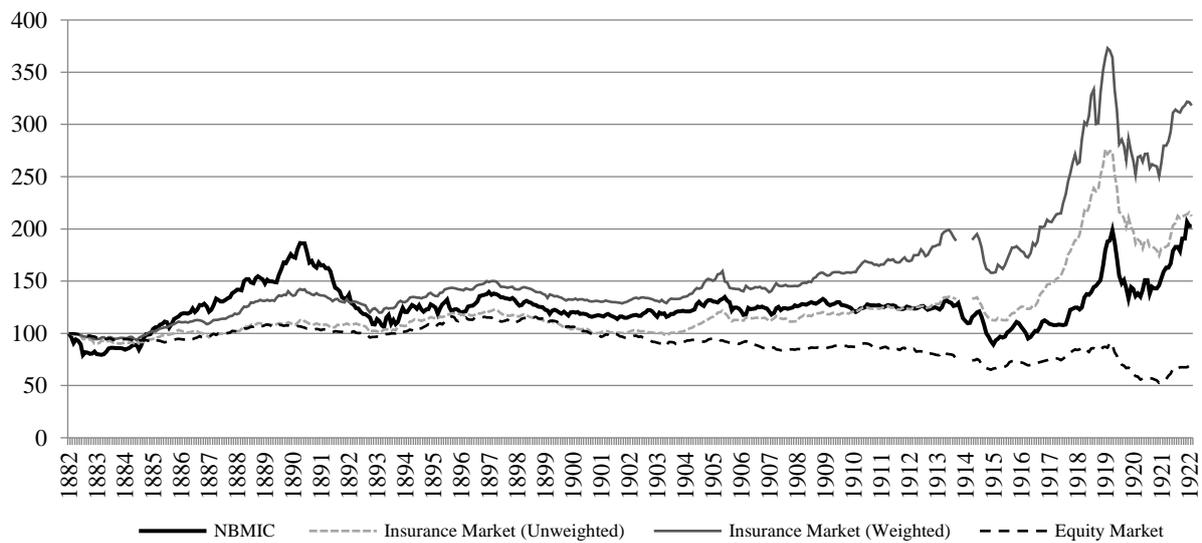


Figure 2. *NBMIC performance versus UK insurance market (monthly), Nov 1882- Dec 1922*

Sources: See text.

Notes: Insurance sector indices are calculated from the average monthly returns of ordinary shares of all insurance companies listed in the *Investor's Monthly Manual* (IMM). This includes 101 firms in December 1882, 87 firms in December 1900, and 47 firms in December 1920. Returns of the insurance sector are both equally-weighted and weighted by market capitalisation. The equity market index is calculated from the equally-weighted returns of all common equities in the IMM. The index of NBMIC returns is calculated using the average monthly price of all trades in the company shares from Nov 1882-Dec 1920 and using the final price of the month listed in the IMM for Jan. 1921 to Dec. 1922 inclusive. Returns are adjusted for stock splits and share issues. All indices exclude dividends and the index is set equal to 100 in Nov. 1882.

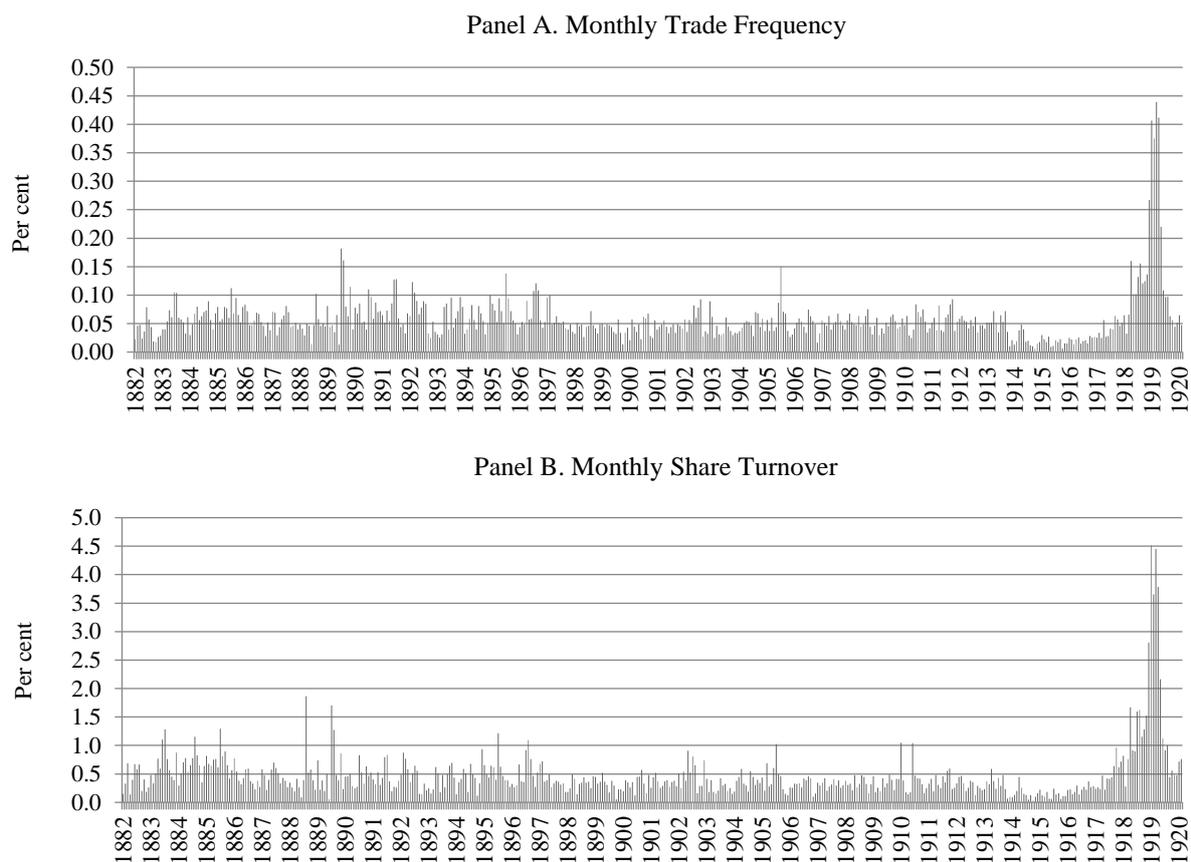


Figure 3. *Monthly trading activity of NBMIC shares, 1882-1920*

Sources: see text.

Notes: Monthly share turnover is the number of shares traded each month as a percentage of total outstanding shares. Monthly trade frequency is the number of transactions each month as a percentage of total outstanding shares. Both measures of trading activity are calculated for trading days (Monday to Saturday) and take into account new share issues.

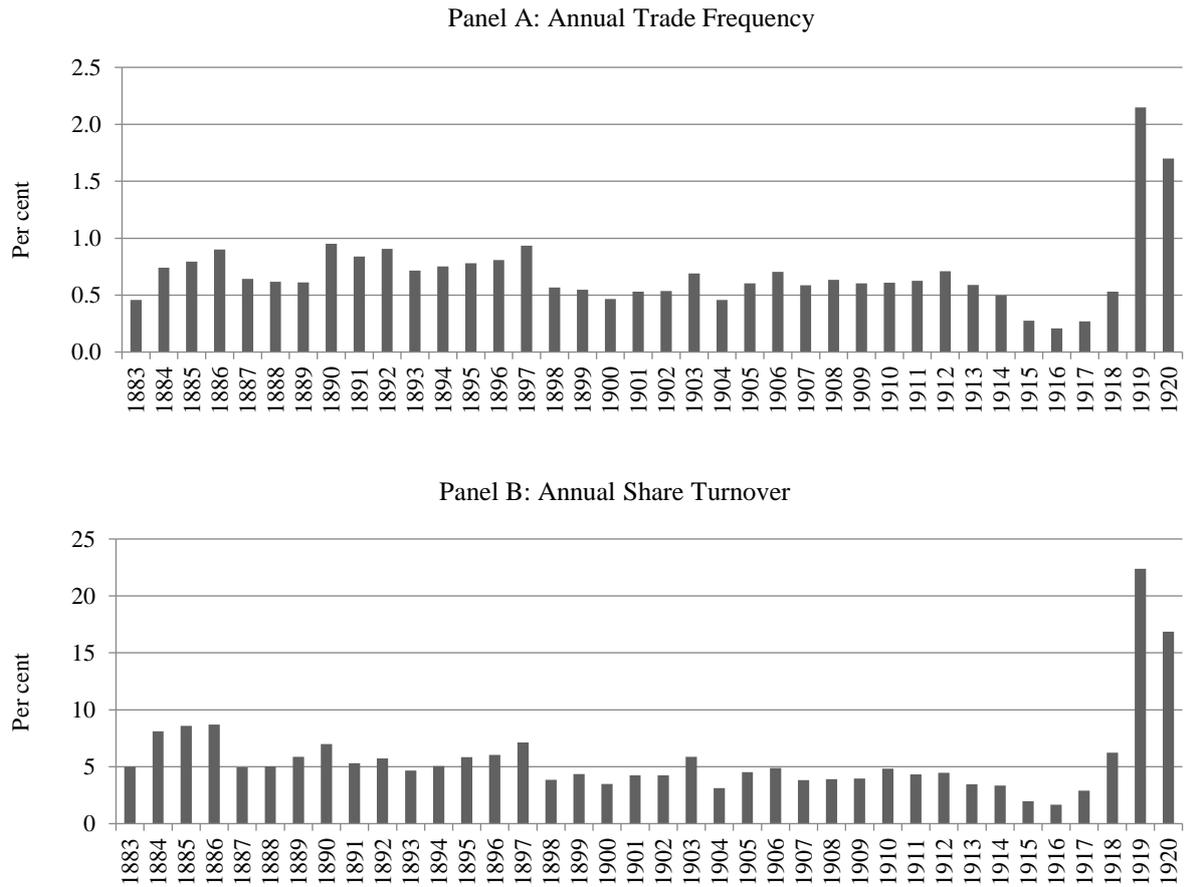


Figure 4. Annual trading activity of NBMIC shares, 1882-1920

Sources: see text.

Notes: Annual share turnover is the number of shares traded each year as a percentage of total outstanding shares. Annual trade frequency is the number of transactions each year as a percentage of total outstanding shares. Both measures of trading activity are calculated for trading days (Monday to Saturday) and take into account new share issues.

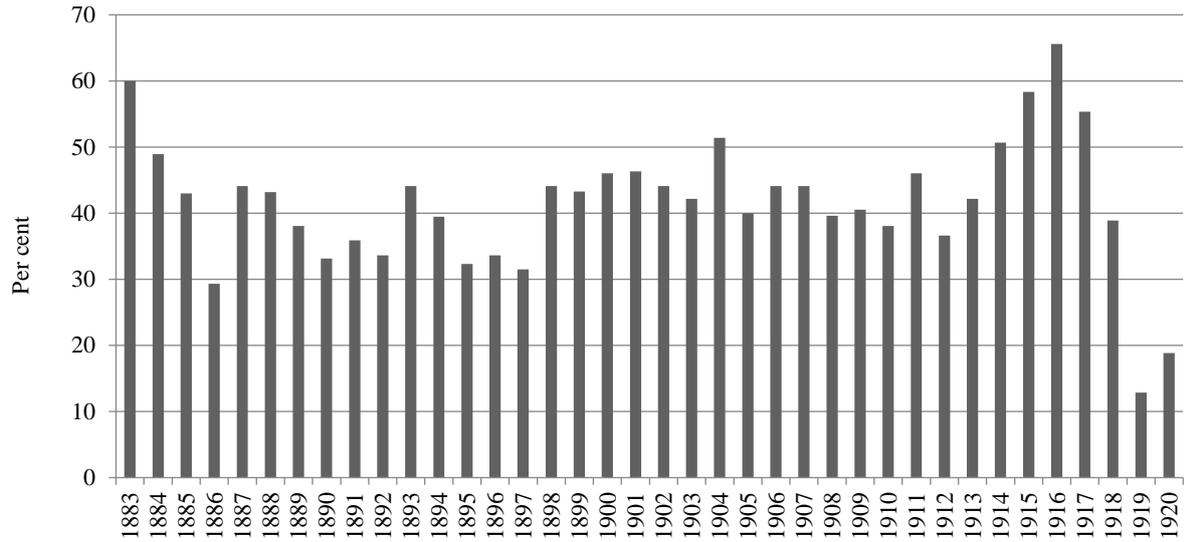


Figure 5. Annual percentage of days with no trades in NBMIC shares, 1883-1920

Sources: see text.

Notes: This measure is the number of trading days in the year where there is no trading activity divided by the total number of trading days in the year.

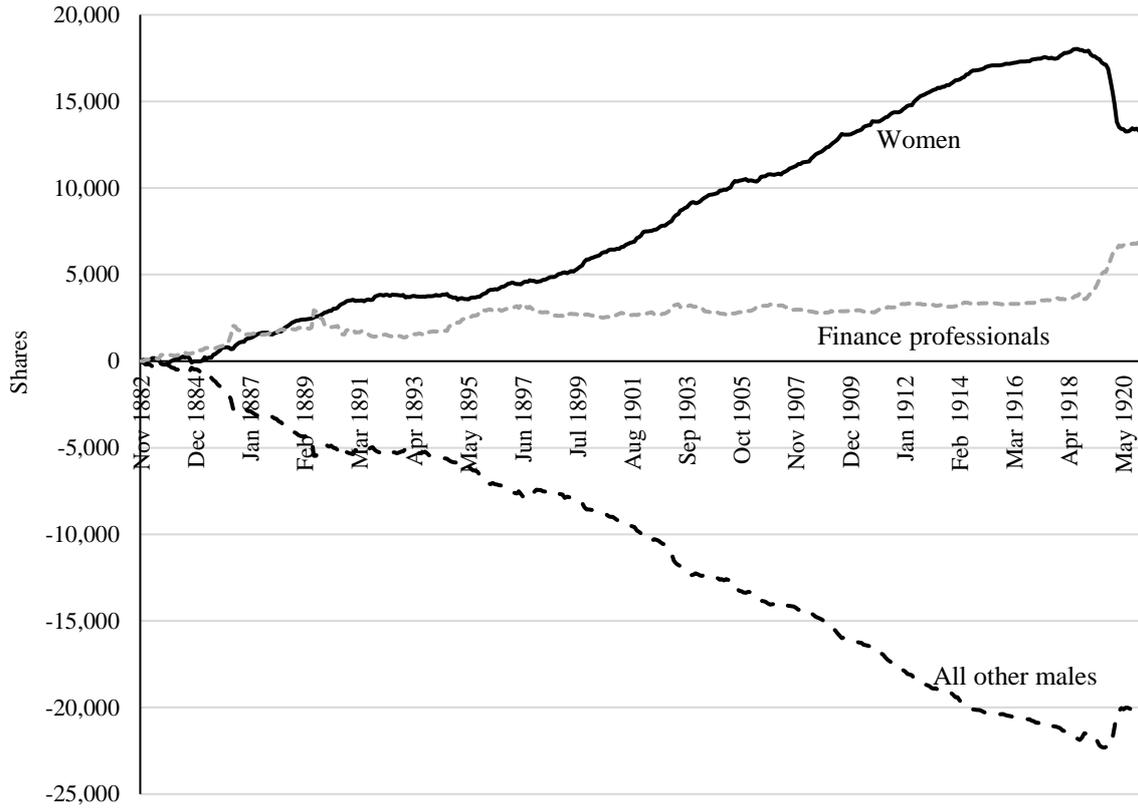


Figure 6. *The cumulative change in the number of NBMIC shares held by women, males and finance professionals, 1882-1920*

Sources: see text.

Notes: The above data are flow measures which capture the net change in the socio-occupational make-up of the NBMIC's shareholder constituency over time.

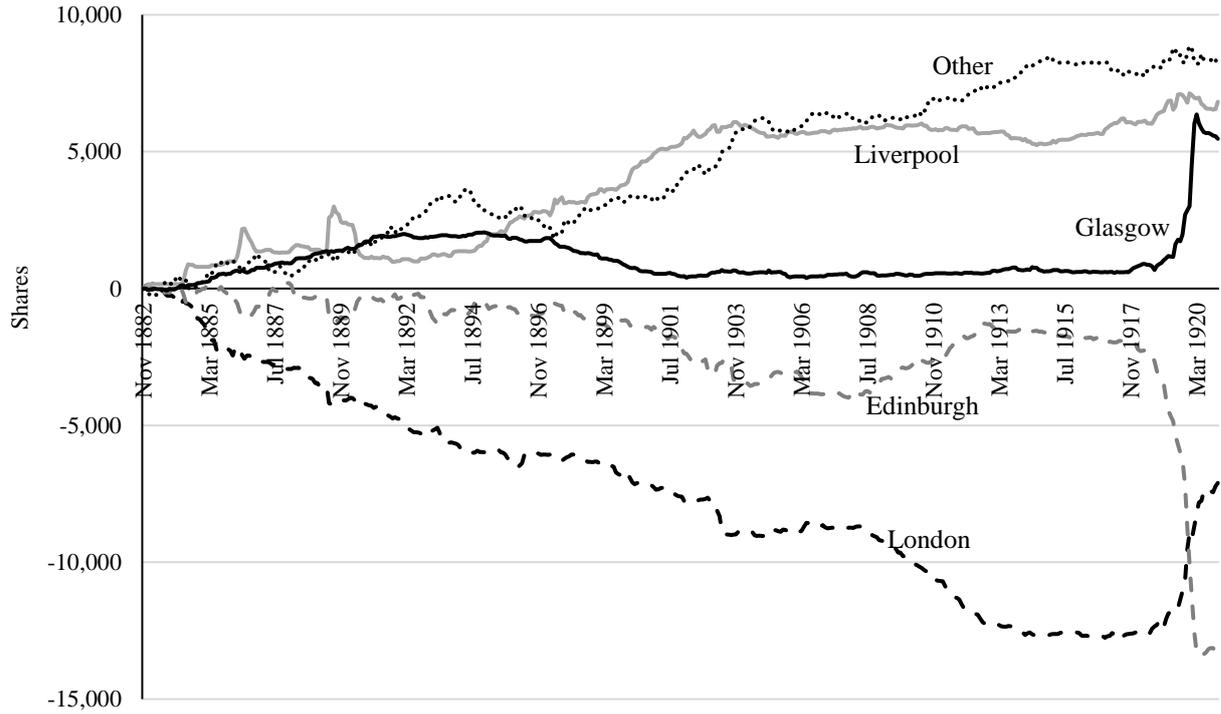


Figure 7. The cumulative change in the number of NBMIC shares held by residents of London, Edinburgh, Glasgow, Liverpool and elsewhere, 1882-1920

Sources: see text.

Notes: The above data are flow measures which capture the net change in the geographical distribution of the NBMIC's shareholder constituency over time.

Table 1. *Financial performance of NBMIC, 1881-1919*

Financial Year	Total Assets		Premiums		Claims		Balance of Revenue Account	Dividend per share
	(£'000s)		(£'000s)		(£'000s)		(£'000s)	(£)
	Life & Annuity	Fire	Life & Annuity	Fire	Life & Annuity	Fire	Fire	
1881	3,763	2,042	399	959	334	626	-	2.00
1882	3,812	2,305	441	1,087	278	678	49	2.00
1883	3,967	2,613	392	1,108	398	673	82	1.25
1884	4,086	2,629	416	1,114	358	704	71	1.50
1885	3,792	2,734	415	1,149	364	615	167	1.50
1886	4,329	2,771	429	1,143	357	617	150	2.25
1887	4,534	2,839	477	1,190	361	667	176	1.75
1888	4,753	2,909	526	1,282	415	736	110	1.75
1889	6,693	3,382	617	1,270	419	711	166	1.75
1890	7,021	3,419	729	1,389	566	811	96	2.00
1891	7,291	3,405	814	1,442	619	871	62	2.38
1892	7,775	3,366	917	1,467	659	998	-20	1.50
1893	8,221	3,355	914	1,447	660	1,050	-71	1.00
1894	8,712	3,431	1,023	1,441	680	828	140	1.00
1895	9,445	3,586	1,216	1,478	774	873	114	1.25
1896	9,793	3,656	1,027	1,464	760	796	187	2.13
1897	10,290	3,775	986	1,434	713	810	151	1.50
1898	10,712	3,800	1,008	1,424	905	854	83	1.50
1899	11,168	3,792	1,088	1,447	886	930	16	1.50
1900	11,468	3,871	975	1,547	926	972	10	1.50
1901	12,526	3,823	1,110	1,624	956	1,116	-83	1.73
1902	13,077	3,984	1,167	1,866	963	980	164	1.73
1903	13,404	4,179	1,111	1,820	1,084	937	287	1.73
1904	13,677	4,141	1,111	1,938	1,108	1,273	177	1.73
1905	14,099	4,519	1,178	1,940	1,039	971	324	1.73
1906	14,418	4,163	1,281	2,064	1,041	1,678	-364*	1.78
1907	14,922	4,330	1,285	2,158	1,128	1,113	289	1.78
1908	15,274	5,022	1,237	2,107	1,255	1,173	227	1.78
1909	15,767	5,299	1,300	2,193	1,219	1,096	308	1.78
1910	16,093	6,351	1,325	2,209	1,183	1,102	324	1.78
1911	16,391	6,970	1,337	2,379	1,162	1,349	70	2.00
1912	17,022	7,049	1,426	2,436	1,167	1,285	250	2.00
1913	17,766	7,111	1,435	2,478	1,169	1,353	194	2.00
1914	18,287	7,102	1,445	2,146	1,350	1,408	10	2.00
1915	18,784	7,364	1,376	2,147	1,467	1,097	217	2.00
1916	19,037	7,449	1,318	2,355	1,431	1,229	161	2.00
1917	19,146	8,039	1,297	2,856	1,517	1,917	-217	2.00
1918	19,685	8,159	1,537	3,083	1,365	1,500	355	2.00
1919	20,431	8,911	1,775	3,649	1,383	1,561	440	2.00

Sources: *North British and Mercantile Insurance Co. Ltd. Annual Financial Statements*. (1881-1919). Annual financial statements (CU2700-2). Aviva Archives, Norwich, UK.

Notes: The Asset Base, Premiums and Claims have been consolidated across the life and annuity accounts. We have excluded the Accident, Marine and Art businesses from the above table, because NBMIC maintained separate balance sheets following their inception / acquisition in 1908 and 1917 respectively. The position of profit or loss on the Revenue account is before the inclusion of any interest and dividend income from investments.

* This loss includes an additional £250,000 which was transferred to a special reserve following the San Francisco earthquake.

Table 2. *Ownership structure of NBMIC in 1882 and 1921*

	<u>1882</u> (1,210 shareholders)			<u>1921</u> (5,526 shareholders)		
	Shares	Per cent of total shares	Average holding (per cent)	Shares	Per cent of total shares	Average holding (per cent)
Top 1 shareholder	2,358	2.93		1,000	0.95	
Top 5 shareholders	8,364	10.41	2.08	4,202	3.99	0.8
Top 10 shareholders	11,982	14.92	1.49	6,831	6.48	0.65
Top 20 shareholders	17,050	21.22	1.06	10,064	9.55	0.48
All Shareholders	80,000	100	0.08	110,000	100	0.02

Sources: North British and Mercantile Insurance Co. Ltd. Register of Shareholders. (c.1862-1921). Register of Shareholders [North of Humber and Mersey, 1904-1921, Vols. 1 and 2, Register of Shareholders South of Humber and Mersey, 1909-1921, and Register of Shareholders Resident London and Edinburgh, 1862-1885.] (CU2934,35,38,39,42,43,55 and 56). Aviva Archives, Norwich UK.

Notes: The NBMIC had northern and southern shareholder registers. Over time, these volumes differed in chronology, which did not make it for easy to do a cross-sectional analysis of shareholders at one point in time. In order to get a cross-sectional look at shareholders in 1882 and 1921, we utilised the stock splits which occurred in those years and which were stamped beside the shareholders of the company at those two unique points in time.

Table 3. *Portfolios and wealth of deceased NBMIC shareholders, 1884-1920*

	Proportion of probated wealth in NBMIC shares (%)			Probated wealth (£)		
	Median	Lower quartile	Mean	Median	Lower quartile	Mean
1884-1889	4.6	2.0	11.3	39,054	9,873	169,379
1890-1894	7.8	2.6	14.7	17,125	7,243	91,784
1895-1899	5.4	3.1	13.0	17,956	7,522	56,322
1900-1904	4.7	1.7	11.4	17,196	6,322	52,058
1905-1909	5.0	2.0	9.9	18,969	4,250	56,906
1910-1914	4.7	1.9	7.9	10,664	4,170	80,402
1915-1920	3.9	1.7	11.1	10,257	3,734	43,776
1884-1920	4.9	1.9	10.9	15,805	5,136	70,709

Sources: see text.

Notes: We use the market value of NBMIC shares at death and divide this by the probate value of the entire estate. Probated wealth of deceased shareholders is unadjusted for inflation.