QUCEH WORKING PAPER SERIES
http://www.quceh.org.uk/working-papers

INDEPENDENT WOMEN:
SHAREHOLDERS IN THE AGE OF THE SUFFRAGETTES

Graeme G. Acheson (University of Stirling)
Gareth Campbell (Queen's University Belfast)
Áine Gallagher (Queen's University Belfast)
John D. Turner (Queen's University Belfast)

Working Paper 2018-09

QUEEN'S UNIVERSITY CENTRE FOR ECONOMIC HISTORY
Queen's University Belfast
185 Stranmillis Road
Belfast BT9 5EE

September 2018

Independent Women:
Shareholders in the Age of the Suffragettes

Graeme G. Acheson[1]

Gareth Campbell[2]

Áine Gallagher[2#]

John D. Turner[2]

Abstract

The early twentieth century saw an increasingly vocal movement which campaigned for women to be able to exercise their political voices independently of men. This coincided with more women participating directly in the stock market. In this paper we analyse whether these female shareholders acted independently of men. We reject the hypothesis that they were heavily influenced by male associates. Using a novel dataset of 500,000 shareholders in some of the largest British railways, we find that women were much more likely to be solo shareholders than men. There is also evidence that they prioritised their independence above other considerations such as where they invested or how diversified they could be. However, we find that they were deliberately excluded from being eligible for election to boards of directors.

JEL codes: G10, J16, N23

Keywords: Gender, Investment, Stock Market, Railways

[1] University of Stirling.
[2] Queen's University Belfast.
[#] Corresponding author: Queen's Management School and Centre for Economic History, Queen's University Belfast, 185 Stranmillis Road, Belfast, BT9 5EE, Northern Ireland; Email: aine.gallagher@qub.ac.uk.

* Thanks to the British Academy for financial support. Thanks to the archivists at the National Archives at Kew and the National Archives of Scotland for all their assistance. Thanks to Les Hannah, Eric Hilt, Naomi Lamoreaux, Susie Pak, Lucy Newton, Linda Perriton, Robert Wright, and participants at the European Historical Economics Society Conference (Tubingen, 2017) and Business History Conference (Baltimore, 2018) for their comments.

1. Introduction

Women have a long tradition of investing in financial instruments, and scholars have recently documented the rise of female shareholders in nineteenth-century Britain, the United States, Australia and Europe.[1] However, we know very little about the extent to which Victorian and Edwardian women made their investment choices independently of male relatives, and whether women investors over a century ago behaved differently from their male counterparts. In this era, when the suffragette movement was at its height, we analyse whether women were also demonstrating their independence through their investment decisions.

To address this, we turn to the shareholder constituencies of railways, which were the largest public companies in the Victorian and Edwardian capital market. Railway companies in the UK popularised equity investment among the middle classes and had been around as a major investment asset since the first railway boom of the mid-1830s. By 1900 railways constituted one quarter of the total capitalisation of the British equity market.[2] 49 of the 100 largest companies on the British equity market in 1911 were railways.[3] The railways, therefore, make an ideal lens through which to examine women investors.

Detailed railway shareholder records, comparable to those for other sectors, have generally not been preserved. However, we have found *Railway Shareholder Address Books*

[1] Acheson and Turner, 'Shareholder liability' and 'Investor Behaviour'; Doe, 'Waiting for her ship to come in'; Freeman et al., 'Between madam bubble'; Freeman et al., 'A doe in the city'; Green and Owens, 'Gentlewomanly capitalism'; Johns, 'The first female shareholders'; Licini, 'Women's wealth and finance'; Lough, *Business finance*; Maltby and Rutterford, 'She possessed her own fortune'; Newton and Cottrell, 'Female investors'; Petersson, 'Women, money and the financial revolution'; Robertson and Yohn, 'Women and money'; Rutterford and Maltby, 'The nesting instinct' and 'The widow, the clergyman and the reckless'; Rutterford et al., 'Who comprised'.

[2] Grossman, 'New indices'.

[3] Foreman-Peck and Hannah, 'Extreme divorce', online appendix.

for six of the largest railway companies around when the suffragette movement reached its peak.

An analysis of these shareholder address books suggests that women represented about 30 to 40 per cent of shareholders in each railway company in our sample at this time. This implies that women were not only being influential in affecting political change during this era, they were also playing a very important role in the financial markets. To place this period in context, we have searched for earlier shareholder records for our sample railways, and have been able to find a few previous sources, with the longest series being available for the Great Western Railway (GWR). From this data we are able to trace the growing importance of women shareholders from 1843, when they made up about 11 per cent of the GWR shareholder base, to 1893 when they represented about 35 per cent of primary shareholders, to 1920 when they constituted about 40 per cent of primary shareholders.

However, although women were becoming increasingly prevalent in shareholder constituencies, it is possible that they may still have been heavily influenced by male relatives in their investment decisions. To examine this we focus on joint shareholdings, where people would invest together, rather than buying shares on their own. This practice was extremely common, and from our data we are able to analyse the differences between solo shareholders, lead joint shareholders (i.e., individuals who owned shares with others but held the voting rights), and secondary joint shareholders (i.e., individuals who owned shares with others but did not hold the voting rights). We find that women were much more likely to be solo shareholders than men, with 70 to 80 per cent of women investing on their own, compared to just 30 to 40 per cent of men. When they did participate in joint shareholdings, they were almost equally likely to be the lead shareholder as the secondary shareholder, whereas the majority of men took up a secondary position. When women did participate as a secondary shareholder,

the lead was usually not a male relative. These findings are strong evidence that women shareholders were acting independently when it came to making their investments.

We then analyse how the interaction between gender and joint shareholdings affected investment decisions. We begin by examining differences in terms of local versus arms-length investment, using geospatial analysis to compare the address of each shareholder to each of the railway stations of the company which they had invested in. We find that women were more likely than men, and solo investors more likely than joint shareholders, to invest locally. This suggests that men may have used joint investments as a way of reducing the risks of investing at a distance. In contrast, women preferred to maintain their independence even if this meant focusing more on local investments.

We then examine the extent to which women and men invested across different railways. In the modern era, adopting a value-weighted portfolio which is most heavily concentrated in larger companies is common.[4] Because three of our sample companies were in the top five largest companies of their era and a further three are in the top twenty-five, we would a priori expect to see some overlap of shareholders investing in different railways if they adopted this approach to diversification. From our analysis, we find that male and joint shareholders were more likely than female and solo shareholders to hold multiple railway stocks. This could imply that men were using joint shareholdings as a means of reducing transaction costs and increasing diversification. In contrast, women may have been prioritising independent investments, even if it meant being less diversified.

[4] Markowitz, 'Portfolio selection'. Although the concept of modern portfolio theory was not developed until the twentieth century, individuals during our sample period were aware of the concept of reducing risk by investing across a range of domestic and foreign securities (Lowenfeld, *Investment an exact science* and *The rudiments of sound investment*).

We also consider whether there were differences in terms of how long each type of shareholder held onto their shares for because modern studies suggest that women are much less likely than men to trade their shares.[5] We find that only a minority of shareholders maintained a long-run buy and hold strategy, with little suggestion that this differed by shareholder characteristics. This implies that our findings are not being driven by a cohort effect, and that the increasing prevalence of female shareholders who adopted independent investments was a conscious choice by them.

Although women were being increasingly active and independent in managing their finances, they seem to have been deliberately deprived of any chance of being involved in the management of the firms they had invested in. Each railway reported which shareholders were qualified to be elected as directors, which should have been based on whether they met a threshold in terms of how much they invested. There were essentially no women recorded as being eligible, which implied that they could not even be considered for election. Therefore, although women were exercising their independence in their personal investment decisions, and gaining more rights in the political world, they were still very far from being able to be active in the corporate governance sphere.

This paper contributes to the growing literature on investors in Victorian and Edwardian Britain. As well as augmenting the literature on gender and investment in this era by looking at the differences when it came to women and men investing in the stock market, it adds railways, the largest and most important sector on the stock market, to studies which have focussed on the shareholder constituencies of banks and new companies.[6] The paper also contributes to the literature which has focussed on gender differences in modern financial markets, which finds that women tend to display lower risk tolerances, trade less frequently

[5] Barber and Odean, 'Boys will be boys'.

[6] Acheson and Turner, 'Investor Behaviour'; Acheson et al., 'Who financed'.

and are less prone to overconfidence than their male counterparts due to socioeconomic, psychological and biological factors.[7] Our paper also augments the literature which has looked at investment in and the performance of Victorian and Edwardian railways.[8] Our findings also suggest that investors did not invest that frequently across multiple railways, which contributes to prior work on how investors selected investments and formed portfolios in this period.[9] Finally, our paper augments the emerging literature on local investment biases in this early market by showing that women, and solo shareholders, were more likely to focus on local companies.[10]

The paper proceeds as follows. Section 2 discusses our sample of railway shareholders, and the risk and return of railway stocks. Section 3 provides context on women investors during the period. Section 4 considers whether women made independent investment decisions. Section 5 analyses the extent to which women and men investors invested in local railways. Section 6 considers whether railway investors invested in more than one railway, whilst Section

[7] Bajtelsmit et al., 'Gender differences'; Barnea et al., 'Nature or nurture'; Barber and Odean, 'Boys will be boys'; Borghans et al., 'Gender differences in risk aversion'; Cesarini et al., 'Genetic variation in financial decision-making'; Cesarini et al., 'Genetic variation in preferences'; Coates and Herbert, 'Endogenous steroids and financial risk taking'; Cronqvist et al., 'The fetal origins hypothesis in finance'; Cronqvist et al., 'Value versus growth investing'; Croson and Gneezy, 'Gender differences in preferences'; Dwyer et al., 'Gender differences'; Jianakoplos and Bernasek, 'Are women more risk averse?'; Kumar, 'Who gambles in the stock market'; Sapienza et al., 'Gender differences in financial risk aversion'; Sunden and Surette, 'Gender differences'.

[8] Irving, 'The profitability and performance of British Railways'; Mitchell et al., 'How good was the profitability of British railways'.

[9] Goetzmann and Ukhov, 'British investment overseas'; Mitchell et al., 'How good was the profitability of British railways'; Rutterford and Sotiropoulos, 'Financial diversification' and 'Putting all their eggs in one basket'.

[10] Rutterford et al., 'Individual investors'.

7 examines the length of investment horizons. Section 8 discusses the eligibility of women for election as directors, and Section 9 summarises our findings.

2. Railway shareholders

Our analysis of shareholding patterns of women around the time of the suffragette movement focus on *Railway Shareholder Address Books*. These provide consistent and reliable information on a very extensive number of investors in some of the largest companies in Britain during this time. Under the Regulation of Railways Act (1868), railways were required to maintain shareholder address books for the purposes of correspondence with their ordinary and preference shareholders and for viewing by fellow shareholders as well as mortgage or debenture holders.[11] We conducted an extensive search in the National Archives at Kew and the National Archives of Scotland for these address books and found six major railways around the period of interest, which were as follows: London and North Western (1915); Great Western (1920); North Eastern (1921); Caledonian (1922); North British (1915); Glasgow and South Western (1921).[12]

From Table 1 we can see that these books together report almost 290,000 shareholdings. It was common for multiple shareholders to invest jointly in one shareholding, with some companies reporting each individual, whilst others just reported the lead shareholder and referred to investing 'with others'. When we include the secondary investors which are reported by some firms, we have details of about 345,000 shareholders.

[11] 31 & 32 Vict, c.119, section 34.

[12] London and North Western (1915), RAIL 410/769; Great Western (1893), RAIL 251/131; Great Western (1920), RAIL 251/7; North Eastern (1921), RAIL 527/439; Caledonian (1897), BR/CAL/2/1; Caledonian (1922), BR/CAL/2/10; North British (1870), BR/NBR/2/95; North British (1889), GD282/13/259; North British (1902), BR/NBR/2/91; North British (1915), BR/NBR/2/92; Glasgow and South Western (1921), BR/GSW/2/5.

<< INSERT TABLE 1 >>

In addition, we have also been able to find some earlier address books for the North British, the Caledonian, and the Great Western, and have also obtained the 1843 shareholder records for the Great Western from the National Archives at Kew.[13] When these are included, we have information on over 490,000 shareholders.

The *Railway Shareholder Address Books* gave the shareholder name, address, and whether an individual held enough shares to meet the share qualification for directors. They also recorded information on the marital status of their female shareholders, and the occupational status of their male shareholders. Women were typically referred to as spinsters, widows or married. In cases where this detail was not provided, we have identified women based on their first name, and allocated them to the 'female other' category.[14] For males, their occupation was generally reported, but in some cases we have determined a classification from the title of the individual, e.g., Reverend, and Colonel etc. We group together employed males, who cover the full socio-economic spectrum, into one category. We also have a male rentier classification, which includes members of the nobility, and those designated as esquires and gentlemen, who simply may have been retired rather than members of the gentry. We also have a group for males whose occupational status was not disclosed.

From Table 1, we can see that the English railways (the Great Western, London and North Western, and North Eastern address books) had almost complete records on investor marital status or occupation, but the Scottish railways (the Caledonian, North British, and

[13] RAIL 251/28, 29, 32, 50, 52 and 54.

[14] To confirm that a non-return of an occupation status for female shareholders was not solely due to reporting practices, we cross-referenced the female shareholders of the North British Railway Company (in 1902) with the *Edinburgh Trade Directory* of that year. Of the 520 female shareholders who resided in Edinburgh, we located only two with a recorded occupation.

Glasgow and South Western) were less detailed in this regard. Overall, we have a comprehensive categorisation of females and males for all of the shareholders, and occupational or marital status classifications for 85 per cent of our sample.

How representative is our sample? The six railways included in this study were ranked 2nd, 5th, 6th, 21st, 24th, and 54th at the end of 1918 in terms of the market capitalisation of their ordinary and preference equities amongst all UK public companies.[15] Our dataset of 345,000 railway shareholders, for the period 1915-22, represents circa 38 per cent of the population of railway investors in 1914.[16]

Several of the companies in our sample had national rail networks with London as their central node, whereas others had rail and station networks located in Scotland or the north-east of England. The location of all of the stations is shown in Panel A of Figure 1, which illustrates that the railways in our sample covered a very substantial part of Great Britain. Shareholder addresses were reported for 98 per cent of shareholders, and each address was geocoded using the Bing Maps API. These shareholders come from right across the British Isles, with clusters in the major populated areas, as shown in Panel B of Figure 1.

<< INSERT FIGURE 1 >>

The railways as a sector may also be viewed as being generally representative of the 'blue chip' end of the financial market. By the end of the nineteenth century, their position and legitimacy was recognised by the Investment Trust Acts of 1889 and the Trustee Act 1893,

[15] Based on authors' calculations from *Investor's Monthly Manual*. Companies headquartered overseas, or traded in dollars, are excluded from the ranking.

[16] Clapham, *An Economic History of Modern Britain* estimated there were c.900,000 investors in UK and Irish Railways in 1914.

which designated railway stocks as suitable investments for trust funds.[17] At the end of 1920 the British railways constituted 32 per cent of the nominal capital of domestic corporates on the Official List of the London Stock Exchange.[18]

Figure 2 shows the capital gains and dividend yields on the ordinary and preference shares of our six sample companies compared to the overall market. The railways' share prices had declined considerably from the late 1890s, largely due to the profitability of the railways deteriorating due to cost inefficiencies, waste and managerial failures although this did then contribute to a rising dividend yield.[19] During World War I, the railway system was taken under government control, and the railways received an annual payment based on their 1913 receipts plus four per cent on capital expenditure. Government control continued until 1921-22, at which point the railways received £60 million to satisfy all claims with regards government possession, and they were re-organised into four large groupings[20].

<< INSERT FIGURE 2 >>

To analyse what all of this meant for investors, Table 2 shows the evolution of risk factors for our six sample companies from 1869 through to 1929, using a methodology similar to Fama and French.[21] The returns of our sample companies are regressed on the returns of a broad market index (RmRf), the returns on small companies minus big companies (SMB), the

[17] 52 & 53 Vict., c. 32; 56 & 57 Vict., c. 53. See Mitchell et al., 'How good was the profitability of British railways'.

[18] Calculations based on Michie, 'London Stock Exchange', p.175. To focus on domestic corporates we exclude government bonds and foreign railways from the denominator of this calculation. The numerator and denominator both include corporate debt, whereas the railway shareholder address books that we consider focus on equities.

[19] Mitchell et al., 'How good was the profitability of British railways'.

[20] *Stock Exchange Year Book*, 1930, p.294

[21] Fama and French, 'Common risk factors'.

returns on high dividend yield companies minus low dividend yield companies (HML), and the returns on foreign minus domestic companies (FMD).

<< INSERT TABLE 2 >>

The results suggest that during the period we focus on, from 1915-1922, the railways had a low beta compared to the market, and moved more like big, domestic companies, all of which is consistent with intuition. Notably, after controlling for these factors, the constant is not significant, suggesting that the railways' returns were broadly similar to other companies after controlling for their blue-chip characteristics.

3. Women investors in Victorian and Edwardian Britain

Recent research has suggested that women were active in the capital markets as far back as the eighteenth century,[22] and became increasingly involved towards the latter part of the nineteenth century.[23] From Table 3, which outlines the breakdown of the shareholder base for the railways in our sample between 1915 and 1921, it can be seen that women comprised approximately one third of all primary shareholders across our sample of railways.[24] These results are similar to the findings of Rutterford et al. who report that women investors comprised 38.0 per cent of their sample of non-railways during the 1920s.[25]

[22] Carlos and Neal, 'Women investors in early capital markets'; Carlos et al., 'Women in the city'; Dickson, *The financial revolution in England*; Freeman et al., 'A doe in the city'; Fride, *Silent partners*; Laurence, 'Women, banks and the securities market' and 'Women investors'.

[23]Acheson and Turner, 'Investor Behaviour'; Doe, 'Waiting for her ship to come in'; Green and Owens, 'Gentlewomanly capitalism'; Maltby and Rutterford, 'She possessed her own fortune'; Newton and Cottrell, 'Female investors'; Rutterford and Maltby, 'The widow, the clergyman and the reckless'.

[24] For consistency across the companies, we do not include secondary shareholders in this analysis as their identities are only reported for two of the railways.

[25] Acheson et al., 'Who financed'; Rutterford et al., 'Who comprised'.

<< INSERT TABLE 3 >>

To place this period in context, we have been able to use the shareholder books of the Great Western Railway in 1843 and compare it to the shareholder address books that we have for this company in 1893 and 1920. From Table 4, we can see the increasing prevalence of women investors over the 77-year period, with the proportion of female shareholders increasing considerably, from a relatively low base of 10.8 per cent in 1843, to 24.7 per cent in 1893. There was another substantial increase thereafter, with 40 per cent of shareholders in the GWR being female by 1920.

<< INSERT TABLE 4 >>

The increasing levels of female investment is likely related to a range of demand- and supply-side factors.[26] During the Victorian era, there were several demographic and social changes which influenced the composition of the investor base. By the latter part of the nineteenth century, there was a gender imbalance, referred to as 'surplus women' or spinsters and widows, who numbered 600,600 in 1871 and increased to 1,147,700 by 1911.[27] Although working class women may have held employment outside of the home, given the social constraints at the time, the majority of middle and upper class women did not hold paid employment.[28] This resulted in large numbers of single women who relied on investment income as a way to sustain their standard of living. Also, a lack of public state pension provision meant that women without employment opportunities were more likely to engage with financial investments as a means to support themselves.[29]

[26] Rutterford et al., 'Who comprised'.

[27] Hinde, *England's population*; Mitchell and Deane, *Abstract of British historical statistics*; Rutterford et al., 'Who comprised'; Wrigley et al., *English population history*.

[28] Kay, 'Small business, self-employment and women's work life choices'.

[29] Laurence et al., *Women and their money*.

A further boost to female investment came from the introduction of the Married Women's Property Acts (MWPA) in 1870 and 1882, which represented a major legal change in the restrictions around women's ownership of property and subsequent participation in the capital markets.[30] Prior to 1870, married women were prevented from owning and controlling property due to the principle of coverture (*feme covert*) established in legislation, whereas single women did not face such restrictions. Upon marriage, women were no longer recognised as a separate legal person (*feme solo*) and control of any assets brought into the marriage was passed to the husband. Women were permitted to retain ownership of personal items and freehold (real) property, although the husband was entitled to any income arising from real property, effectively relinquishing control.

The passage of the MWPA in 1870 allowed married women to retain ownership of any income earned through her own work or real property after the marriage, and the subsequent Act in 1882 extended married women's rights to an equal footing with single women. The MWPA had a significant impact on women's investment decisions, resulting in enhanced participation in the stock market and altered portfolio allocations away from real estate and towards personal property held in the form of savings or investments in company stock.[31] However, it is notable that by 1893, there were still very few married women shareholders in the Great Western Railway, although they had become much more prominent by 1920.

The increasing prominence of the Suffragette movement may also have encouraged more women to engage in investment and take control of their financial affairs. Listed among our railway shareholders, we found a number of prominent Suffragettes, including Marion Wallace-Dunlop, Olive Wharry, Margaret Wynne Nevinson, Princess Sophia Duleep Singh, and Sarah Emily Davies.

[30] 33 & 34 Vict. c.93; 45 & 46 Vict. c.75

[31] Combs, 'A measure of legal independence'; Rutterford et al., 'Who comprised'.

Innovation in the British capital markets in the latter part of the nineteenth century, which resulted in more company formations, lower share denominations and lower risk securities available to investors, has been proposed as one of the main supply-side factors contributing to the broader democratisation of share ownership during this period.[32] In particular, the increasing availability of lower risk securities with a steady income stream may have been attractive to women.

4. Were women independent investors?

Social perceptions in the nineteenth century were generally derogatory in terms of women's capabilities to act as informed investors. Contemporary sources of the time comment that women were largely uneducated in relation to investment matters and were mostly excluded from social networks disseminating financial knowledge.[33] Given the attitudes towards women in this period, some of the literature proposes that women were effectively 'directed' in their investment choices by male relatives and advisors.[34] The perception was that women would benefit from investment advice dispensed by their male counterparts, with some evidence indicating that women were influenced in their investment decisions.[35]

We can gain some insights into this issue by examining solo versus joint shareholdings. Individuals who invested on their own had independent control of all of the rights to their dividends, capital gains and votes associated with their shares. In contrast, if a number of people

[32] Rutterford et al., 'Who comprised'.

[33] Cotton, *Everyone's guide to investment matters*.

[34] Davidoff and Hall, *Family fortunes*; Morris, *Men, women and property in England*.

[35] Freeman et al., 'A doe in the city'; Hudson, 'Attitudes to investment risk'; Maltby and Rutterford, 'She possessed her own fortune'; Morris, 'Men, women and property in England'; Rutterford & Maltby, 'The widow, the clergyman, and the reckless'.

invested jointly this would suggest close co-operation between them in terms of their investment decision. Within the joint holding, there may have been some investors more influential than others, and we can distinguish the lead and secondary shareholders by the order in which they were reported, as Section 78 of the Company Clauses Consolidation Act (1845), attributed voting power only to the first named owner.[36]

Three address books (Great Western 1893, London & North Western 1915, North Eastern 1921) disclose the name and occupation of all secondary investor(s) in a joint shareholding, so we analyse them in detail in Table 5. The other railways deal with joint shareholdings by just reporting the lead shareholder and stating that they invested 'with others', so we group them together for analysis.

<< INSERT TABLE 5 >>

The results show that females were much more likely to invest independently. For the Great Western in 1893, 68 per cent of women invested on their own, compared to just 27 per cent of men. For the London and North Western in 1915, it was 74 per cent of women, compared to 35 per cent of men, and for the North Eastern in 1921 it was 79 per cent of women compared to 41 per cent of men. For the other railways, we cannot identify the secondary shareholders, but it can be seen that of the women who either invested solo or as lead joint holder, 89 per cent were on their own, compared to 62 per cent of men. These patterns emerge for females regardless of their marital status, with widows, spinsters and married women all tending to invest independently.

Returning to the three companies where we have details of secondary shareholders, we can see that when women were involved in joint shareholdings, they were also more likely than

[36] 8&9 Vict. c.16. This Act regulated the constitutions and bylaws of public utility companies such as railways. Notably, Table A of the 1862 Companies Act had a similar provision.

men to be the lead shareholder, rather than one of the secondary shareholders. This would again suggest that these investment decisions were being driven by the women.

In Table 6, we move on to examine the extent of familial ties among joint shareholdings. We determine whether secondary shareholders invested alongside someone who was related to them by virtue of sharing the same surname. Whilst this will not pick up every family connection, it should provide a good approximation. The first point of note is that in cases of joint shareholdings, on average, only a quarter of these constitute instances of investing in kinship groups. Previous research has suggested that in the eighteenth and early nineteenth centuries familial ties in investing were commonplace.[37] However, our evidence for the earlier twentieth century implies that familial relationships in shareholdings had weakened and were not the primary driver of joint holdings.

<< INSERT TABLE 6 >>

Considering differences between the sexes, it is apparent that men tended to invest mainly with other, unrelated, men. Given that only a small proportion of secondary male shareholders shared a surname with the primary shareholder, it could be inferred that these instances of joint shareholdings were more likely to be through professional connections rather than kinship ties.

In cases where women were the secondary shareholders, in about half of the cases they invested with a family member, and these were slightly more likely to be a male rather than a female relative. Overall, in about 37 per cent of cases they invested with other women. These results suggest that even in the minority of cases where females did decide to invest jointly, many of these holdings were alongside other women.

[37] Freeman et al, 'A doe in the city', Hudson, *Attitudes to investment risk*.

5. Independence and Geography

Given that women were more likely than men to be investing independently, we now go on to establish how this may have affected their investment decisions. One dimension that may have been affected was the propensity to invest in companies which operated in the local area, rather than in distant enterprises. The preference to invest locally or 'local bias', is prevalent in modern financial markets, with two alternative explanations offered in terms of the extent of informational asymmetries favouring local investment or psychological factors influencing investor preferences.[38] There is also a small body of work examining the historic geographic distribution of shareholders, which also notes the presence of a local bias in investment decisions in the nineteenth and early part of the twentieth centuries.[39]

The railways make a particular good case study for this because we can observe the precise operating area of each company, rather than just focusing on company headquarters. To conduct our analysis, we calculated the distance as the crow flies (in miles) between each shareholder and the nearest station of the railway which they had invested in.[40] Panel A of Table 7 outlines the proximity of men and women shareholders to their investments for all of the railways in our sample in the period 1915-1921. The median shareholder lived about 16 miles away from the closest station of the railway that they had invested in. About 41% of

[38] Bernille et al., 'Home away from home'; Coval and Moskowitz, 'Home bias at home' and 'The geography of investment'; French and Poterba, 'Investor diversification'; Grinblatt and Keloharju, 'How distance, language and culture influence stockholdings'; Ivkovic and Weisbenner, 'Local does as local is'; Seasholes and Zhu, 'Individual investors and local bias'; Zhu, 'The local bias of individual investors'.

[39] Franks et al., 'Ownership: evolution and regulation'; Reed, *Investment in railways*; Rutterford et al., 'Individual investors and local bias in the UK'.

[40] For the sake of robustness, we also examined the distance of shareholders from the railway's head office and found similar patterns to the results reported below. We also run the regressions using various levels of precision in terms of the geocoding, and the results remain similar.

shareholders lived within 5 miles of the nearest station, and a further 33% lived between 5 and 100 miles away.

<< INSERT TABLE 7 >>

However, these overall results are being affected by where the railways were based, as large cities would naturally be expected to be a considerable source of capital. We therefore show results in Panel B for those companies which had a terminal in London (the Great Western and the London & North Western). For these railways, the median shareholder lived just 4 miles away. 53 per cent of shareholders lived within 5 miles, and 94 per cent lived within 100 miles of the nearest station. These high levels of local ownership reflect both a propensity by some shareholders to invest locally, coupled with the fact that these railways operated in, or close to, the major cities of London, Liverpool, and Manchester.

To disentangle these two effects somewhat, we show results for the other railways that were based in Scotland and the North-East of England, in Panel C. In these companies the median shareholder lived 92 miles away from the nearest station. About 30 per cent lived within 5 miles, and a total of about 53 per cent lived within 100 miles. For these railways we observe a much more geographically dispersed shareholder base. There was still considerable local investment, partly due to a preference to invest in the familiar and partly due to these railways operating in or near the major cities of Glasgow and Edinburgh. However, there was also a considerable amount of arms-length investment from shareholders throughout Britain.

Focussing on the gender aspect of investment preferences, it appears that women overall were more likely to invest closer to home, with the median male living 18 miles away, compared to the median female who lived 14 miles away. This pattern does not emerge when focusing the railways with a London terminal, with women actually tending to be slightly further away, but the difference in the absolute number of miles is very small. A much starker difference is shown when considering the railways based in the North of England and Scotland.

The median male lived 96 miles away, whilst the median female lived 80 miles away. This suggests that females were somewhat less likely to invest at a distance. This difference in gender preferences concurs with previous work in the area highlighting that in relative terms women may have lower risk tolerances than men when distance to investment is used as a proxy for investment risk.[41]

We then split the shareholders according to whether they were solo or joint investors. The differences between these groups are even more pronounced than those based on gender. Solo shareholders lived about 15 miles from their nearest station, whilst the lead shareholder from a joint holding lived about 24 miles away. Again, this pattern is not present for the railways with a base in London, but are very pronounced for the other railways. The lead investors of joint holdings lived a median distance of 108 miles away, compared to solo investors who lived a median distance of 81 miles away. About 25 per cent of lead investors in joint holdings lived within 5 miles, compared to 33 per cent of solo investors.

These results imply that women and solo investors were more likely than men and joint holders to invest locally. Given that women were also more likely to be solo investors, and men were more likely to be joint holders, it is plausible that these patterns are jointly determined. Men may have used joint holdings as a way to manage the information asymmetries and risks of investing at a distance, whereas women preferred to maintain their solo investments even if it meant investing closer to home.

6. Independence vs Diversification

Another potential advantage of joint holdings is that they could reduce the transaction costs for small purchases. Commission had to be paid on each trade which was usually a percentage of

[41] Freeman et al., 'A doe in the city', Reed, *Investment in railways*.

stock value, but there was a minimum amount charged on small bargains. Based on a typical railway share, it would have cost 5s for any purchase of up to £20 of railway stock, and 10s for anything up to £200.[42] There was also a fixed transfer fee of 2s 6d, regardless of the size of the transfer.[43]

Therefore, for shareholders interested in purchasing only very small amounts of stock, buying together and sharing the transaction costs could have been attractive. Although we do not know precisely how much each person owned, there is evidence to suggest that most investors held only small amounts. As will be discussed more extensively later, the address books noted which shareholders owned enough stock to qualify as a director. For the London and North Western, this required owning around £1,000 of ordinary equity, but it seems that less than 5 percent of shareholders met this criteria.[44] Other railways had similar or slightly higher thresholds, and similarly low numbers meeting this threshold.

Being able to buy small amounts of stock, and sharing the costs, would have been particularly useful for investors who wanted to spread their capital around numerous companies in an attempt to diversify their holdings. To determine whether investors adopted a diversified portfolio approach to their investments, we used a matching algorithm to identify shareholders who held shares in more than one railway.[45] Each pair-wise match between the various railways was examined and the primary shareholders matched on the basis of their name and the town

[42] *Investor's Monthly Manual*, December 1919, p. 706

[43] *Stock Exchange Yearbook*, 1930, p. 439

[44] Calculations suggest that 4.2 per cent of men met the threshold for the London and North-Western

[45] One limitation of this approach is that we are not comparing company address books at the same point in time and so there is a possibility that we are not capturing shareholders who may have held positions in more than one company simultaneously, but subsequently divested one of their holdings within a short time frame. However, we do not expect this effect to be material given the relatively short gaps involved.

they lived in. The matching exercise excluded shareholders who were noted as deceased or who held shares in a Trustee capacity.

<< INSERT TABLE 8 >>

Table 8 outlines the extent of cross-holdings within the sample of shareholders. For shareholders in the Great Western, about 14 per cent also invested in the London & North Western, 12 per cent invested in the North Eastern, 9 per cent in the Caledonian, 7 per cent in the North British and 3 per cent in the Glasgow and South Western. Overall, the shareholders of the Great Western invested in 1.45 railways, meaning 0.45 apart from the Great Western. Similar rates are observed when the other railways are considered, with an average of 1.52 railway holdings across all shareholders. To place this in context, Sotiropoulos and Rutterford find that at the end of the nineteenth century the average number of holdings of all companies by investors was 4.57[46].

There are clear gender differences, with male shareholders on average holding 1.63 of the railways in our sample, compared to female shareholders who held an average of 1.36. This gender disparity exists across each of the railways, with men consistently being more likely to invest in multiple companies. This pattern is similar to evidence on multiple railway holdings during the pre-1850 period.[47] It is also consistent with the more detailed analysis on portfolio holdings by Rutterford and Sotiropoulos, who found that male investors held 5.6 securities on average, versus female investors who held 3.5.[48]

[46] Sotiropoulos, D.P. and Rutterford, J., 'Individual investors'

[47] Hudson, *Attitudes to investment risk*.

[48] Rutterford and Sotiropoulos, 'Putting all their eggs in one basket'

Similar differences emerge when multiple shareholdings are analysed according to whether they were made by solo investors or by the lead investor of a joint holding.[49] On average, the lead joint holders had invested in 1.72 companies in our sample, compared to solo investors who on average invested in 1.44. This suggests that joint holdings amongst shareholders may have facilitated diversification opportunities.

These results in terms of gender and joint holdings again are likely to be connected. Men may have used joint holdings as a way to invest small amounts in multiple companies, allowing them to diversify. In contrast, women seem to have preferred pursuing a few independent solo investments, even if it meant holding a less diversified portfolio.

7. Were these trends driven by long-term investment patterns?

It is possible that the patterns we have observed, of women becoming more prevalent in the shareholder base, and of women investing more independently than men, could be spuriously linked. Perhaps joint shareholdings had been more common in previous decades, and were not being initiated any longer, so when females became more prevalent they just followed the developing trend of solo investments. The joint holdings which we observe in the 1915-1921 period may have been an artefact of history, with these joint shareholders having invested many decades ago and having never sold their shares.

To analyse this, we are able to use the shareholder address books which we have for three railways which cover sequential points in time. Again, the matching algorithm was used to match individuals across different books. Table 9 reports the percentage of investors during the 1915-1922 period which had already invested at earlier dates. The results suggest that there

[49] As we do not know the identity of the secondary shareholders in joint holdings for four of the companies we cannot check if the same group of joint holders invested multiple times. We restrict our analysis to whether the lead joint holder appeared in multiple address books.

were considerable shifts in and out of each company. For example, only about 27 per cent of shareholders in the North British had been investing for at least 13 years, 8 per cent had been investing for 26 years, and 2.4 per cent had been investing for 45 years. For the Caledonian, about 11 per cent had been investing for 25 years, and for the Great Western about 6 per cent had been investing for 27 years.

<< INSERT TABLE 9 >>

This suggests that only a minority of investments were a legacy of past decades. There also seems to be little difference between groups based on gender and joint holdings, with only the Great Western showing some differences resulting from these characteristics. This would imply that most shareholdings were relatively recent, and that these new entrants, both male and female, had consciously decided that joint or solo investments were appropriate for them at this time. The men frequently chose to pursue joint shareholdings, whereas the women deliberately pursued independent solo investments.

8. Male hegemony in the boardroom

The results presented so far suggest that women were becoming increasingly important as shareholders, in terms of their number, and due to their independence. In terms of governance, they could potentially have translated this into influence by exercising their voting rights. We can find no evidence to suggest that women were prevented from voting in companies, even though they had been unable to vote in political elections during this period.

However, this liberal approach only went so far, as women seem to have been deliberately excluded from becoming actively involved in the governance of the firm as directors. The *Railway Shareholder Address Books* report who was eligible to be a director by using an asterisk. Table 9 details the occupational split of individuals who were reported to be

qualified to act as a director of the firm. Only nine women from the entire sample meet the criteria, of which two are joint holdings with deceased males.

<< INSERT TABLE 10 >>

This finding could potentially be explained by women having lower amounts invested in the companies. Individuals who held a minimum investment specified by the company's byelaws were supposed to be eligible to act as a director of the railway. This varied somewhat between companies but was typically between £1,000 and £2,000. This was a considerable sum, with even the lowest qualification of £1,000 equating to almost six times the average nominal annual salary for the 1920s.[50] However, it seems highly unlikely that 99.998 per cent of those investing substantial amounts in the railways were male.

A much more likely explanation is that the lack of asterisks against women is a reflection of the prevailing social attitudes about women's role in governance.[51] It is highly probable that even those few cases where women were reported as being eligible were just typographical errors. Indeed, two of the remaining seven women died shortly after our sample period and the low values of their probated estate (c.£6,000 and c.£12,000) would make it highly unlikely that they held the qualifying amount of shares to be a director. Despite women constituting over 30 per cent of shareholders in each of the railways, they were not even considered for election to the boards of directors, let alone be successful in being appointed.

To confirm our interpretation of female director eligibility in this era, we examined an external source - a shareholder list for the Union Bank of Scotland in 1910. Rather unusually, this list clearly identified both the number of shares owned by each individual and asterisked all shareholders who were eligible to be directors.[52] Although there were many insistences of

[50] The average annual nominal salary in the 1920's was £164.10. Clark, 'Average Earnings'.

[51] Freeman et al., 'Between Madam Bubble and Kitty Lorimer' and 'A doe in the city'.

[52] Bank of Scotland Archive, Union Bank of Scotland, list of shareholders (1885), UBS 7/20/22

females holding the qualifying number of shares, there is no asterisk beside their name unlike their male counterparts.

Female directorship was extremely rare in this era. The *Financial Times* in 1916 noted that the Swansea and Mumbles Railway Company had two female directors and that these were the only women directors in the country.[53] This railway was a small concern and was largely owned by their family, with their father (Lord Clantawe) being chairman. When one of them was first appointed to the board, the *Financial Times* commented that the "post is not likely to tax Miss Jenkin's abilities unduly" because the railway was leased to a larger railway company.[54] Even by 1929, there appears to have been limited progress regarding the issue of women in the boardroom, with Lady Ravensdale highlighting that there was still much prejudice to overcome before positions of real responsibility would open up to women in the city.[55]

9. Conclusions

This paper has shown that female investors around the era of the suffragettes were exercising their independence through their investment decisions. By the early part of the twentieth century, women were a major constituent in the shareholder base of railway companies. Female investors, across all marital classifications, had increased in prominence over the previous decades, but the largest relative increases in shareholder participation had come from married women.

Using records on joint investments, we find clear evidence that women were making independent investment decisions and were more likely to invest as a solo shareholder than

[53] *Financial Times*, 8 February 1916

[54] *Financial Times*, 8 August 1908.

[55] *Financial Times*, 18 June 1929.

their male counterparts. Of the limited number of females who did invest as secondary shareholders on a joint basis, many of them had a lead investor who was also female, and only a minority were with related males.

We find that joint shareholders, and males, were more likely to invest further afield, whereas solo shareholders, and females, tended to invest locally. It is possible that males were using joint shareholdings as a way to expand their horizons and reduce risks. Females seem to have prioritized their independence, which may have led to more local investments.

There were also clear differences in terms of holding multiple railway stocks. Joint shareholders, and males, tended to invest across more companies than solo shareholders and females. It is possible that men were using joint shareholdings as a way to reduce transaction costs, facilitating diversification, whilst women preferred to invest alone even if it meant concentrating their investments in a smaller number of assets.

Our evidence therefore indicates that, during the era of the suffragettes, women were exercising independence in their own financial affairs, taking full control of the risks and rewards of share ownership. The increasing prominence of female investors is reflective of the broader changes in social perceptions, demographics and legal restrictions on women over the closing decades of the nineteenth and early part of the twentieth centuries. However, it appears that they were still being excluded from playing an active role in governance, and were deemed ineligible for election to the boards of directors.

References

Acheson, G. G. and Turner, J.D., 'Shareholder liability, risk aversion, and investment returns in nineteenth-century British banking', in D.R. Green, A. Owens, J. Maltby, and J. Rutterford, eds., *Men, women, and money: perspectives on gender, wealth and investment 1850-1930, (Oxford, 2011)* , pp. 207-27.

Acheson, G. G., Turner, J. D., and Ye, Q., 'The character and denomination of shares in the Victorian equity market', *Economic History Review*, 65 (2012), pp. 862–86.

Acheson G. G. and Turner, J. D., 'Investor behavior in a nascent capital market: Scottish bank shareholders in the nineteenth century', *Economic History Review*, 64 (2011), pp.188-213.

Acheson, G.G., Campbell, G. and Turner, J.D., 'Who financed the expansion of the equity market? Shareholder clienteles in Victorian Britain', *Business History*, 59 (2017), pp.607-37.

Bajtelsmit, V.L., Bernasek, A. and Jianakoplos, N.A., 'Gender differences in defined contribution pension decisions', *Financial Services Review*, 8(1999), pp.1-10.

Barber, B.M. and Odean, T., 'Boys will be boys: Gender, overconfidence, and common stock investment', *Quarterly Journal of Economics*, 116 (2001), pp.261-292.

Burdett, H.C., *Burdett's Official Intelligence* (London, 1885, 1890, 1895)

Bernile, G., Kumar, A. and Sulaeman, J., 'Home away from home: Geography of information and local investors', *Review of Financial Studies*, 7 (2015), pp.2009-49.

Borghans, L., Heckman, J.J., Golsteyn, B.H. and Meijers, H., 'Gender differences in risk aversion and ambiguity aversion', *Journal of the European Economic Association*, 7 (2009), pp.649-58.

Butt, R.V.J., *The directory of railway stations: Details every public and private passenger station, halt, platform and stopping place, past and present* (London, 1995).

Carlos, A.M. and Neal, L., 'Women investors in early capital markets, 1720-1725', *Financial History Review*, 11 (2004), pp.197-224.

Carlos, A.M., Maguire, K. and Neal, L., 'Women in the city: financial acumen during the South Sea Bubble', in A. Laurence, J. Maltby, and J. Rutterford, eds., *Women and their money 1700-1950: essays on women and finance* (London, 2008), pp.33-45.

Cesarini, D., Dawes, C.T., Johannesson, M., Lichtenstein, P. and Wallace, B., 'Genetic variation in preferences for giving and risk taking', *Quarterly Journal of Economics*, 124 (2009), pp.809-42.

Cesarini, D., Johannesson, M., Lichtenstein, P., Sandewall, Ö. and Wallace, B., 'Genetic variation in financial decision-making', *Journal of Finance*, 65 (2010), pp.1725-54.

Clapham, J. S., *An economic history of modern Britain: Machines and national rivalries, 1887–1914* (Cambridge, 1938).

Clark, G., 'Average earnings and retail prices, UK, 1209-2010', *Working Paper UC Davis* (2011).

Coates, J. M. and Herbert, J., 'Endogenous steroids and financial risk taking on a London trading floor', *Proceedings of the National Academy of Sciences*, 105 (2008), pp.6167-72.

Combs, M. B., 'A measure of legal independence: the 1870 Married Women's Property Act and the portfolio allocations of British wives', *Journal of Economic History,* 65 *(*2005), pp.1028-57.

Cotton, W., *Everyone's guide to money matters* (London, 1898).

Coval, J.D. and Moskowitz, T.J., 'Home bias at home: Local equity preference in domestic portfolios', *The Journal of Finance*, 54 (1999), pp.2045-73.

Coval, J.D. and Moskowitz, T.J., 'The geography of investment: Informed trading and asset prices', *Journal of Political Economy*, 109 (2001), pp.811-41.

Cronqvist, H., Previtero, A., Siegel, S. and White, R.E., 'The fetal origins hypothesis in finance: Prenatal environment, the gender gap, and investor behavior', *Review of Financial Studies*, 29 (2015), pp. 739-86.

Cronqvist, H., Siegel, S. and Yu, F., 'Value versus growth investing: Why do different investors have different styles?', *Journal of Financial Economics*, 117 (2015), pp.333-49.

Croson, R. and Gneezy, U., 'Gender differences in preferences', *Journal of Economic Literature* 47, 2 (2009), pp. 448-74.

Davidoff., L. and Hall, C., *Family fortunes: men and women of the English middle class, 1870-1850* (London, 1987).

Dickson, P.G.M., *The financial revolution in England: a study in the development of public credit, 1688-1756* (London, 2017).

Doe, H., 'Waiting for her ship to come in? The female investor in nineteenth-century sailing vessels', *Economic History Review*, 63 (2010), pp.85-106.

Dwyer, P.D., Gilkeson, J.H. and List, J.A., 'Gender differences in revealed risk taking: evidence from mutual fund investors', *Economics Letters*, 76 (2002), pp.151-58.

Fama, E.F. and French, K.R. 'Common risk factors in the returns on stocks and bonds', *Journal of Financial Economics*, 33 (1993), pp. 3-56.

Foreman-Peck, J. and Hannah, L., 'Extreme divorce: the managerial revolution in UK companies before 1914', *Economic History Review*, 65 (2012), pp.1217-38.

Franks, J., Mayer, C. and Rossi, S., 'Ownership: evolution and regulation', *Review of Financial Studies, 22* (2008), pp.4009-56.

Freeman, M., Pearson, R. and Taylor, J., 'A doe in the city: Women shareholders in eighteenth- and early nineteenth-century Britain', *Accounting, Business & Financial History, 16* (2006), pp.265-91.

Freeman, M., Pearson, R. and Taylor, J., 'Between Madam Bubble and Kitty Lorimer: women investors in British and Irish stock companies', in A. Laurence, J. Maltby, and J. Rutterford, eds., *Women and their money 1700-1950: essays on women and finance* (London, 2008), pp.95-113.

French, K. R. and Poterba, J.M., 'Investor diversification and international equity markets', *American Economic Review*, 81 (1991), pp.222-26.

Fride, A. M., *Silent partners: women as public investors during Britain's financial revolution* (Oxford, 2017).

Hinde, A., *England's population: a history since the Domesday survey* (Hodder Arnold, 2003).

Hudson, S. A., *Attitudes to investment risk amongst West Midland canal and railway company investors, 1760-1850*, PhD thesis, University of Warwick (2001).

Goetzmann, W.N. and Ukhov, A.D., 'British investment overseas 1870–1913: a modern portfolio theory approach', *Review of Finance*, 10 (2006), pp.261-300.

Green, D.R. and Owens, A., 'Gentlewomanly capitalism? Spinsters, widows, and wealth holding in England and Wales, c. 1800–1860', *Economic History Review*, 56 (2003), pp.510-36.

Grinblatt, M. and Keloharju, M., 'How distance, language, and culture influence stockholdings and trades', *Journal of Finance*, 56 (2001), pp.1053-73.

Grossman, R. S., 'New indices of British equity prices, 1870-1913', *Journal of Economic History*, 62 (2002), pp. 121-46.

Irving, R.J., 'The profitability and performance of British railways, 1870-1914', *Economic History Review*, 31 (1978), pp.46-66.

Ivković, Z. and Weisbenner, S., 'Local does as local is: information content of the geography of individual investors' common stock investments', *Journal of Finance*, 60 (2005), pp.267-306.

Jianakoplos, N.A. and Bernasek, A., 'Are women more risk averse?', *Economic Inquiry*, 36(1998), pp.620-30.

Jefferys, J. B., 'The denomination and character of shares, 1855–1885', Economic History Review, 2nd ser., XVI(1946), pp. 45–55.

Johns, L., ‘The first female shareholders of the bank of New South Wales: examination of shareholdings in Australia's first bank, 1817–1824’, *Accounting, Business & Financial History*, 16 (2006), pp.293-314.

Kay, A. C., ‘Small business, self-employment and women’s work-life choices in nineteenth century London’, in D. Mitch, J. Brown and M.H. van Leeuwen, eds., *Origins of the modern career*, (Aldershot, 2004), pp.191-206.

Kumar, A., ‘Who gambles in the stock market?’, *Journal of Finance*, 64 (2009), pp.1889-1933.

Laurence, A., ‘Women investors, ‘that nasty South Sea affair’ and the rage to speculate in early eighteenth-century England’, *Accounting, Business & Financial History*, 16 (2006), pp.245-64.

Laurence, A., ‘Women, banks and the securities market in early eighteenth-century England’, in A. Laurence, J. Maltby, and J. Rutterford, eds., *Women and their money 1700-1950: essays on women and finance* (London, 2008), pp.46-55.

Laurence, A., Maltby, J., and Rutterford, J., *Women and their money 1700-1950: essays on women and finance* (London, 2008).

Lincini, S., ‘Women’s wealth and finance in nineteenth-century Milan’, in A. Laurence, J. Maltby, and J. Rutterford, eds., *Women and their money 1700-1950: essays on women and finance* (London, 2008), pp.271-89.

Lough, W., *Business finance* (New York, 1920).

Lowenfeld, H., *Investment: an exact science* (London, 1907).

Lowenfeld, H., *The rudiments of sound investment* (London, 1911).

Maltby, J. and Rutterford, J.,’Gender and Finance’, in K. Cetina and A. Preda, eds., *The Oxford Handbook of the Sociology of Finance*, (Oxford, 2013), pp.811-835.

Maltby, J. and Rutterford, J., ‘She possessed her own fortune: Women investors from the late nineteenth century to the early twentieth century’, *Business History*, 48 (2006), pp.220-53.

Markowitz, H., ‘Portfolio selection’, *Journal of Finance*, 7 (1952), pp.77-91.

Michie, R. C., *Money, mania and markets: investment, company formation and the stock exchange in nineteenth-century Scotland* (Edinburgh, 1981).

Michie, R.C., ‘The London stock exchange and the British securities market 1850–1914’, *Economic History Review*, 38 (1985), pp.61-82.

Michie, R.C. *The London stock exchange: a history* (Oxford, 1999).

Mitchell, B., Chambers, D. and Crafts, N., ‘How good was the profitability of British railways, 1870–1912?’, *Economic History Review*, 64 (2011), pp.798-831.

Mitchell, B. and Deane, P., *Abstract of British historical statistics* (Cambridge, 1962).

Morris, R.J., *Men, women and property in England, 1780-1870: a social and economic history of family strategies amongst the Leeds middle classes* (Cambridge, 2005)

Newton, L. and Cottrell, P.L., 'Female investors in the first English and Welsh commercial joint-stock banks', *Accounting, Business & Financial History*, 16 (2006), pp.315-40.

Petersson, T., 'Women, money and the financial revolution: a gender perspective on the development of the Swedish financial system, c. 1860-1920', in A. Laurence, J. Maltby, and J. Rutterford, eds., *Women and their money 1700-1950: essays on women and finance* (London, 2008), pp.254-70.

Reed, M.C., *Investment in railways in Britain, 1820-1844* (Oxford, 1975).

Robertson, N.M. and Yohn, S.M., 'Women and money: the United States', in A. Laurence, J. Maltby, and J. Rutterford, eds., *Women and their money 1700-1950: essays on women and finance* (London, 2008), pp.218-25.

Rutterford, J. and Maltby, J., 'The widow, the clergyman and the reckless: women investors in England, 1830—1914', *Feminist Economics,* 12 (2006), pp.111-38.

Rutterford, J. and Maltby, J., 'The nesting instinct: women and investment risk in a historical context', *Accounting History*, 12 (2007), pp.305-327.

Rutterford, J., Green, D. R., Maltby, J. and Owens, A., 'Who comprised the nation of shareholders? Gender and investment in Great Britain, c.1870-1935', *Economic History Review,* 64 (2011), pp. 157-87.

Rutterford, J. and Sotiropoulos, D.P., 'Financial diversification before modern portfolio theory: UK financial advice documents in the late nineteenth and the beginning of the twentieth century', *European Journal of the History of Economic Thought*, 23 (2016), pp.919-945.

Rutterford, J., and Sotiropoulos, D.P., 'Putting all their eggs in one basket? Portfolio diversification 1870–1902', *Accounting History Review*, 26 (2016), pp.285-305.

Rutterford, J., Sotiropoulos, D.P. and van Lieshout, C., 'Individual investors and local bias in the UK: 1870-1935', *Economic History Review*, 70 (2017), pp. 1291-1320.

Sapienza, P., Zingales, L. and Maestripieri, D., 'Gender differences in financial risk aversion and career choices are affected by testosterone', *Proceedings of the National Academy of Sciences*, 106 (2009), pp.15268-15273.

Schubert, R., Brown, M., Gysler, M. and Brachinger, H.W., 'Financial decision-making: are women really more risk-averse?', *American Economic Review*, 89 (1999), pp.381-85.

Seasholes, M.S. and Zhu, N., 'Individual investors and local bias', *Journal of Finance*, 65 (2010), pp.1987-2010.

Sotiropoulos, D.P. and Rutterford, J., 'Individual Investors and Portfolio Diversification in Late Victorian Britain: How Diversified Were Victorian Financial Portfolios?' *Journal of Economic History, 78* no. 2, (2018) pp.435-471.

Sunden, A.E. and Surette, B.J., 'Gender differences in the allocation of assets in retirement savings plans', *American Economic Review,* 88 (1998), pp.207-11.

Stock Exchange Official Intelligence, (1900)

Wrigley, E.A., Davies, R.S., Oeppen, J.E. and Schofield, R.S., *English population history from family reconstitution 1580-1837* (Cambridge University Press, 1997).

Zhu, N., 'The local bias of individual investors', *Yale ICF Working Paper*, No. 02-30 (2002).

Table 1. Sample of railway shareholders

Company	Year	Number of Shareholdings	Number of Shareholders Reported	% Occupations/ Marital Status Reported
Great Western	1920	69,732	69,732	97.7%
London and North Western	1915	68,878	101,970	99.2%
North Eastern	1921	56,011	78,542	94.6%
Caledonian	1922	42,924	42,924	65.1%
North British	1915	37,488	37,488	63.3%
Glasgow and South Western	1921	14,686	14,686	56.3%
Total (1915-1921)		289,719	345,342	87.9%
Prior Observations				
Great Western	1843	2,018	2,018	98.7%
Great Western	1893	38,796	62,251	94.2%
Caledonian	1897	27,767	27,767	68.6%
North British	1870	10,623	10,623	65.8%
North British	1889	17,963	17,963	65.6%
North British	1902	27,495	27,495	67.2%
Total (All periods)		414,381	493,459	85.2%

Sources: Railway company shareholder address books in the National Archives (Kew): London and North Western (1915), RAIL 410/769; Great Western (1893), RAIL 251/131; Great Western (1920), RAIL 251/7; North Eastern (1921), RAIL 527/439; Caledonian (1897), BR/CAL/2/1; Caledonian (1922), BR/CAL/2/10; North British (1870), BR/NBR/2/95; North British (1889), GD282/13/259; North British (1902), BR/NBR/2/91; North British (1915), BR/NBR/2/92; Glasgow and South Western (1921), BR/GSW/2/5. Shareholder records for the Great Western 1843 railway held at the National Archives (Kew), RAIL 251/28, 29, 32, 50, 52 and 54.

Table 2. Regressions explaining returns on sample companies by period

	(1) 1869-1884	(2) 1885-1899	(3) 1900-1914	(4) 1915-1922	(5) 1923-1929
RmRf	1.414***	1.275***	1.221***	0.647***	0.701***
	(0.057)	(0.045)	(0.084)	(0.141)	(0.205)
SMB	-0.057*	-0.128***	-0.194**	-0.529***	-0.471
	(0.033)	(0.029)	(0.091)	(0.141)	(0.284)
HML	-0.296***	-0.101***	-0.197***	0.162	0.132
	(0.055)	(0.025)	(0.050)	(0.122)	(0.171)
FMD	-0.472***	-0.475***	-0.633***	-0.690***	-0.572***
	(0.043)	(0.026)	(0.050)	(0.092)	(0.141)
Constant	-0.001*	-0.001***	0.000	0.002	-0.002
	(0.001)	(0.000)	(0.001)	(0.002)	(0.002)
Observations	179	179	175	96	84
R-squared	0.859	0.890	0.778	0.716	0.469

Notes: The dependent variables are the returns on portfolio of all ordinary and preference shares issued by sample railways, minus the risk-free rate. RmRf = Returns on portfolio of all ordinary and preference shares issued by all companies in *Investor's Monthly Manual*, minus risk-free rate; SMB = Returns on Small companies Minus Big companies; HML = Returns on High Yield companies Minus Low Yield companies; FMD = Returns on Foreign companies Minus Domestic companies; Constant = Excess Returns on Sample Railways after controlling for risk factors.

Table 3. Occupational classification of primary shareholders

	Great Western	London and North Western	North Eastern	Caledonian	North British	Glasgow and South Western
	1920	1915	1921	1922	1915	1921
Spinster	17.9%	18.2%	17.7%	16.6%	0.0%	0.0%
Widow	9.4%	9.0%	7.7%	5.5%	0.0%	0.0%
Married	12.1%	10.8%	13.3%	4.1%	0.0%	0.0%
Undisclosed	0.7%	0.2%	0.9%	9.2%	32.9%	34.9%
Female shareholdings	**40.1%**	**38.2%**	**39.7%**	**35.4%**	**32.9%**	**34.9%**
Employed	25.3%	26.4%	27.4%	13.4%	11.1%	8.4%
Rentier	31.1%	31.7%	19.2%	0.9%	1.2%	1.3%
Undisclosed	2.9%	2.9%	6.4%	35.3%	37.1%	43.8%
Male shareholdings	**59.3%**	**61.0%**	**53.0%**	**49.6%**	**49.3%**	**53.6%**
Trustees/Executors	0.0%	0.1%	6.8%	14.3%	16.9%	10.4%
Institutional	0.6%	0.7%	0.6%	0.6%	0.9%	1.1%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Notes: Data for non-railways taken from, Acheson et al., 'Who financed', a sample of 49 firms registered under the 1856 and 1862 Companies Act

Sources: Shareholder address books.

Table 4. Occupational classification of primary shareholders in the Great Western Railway, 1843-1920

	Great Western 1843	Great Western 1893	Great Western 1920
Spinster	8.2%	18.8%	17.9%
Widow	2.3%	11.1%	9.4%
Married	0.0%	0.6%	12.1%
Other	0.3%	4.4%	0.7%
Female shareholdings	**10.9%**	**34.9%**	**40.1%**
Employed	35.8%	23.8%	25.3%
Rentier	49.1%	36.6%	31.1%
Undisclosed	3.0%	4.5%	2.9%
Male shareholdings	**87.9%**	**65.0%**	**59.3%**
Trustees/Executors	1.2%	0.0%	0.0%
Institutional	0.0%	0.1%	0.6%
Total	100.0%	100.0%	100.0%

Sources: Shareholder register for 1843 of £100 and £20 shares. Shareholder address books for 1893 and 1920.

Table 5. Classification of shareholding types

	Male	% of Males	Female	% of Females	% of Females who were: Spinster	Widow	Married	Undisclosed Female
Great Western (1893)								
Single shareholder	12,816	27.5%	10,502	68.1%	43.1%	18.6%	0.1%	6.3%
Lead shareholders	12,406	26.6%	3,043	19.7%	4.1%	9.3%	1.5%	4.8%
Secondary shareholders	21,357	45.9%	1,866	12.1%	7.4%	2.5%	0.4%	1.9%
	46,579	100.0%	15,411	100.0%				
London & North Western (1915)								
Single shareholder	24,756	34.9%	22,369	73.9%	37.6%	13.4%	22.5%	0.3%
Lead shareholders	17,379	24.5%	3,919	12.9%	3.9%	7.0%	2.0%	0.1%
Secondary shareholders	28,881	40.7%	3,987	13.2%	7.3%	2.0%	3.7%	0.1%
	71,016	100.0%	30,275	100.0%				
North Eastern (1921)								
Single shareholder	21,891	41.1%	19,743	79.1%	36.5%	12.9%	27.8%	1.9%
Lead shareholders	11,556	21.7%	2,488	10.0%	3.4%	4.4%	2.1%	0.1%
Secondary shareholders	19,758	37.1%	2,715	10.9%	5.2%	1.5%	4.0%	0.1%
	53,205	100.0%	24,946	100.0%				
Other Railways (1915-1922)								
Single shareholder	63,668	61.8%	53,759	88.7%	29.9%	10.4%	15.8%	32.6%
Lead shareholders	39,411	38.2%	6,819	11.3%	2.4%	4.3%	1.0%	3.5%

Note: Shareholders were classified on the basis of whether they were entered into the address book as a single individual shareholder or whether they owned shares jointly with another individual. Joint shareholders are further classified on the basis of whether they were the lead named individual and as such retained voting rights over the shares or were classified as secondary shareholders. For a small proportion of individuals, the marker in the address book is not legible and they are excluded. Women are classified according to their marital status as recorded in the address books.

Table 6. Familial ties among joint shareholdings

	Great Western (1893)	London & North Western (1915)	North Eastern (1921)	Overall
% 2nd shareholders with kinship ties to lead shareholder	25.0%	24.8%	26.6%	25.4%
% Female secondary shareholders with Lead:				
Related Female	26.7%	20.3%	19.4%	21.4%
Unrelated Female	14.3%	18.0%	15.5%	16.4%
Related Male	28.1%	27.8%	36.1%	30.5%
Unrelated Male	31.0%	33.8%	29.0%	31.7%
% Male secondary shareholders with Lead:				
Related Female	8.1%	6.1%	6.1%	6.7%
Unrelated Female	9.2%	11.4%	9.5%	10.2%
Related Male	14.3%	15.4%	16.5%	15.4%
Unrelated Male	68.4%	67.1%	67.8%	67.7%

Note: Secondary shareholders who shared the same surname as a primary shareholder in a joint shareholding were considered to be related and as such share a kinship tie.

Table 7. Distance from shareholders to nearest railway station

Panel A: All Railways					
	Overall	Male	Female	Lead Joint	Solo
Median Distance	16.3	18.1	14.3	23.6	15.0
Within: 0 – 5 miles	40.6%	40.4%	40.9%	38.4%	41.3%
Within: 5 – 100 miles	32.9%	32.4%	33.8%	31.7%	32.2%
Within: 100 – 200 miles	14.6%	15.2%	13.3%	15.4%	13.1%
Within: 200 – 300 miles	10.5%	10.6%	10.2%	13.1%	11.6%
Within: 300 + miles	1.5%	1.3%	1.8%	1.4%	1.7%
Panel B: Railways with London Terminal					
	Overall	Male	Female	Lead Joint	Solo
Median Distance	4.3	4.0	5.3	4.1	4.7
Within: 0 – 5 miles	51.6%	52.7%	49.1%	52.0%	50.9%
Within: 5 – 100 miles	42.6%	41.5%	44.9%	41.5%	42.7%
Within: 100 – 200 miles	4.8%	4.8%	4.9%	5.6%	5.2%
Within: 200 – 300 miles	0.4%	0.4%	0.4%	0.5%	0.4%
Within: 300 + miles	0.6%	0.6%	0.7%	0.4%	0.7%
Panel C: Railways without London Terminal					
	Overall	Male	Female	Lead Joint	Solo
Median Distance	91.7	96.1	80.3	107.9	80.9
Within: 0 – 5 miles	29.7%	28.1%	32.7%	24.5%	32.9%
Within: 5 – 100 miles	23.2%	23.6%	22.7%	21.9%	22.9%
Within: 100 – 200 miles	24.2%	25.5%	21.7%	25.6%	20.0%
Within: 200 – 300 miles	20.5%	20.7%	19.9%	25.7%	21.6%
Within: 300 + miles	2.4%	2.1%	2.9%	2.3%	2.7%

Notes: Shareholder addresses and railway stations were geocoded using the Bing Maps API. The distance between each shareholder and the closest station of the company which they had invested in is calculated.

Table 8. Shareholdings across multiple railways

	Proportion of Shareholders also investing in:						Average Number of Companies Invested in by:				
	Great Western	LNW	North Eastern	Cale	North British	GSW	Overall	Males	Females	Lead Joint Shareholders	Solo Shareholders
Great Western	1.00	0.14	0.12	0.09	0.07	0.03	1.45	1.56	1.29	1.66	1.37
London & North Western	0.15	1.00	0.13	0.07	0.07	0.03	1.43	1.52	1.30	1.58	1.37
North Eastern	0.16	0.15	1.00	0.08	0.06	0.04	1.49	1.60	1.33	1.76	1.39
Caledonian	0.15	0.11	0.11	1.00	0.16	0.10	1.62	1.74	1.44	1.93	1.55
North British	0.13	0.13	0.09	0.19	1.00	0.09	1.64	1.77	1.43	1.88	1.55
Glasgow & South Western	0.15	0.11	0.13	0.29	0.20	1.00	1.88	2.01	1.67	2.08	1.82
Overall							1.52	1.63	1.36	1.72	1.44

Notes: Shareholder names and the towns they lived in were matched across companies, using a matching algorithm. LNW = London and North Western; Cale = Caledonian; GSW = Glasgow and South Western.

Table 9. Investor holding periods

North British	% of 1915 shareholders who had invested in:		
	1902	1889	1870
All	26.6%	7.9%	2.4%
Male	26.8%	8.5%	3.1%
Female	26.5%	7.0%	1.3%
Lead Joint	25.8%	8.0%	2.2%
Solo	26.9%	7.9%	2.5%

Caledonian	% of 1922 shareholders who had invested in 1897
All	11.1%
Male	11.1%
Female	10.9%
Lead Joint	11.6%
Solo	10.9%

Great Western	% of 1920 shareholders who had invested in 1893:
All	5.8%
Male	6.8%
Female	4.3%
Lead Joint	7.9%
Solo	4.9%

Notes: Shareholder names and the towns they lived in were matched across companies, using a matching algorithm

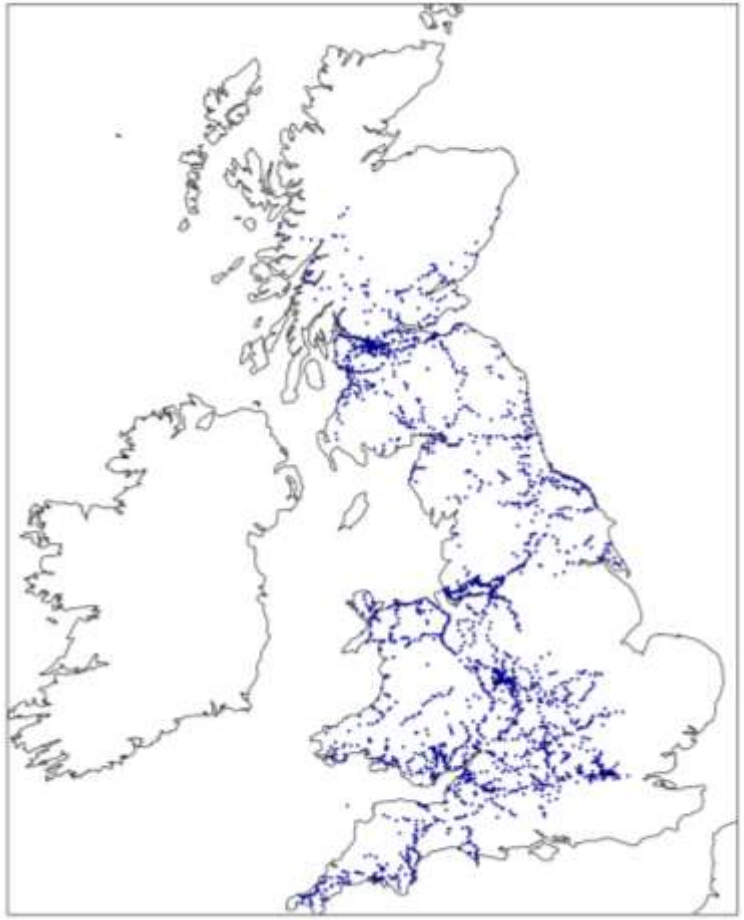
Table 10. Number of shareholdings qualified to act as directors

	Great Western	London and North Western	North Eastern	Caledonian	North British	Glasgow and South Western
	1920	1915	1921	1922	1915	1921
Spinster	0	1	3	1	0	0
Widow	0	2	1	0	0	0
Married	0	0	1	0	0	0
Undisclosed	0	0	0	0	0	0
Female shareholdings	**0**	**3**	**5**	**1**	**0**	**0**
Employed	861	1,031	1,905	114	82	27
Rentier	1,547	1,850	1,786	28	38	18
Undisclosed	48	95	342	299	604	218
Male shareholdings	**2,456**	**2,976**	**4,033**	**441**	**724**	**263**
Trustees/Executors	0	0	18	6	9	1
Institutional	1	0	0	5	1	0
Total	2,457	2,979	4,056	453	734	264

Notes: Shareholders qualified to be a director were marked with an asterisk in the address books.

Figure 1. Maps of railway stations and shareholders of sample companies

Panel A: Railway stations



Panel B: Railway shareholders

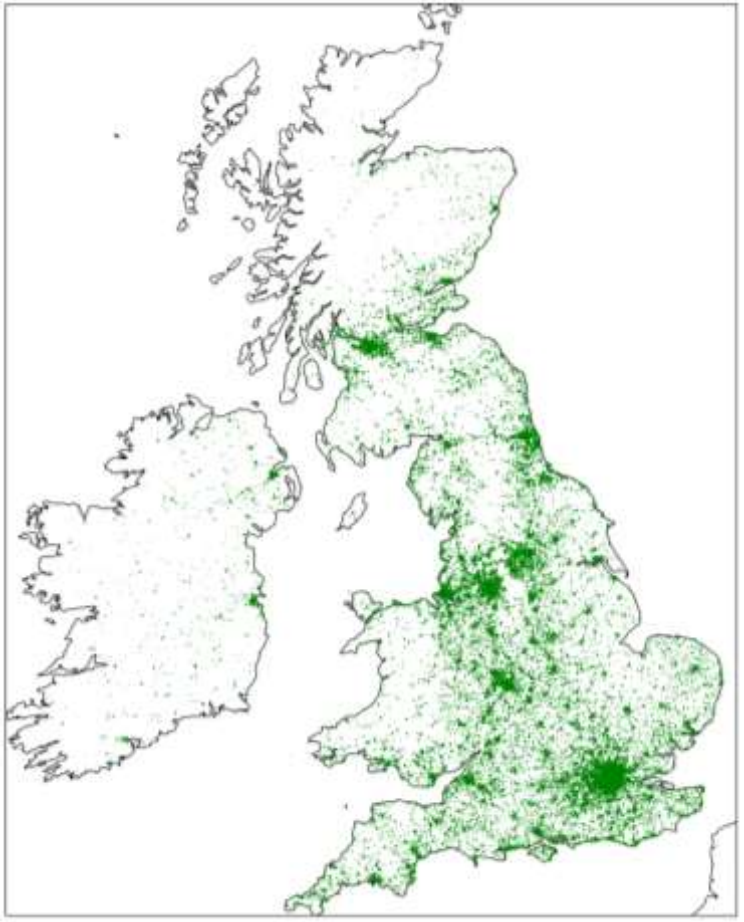
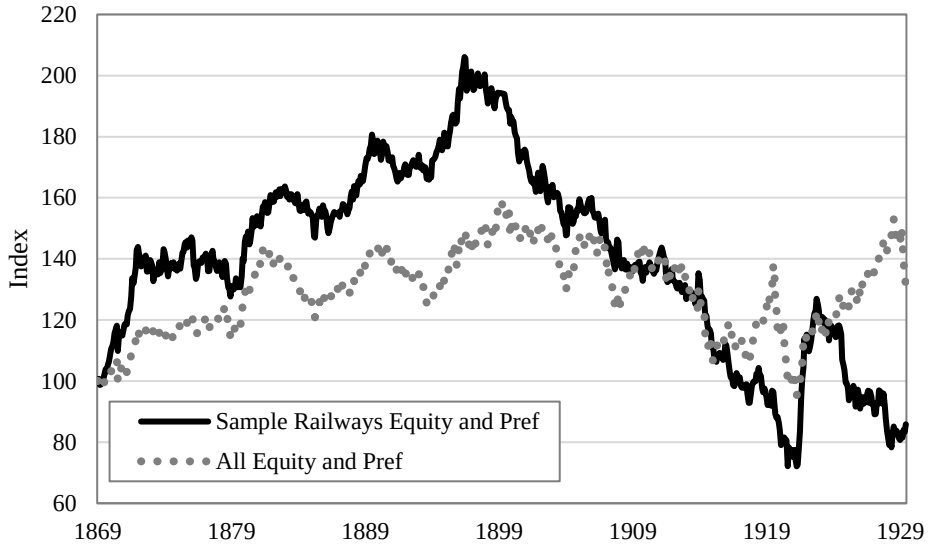
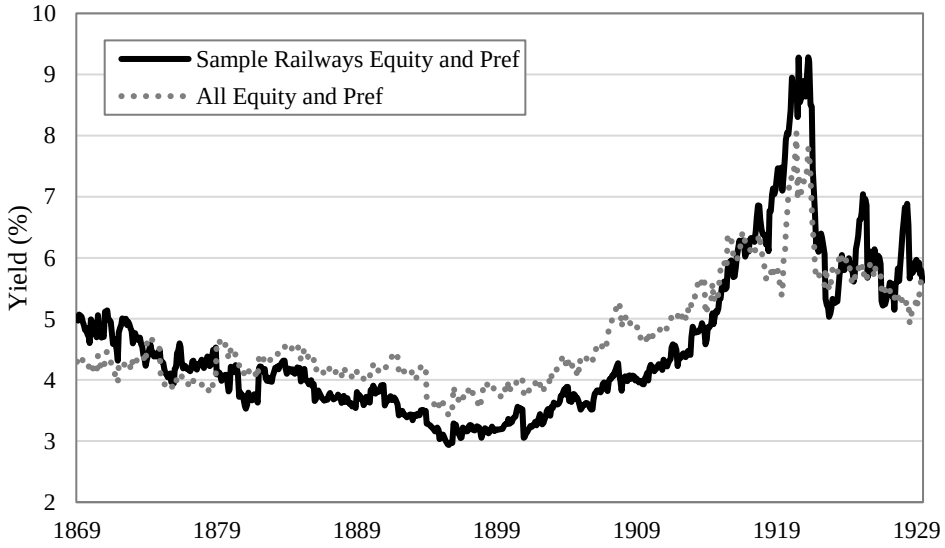


Figure 2. Capital gains and dividend yields of sample railways vs all equity and preference shares of all companies listed in *Investor's Monthly Manual*

Panel A: Capital Gains Indices



Panel B: Dividend Yield



Notes: Prices and dividends for all companies obtained from the *Investors' Monthly Manual*. Indices calculated using a market capitalisation weighting.