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**SHINING A LIGHT:
FEMALE INVESTORS IN THE AUSTRALIAN GAS LIGHT COMPANY, 1836-1940**

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Abstract

A developing literature points to the growing significance of women in the Australian colonial economy, particularly through their role as business owners. We are interested to know whether they were also active company investors, as evidence from other countries such as Britain and America has revealed to be the case. We investigate the Australian Gaslight Company, one of Australia's oldest and largest enterprises and which has extensive surviving records, to shine a light on the growing role of female investors across a century since its formation in 1836. We examine who these women were, how they traded, and what influence they held within the company.

INTRODUCTION

A growing literature on women in colonial Australia has challenged the assumptions behind the separate spheres perspective that women's lives were largely confined to the home. Contrariwise, it has been revealed that women played an active role in business and the economy, particularly as owners and operators of retail outlets and public houses (Minchinton 2017; Bishop 2015a; Wright 2014). Since female ownership was sometimes hidden behind the name of a male relative, the actual contribution women made to business activity was greater than is ostensibly implied by the historical record (Minchinton 2017, p. 81).

Historians have also begun to investigate whether women were active in financing the growing business sector as shareholders. An extensive overseas literature points to the rising importance of women shareholders from the second half of the nineteenth century, particularly in Britain, Europe and North America (Rutterford et al 2011; Robb 2017; Petersson 2009; Craig 2015). In Australia, a recent paper points to the growth of female participation in share ownership from the 1860s to the interwar period, estimating a strong rise from around 4 per cent to 50 per cent or more of investors (Fleming et al 2023). That paper draws upon shareholder evidence from a broad range of companies across various sectors for different years. We extend the story back to the very early years of company formation in Australia by investigating the Australian Gaslight Company (AGL) from its formation in 1836 and carry it forward a century. AGL is one of the earliest incorporated and largest Australian companies [Merrett & Ville 2016]. As the dominant supplier of gas to the Sydney area, it expanded rapidly in tandem with its community. As such, its activities were more closely monitored by government than most companies and it was the subject of specific pieces of legislation. An extensive archive exists for the company at the State Library of New South Wales, which includes shareholder lists, annual reports, and correspondence.

In the current paper we add to the literature in several important ways. It is a rare analysis focussed on female investors in a single enterprise. Analysing a single company avoids the complexity of understanding how the alternative features of different companies influenced the impact of particular factors over time – such as government legislation, and company strategy – on its investing population. It is also unusual in the length of period of analysis. Much of the literature has either focussed on the first half of the nineteenth century or more commonly on the period between about the 1870s and the interwar period. We examine the changes in female investing habits in AGL across a century. In particular, we will describe the remarkable growth of female investing over this long period and seek to understand who these women were, how they invested and what say they had in the companies they owned.

AUSTRALIAN GAS LIGHT COMPANY

AGL was a very early mover in the commercial supply of gas for lighting.¹ Outside Britain, it was the first commercial gas company in the British Commonwealth when approved by an Act of the New South Wales Parliament in 1837 (Act of Council 8, William, IV, 1837) and it remained one of the largest. It took two years to gain Royal Assent and a further two years (1841) to commence street lighting in Sydney. By the following year, it had 415 customers,

¹ This section is largely based on Broomham (1987), J B Were (1933, 1936), and Ginswick (1960a, 1960b and 1961).

representing 1,732 private and 25 government lights. While the downturn of the 1840s slowed growth, in the following decade of the 1850s customer numbers and volume of gas sold more than doubled. Thereafter, the Company grew rapidly as a virtual monopoly supplier of gas to the fast-expanding settlement of Sydney. It increased its geographic coverage and range of customers that had initially focussed on business and government buildings in the centre of Sydney.

Competition from emergent gas companies was muted, most of which were eventually acquired by AGL. However, the development of electric lighting represented more sustained competition from the 1880s and ultimately drove AGL towards a concentration on the use of gas in cooking and heating. Its market power also attracted the attention of policy makers and led to the introduction of government regulatory measures. In particular, the 1912 and 1932 Gas Acts responded to concerns about the price and quality of its supply. The former Act (and its 1918 amendment) fixed the gas price and the level of dividends for each share class, and it allowed for higher dividends to be paid only if gas prices were reduced below the statutory maximum. The 1932 Act, passed by the radical Lang Administration during the middle of the interwar depression, established a commissioner with wide-ranging powers including over prices, dividends, supply, and the relations among gas companies and with their upstream suppliers. In spite of these setbacks, but helped by a growing number of valuable by-products from coal based gas production, the company maintained healthy profitability and relatively stable dividends through this period. In 1936 it commented positively on its long-term success, across a century, and on its future prospects (Were 1936).

In order to fund its sustained expansion across a century, AGL regularly increased its total capital, which was subscribed by a growing body of shareholders, and drew upon creditors particularly in the form of debenture holders. From 1841 to 1933 its capital increased from £33 750 to £6.2m and its shareholders from 193 to 7004. In the course of its expansion, it introduced new classes of ordinary shares – B and C in 1858 and 1883 respectively. The company was first listed on the Sydney Stock Exchange in 1871, and in 1891 it introduced debentures that would continue to represent about a third of its total capital. The return on capital appears to confirm the rapid growth and strong competitive standing of the company. Even in the lowest years of the interwar depression it was paying between 6 and 8 per cent dividends. Earlier dividends may have been higher still with the 1912 Act ‘limiting’ it to as much as 10% for holders of original shares. In 1933, Melbourne stockbrokers J. B. Were observed that most of the company’s share and debenture holders, ‘are [gas] consumers and a large percentage employees’ (Were 1933, p. 2). In the following section we will look more closely at the composition of AGL’s owners with a particular focus on the changing role of women within the company.

THE GROWTH OF FEMALE INVESTING

From the outset, the shareholders of AGL included women. 11 women were on the register by 1841 and constituted 5.7% of shareholders.² Within ten years, their share had jumped to 14.1%

² Although men outnumbered women 2:1 in colonial Australia, this disparity was highest in the mining and rural communities. Gender equity existed in Sydney and its suburbs by the 1850s, from which most of AGL’s investors were drawn, and therefore there is no need to ‘normalise’ the female share. Caldwell (1987), pp. 29-30.

and continued to rise decisively thereafter as we can see in Table 1. By Federation in 1901, 38% of AGL's shareholders were women and by 1931 they had reached parity with men. Our early points of comparison are relatively few. During 1819-21, the female share of the Bank of New South Wales (BNSW) shareholders rose quickly from 9 per cent to 19 per cent. However, it has been argued that it was the consequence of male shareholders exploiting the introduction of female proxy voting in 1819 to strengthen their influence on key issues (Johns 2006, pp. 299-300). We will return to the topics of female voting rights and independent investing in the case of AGL later in the paper.

Year	Total shareholders	No. Females	Female %
1841	193	11	5.7%
1850	149	20	13.4%
1871	208	n.a.	18.0%
1881	389	92	23.7%
1891	752	192	25.5%
1901	1,059	406	38.3%
1911	1,570	720	45.9%
1931	7,092	3,519	49.6%

Table 1. Female investors in AGL, 1841-1931

Sources. 1841-50: State Library of New South Wales (hereafter SLNSW), Jules Ginswick Papers MLMSS 9034, 4 (33); 1871: SLNSW, MLMSS AGL 9875 box 134, items 9, 10 share transfers 1869-71; 1881, 1891, 1901, 1911: SLNSW, MLMSS 11259 T J Thompson Box 2; 1931: *Sydney Morning Herald*, 21 .8.1931, p.10; J B Were 1933.

Notes. 1871. Total shareholders from JB Were 1933; Female percent estimated from share transfers 1870-1

In Figure 1 we have highlighted the AGL results against those for a wider range of companies from the mid nineteenth century to the interwar period (Fleming et al 2023, Figure 1). We find that women were a higher percentage of AGL shareholders than of mid-nineteenth century mining companies, which perhaps reflected the greater investment risks of the latter, especially gold miners. AGL's female share remains above the average of a selection of companies from a wider range of industries after 1880 although less so by the interwar years.

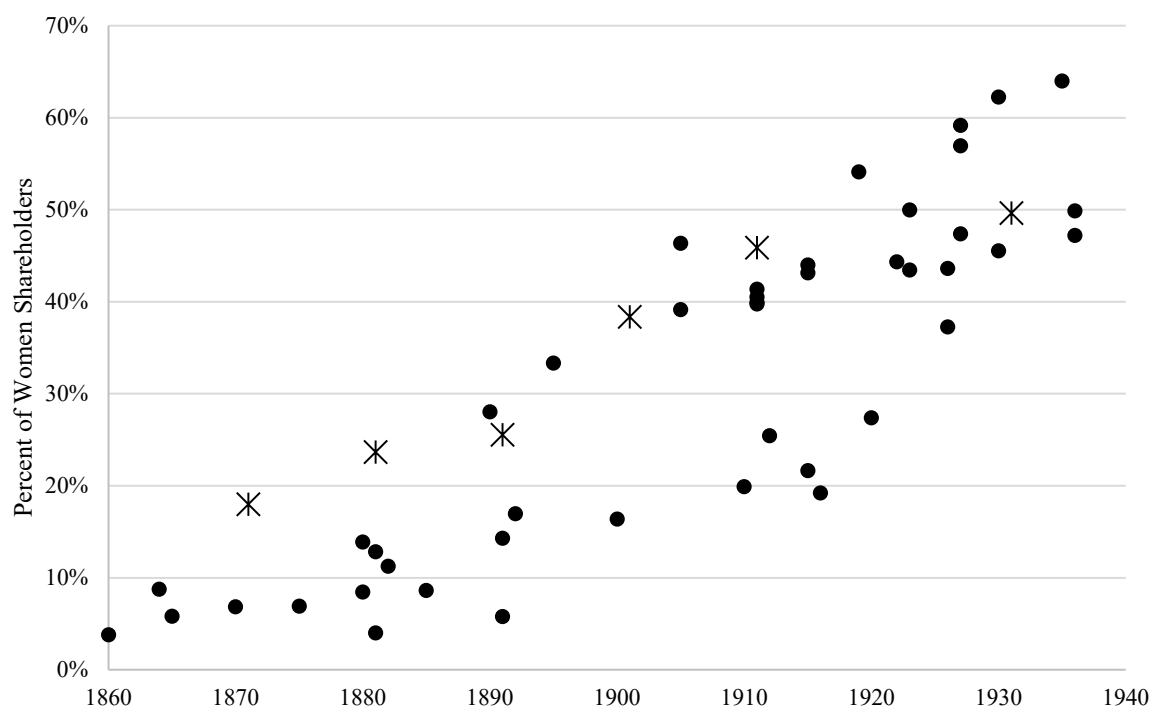


Figure 1. Female share of investors, AGL compared with other companies, 1860-1937

Sources. Data from Fleming et al 2023, Figure 1.

Notes. Dots indicate percent of women shareholders for a sample of 20 companies between 1864 and 1936. Data points for 1860, 1865, 1870, 1875, 1880, and 1885 for Victorian mining companies are the average percent of females by number for all those companies that raised equity in those years. Star represents AGL.

Overseas research points to a very similar trajectory of growth of female investors. One large study of the UK indicates that the female share of the number of investments in a broad sample of companies rose from 15 to 45 per cent between the 1870s and the 1930s (Rutterford et al 2011, p. 169). Utilities companies in this sample attracted more interest than other sectors in the early decades of this period, but this again balanced out by the 1930s (Rutterford et al 2011, p. 173).

WHO WERE THESE WOMEN INVESTORS?

While male investors, from the outset, came from a wide range of occupations, women were mostly defined by their marital status or social class (Ginswick 1960b, pp. 45-7). Thus, spinster, widow, and gentlewoman were generally recorded. Of 37 women who were shareholders in the 1840s, 15 were spinsters, 13 widows, 4 gentlewomen, 3 wives ‘in trust’, and 2 ‘infants’. One gentlewoman among the earliest investors was Mary Reibey who also owned shares in BNSW and was a highly successful colonial entrepreneur [Walsh 1967]. Since married women were generally barred from ownership of private property until the practice of coverture was abolished in New South Wales in 1879, we also find examples of shares recorded as held in trust for married women, commonly naming their husband or father as the trustee. Jane Elizabeth Larnach was the eldest daughter of leading Sydney merchant William Walker. When

at a young age she married Donald Larnach in 1847, who was highly connected in business and political circles, she received from her father a ‘settlement’ of 75 shares that was probably a form of independent income (*Evening News* 11.2.1897, p. 2). Most of the later shareholder lists do not provide evidence of social, marital or occupational status. An extant register of debenture holders in 1930 again defines most women by marital status (90% of all female debenture holders were listed by marital status) although now there are significant numbers of married women (45%).³ A partial list of shareholders for 1894 provides titles for women shareholders, namely Mrs or Miss. Assuming all of the latter are unmarried and those ‘Mrs’ where a male of the same surname is also listed, we can estimate that *at least* 22 per cent of female investors were married.⁴

Research on other Australian companies across much of the period lacks marital and occupational information or it is only declared by a very small percentage of female investors. 2.1 per cent (83) of female investors in the Victorian gold mining companies, 1871-86, declared their status as widows, and 1.5 per cent (59) as married (ECHR). There was only one spinster. These results differ from AGL in the 1840s reported above where spinsters were more prominent and married women less so. Evidence from several companies (Sun Newspapers, G. J. Coles, and Myer Emporium) by the interwar period reaffirms those for AGL with most declaring their status, the majority of whom were married (Fleming et al 2023).

For both AGL and other Australian companies analysed, we only begin to find much information about female occupation by the interwar period, perhaps reflecting low labour market participation at earlier dates (Forsyth 2019, p. 64). For AGL, the 1930 debenture register records female occupation in 10% of cases and includes a variety of employment including nurses (3%), teachers (2%), typists (1%), artists (1%) as well as a civil servant, a dressmaker, a lecturer, and a solicitor. For G. J. Coles in 1937, 20 per cent of women declared an occupation, including professional services (13.2%) and retail/wholesale services (2.2%) (Fleming et al 2023).⁵ In overseas studies for the nineteenth century, the same problem of identification by marital status not occupation has been encountered with only small numbers declaring such employment as dressmaker, teacher or nurse [Maltby & Rutterford, 2006, p. 227].

Geographically, most of AGL’s investors, including women, resided in Sydney and many were probably among the company’s own customers. However, among those 25 female investors who traded their shares in the 1840s – most of their cohort - there was one each from Melbourne, Aberdeen, and Liverpool and three from London.⁶ Thus, nearly a quarter were resident interstate or in Britain. A century later, AGL debenture holders who subscribed for “1940 debentures” in 1930 mainly lived in Sydney (67% of males and 80% of females). Proximity also appears to have been common among women investors in other companies and overseas with a majority living in the vicinity and often a larger share than men (Fleming et al 2023; ECHR; Acheson et al 2021).

³ The “Register of 1940 Debentures” recorded the name, occupation, address, and total value of debentures for each debenture holder who purchased a debenture in 1930 with a 1940 repayment date. Debenture holders were also able to convert an expiring debenture to the 1940 debenture. The register contained information on 410 debenture holders with surnames between A and K inclusive. There were 212 female debenture holders (52% of all debenture holders). SLNSW, MLMSS AGL 9875, vol 142.

⁴ SLNSW, AGL MLMSS 9875, sub-series 7, box 134, item 11

⁵ Professional services includes teacher, nurse, clerk, journalist and typist among others.

⁶ AGL sub-series 7 BOX 132, Item 02: Transfer Books, Vol. 1, 1845 - 1850 [AGL 92].

EXPLAINING THE GROWTH OF THE FEMALE INVESTOR

Previous research has outlined a variety of supply (of investment opportunities) and demand (by women) factors driving the growth of female investing in Australia and overseas (Fleming et al 2023; Freeman et al, 2006; Green & Owens 2003; Maltby & Rutterford 2006; Robb 2017; Robertson & Yohn 2009; Rutterford & Maltby 2006; Rutterford et al 2011; Turner 2009). On the supply side these have included a growth in the extent and nature of private sector enterprises, a widening range of investment instruments, alterations to the legal forms of incorporation, and improvements in the availability of public information and investment advice. On the demand side, changes to women's property rights, demographic shifts, and modernising attitudes towards the economic and business rights and roles of women have all been discussed. Rather than restate these factors in detail, our approach is to focus on the timing and impact of key events in AGL's history and its investment environment. In Figure 2, we have superimposed key events on the timeline of female investment in the company to understand more about the timing and potential relevance of these events.

As we will see below, women acquired and disposed of shares through a variety of channels and therefore the listing of AGL on the new Sydney Stock Exchange in 1871 would have limited impact on their behaviour. Figure 2 suggests no major discontinuity in the gradual growth of female investing.

Eight years later a change in women's property rights occurred with legislation that abolished coverture in New South Wales. Comparing our 1881 and 1891 data points indicates only a marginal growth in the female share of AGL's investors. This would be consistent with studies of female entrepreneurs in New South Wales in the mid nineteenth century, which points to the inconsistent application of coverture prior to 1879 and the modification of the practice through legislation in 1858 (Bishop 2015b). However, since the company and its investing population were expanding rapidly in this decade, the number of female investors more than doubled. Research on Victorian goldmining companies across a similar period points to married women as investors named on shareholder lists. We have very limited information on the marital status of AGL investors in the later nineteenth century but, as indicated above, their representation among the company's investors had expanded substantially by 1930.

Four years later in 1883, the risks of investing in AGL were significantly mitigated by the change from unlimited liability to double liability (twice the share's par value) on most shares. This shift to safer investment options does not appear to have increased the proportion of women investors in the company. It is in the following decade, the 1890s, that the female share of investors jumps from 25 to 38 per cent, which is the most rapid increase in the company's history. This decade was defined by economic stagnation and the increased uncertainty created by a mix of bank failures, drought, and industrial unrest. It is possible that women looked increasingly to AGL as a company with low-risk shares and part of an industry known to generate stable dividends in order to mitigate their risks in such uncertain times. In addition, the 1879 Act had left in doubt women's right to enter into a contract, an issue that was addressed by further legislation in 1893 and that brought New South Wales into line with the other colonies [Golder & Kirkby 2003].

In the decade after Federation, the female share returned to more gradual growth and largely levelled out by the time of World War One and thence to the interwar era. The slower growth in female share after 1911, similar to the 1880s, nonetheless occurred during a period of rapid growth in total investor numbers including women. The tightening of regulation of AGL through the Acts of 1912 and 1932, mentioned earlier, the increased opportunity from low-risk war bonds, and the possibility that female demand (in proportional terms at least) was reaching saturation at around ‘equity’ with men may help to explain this levelling out of women’s share of AGL ownership.

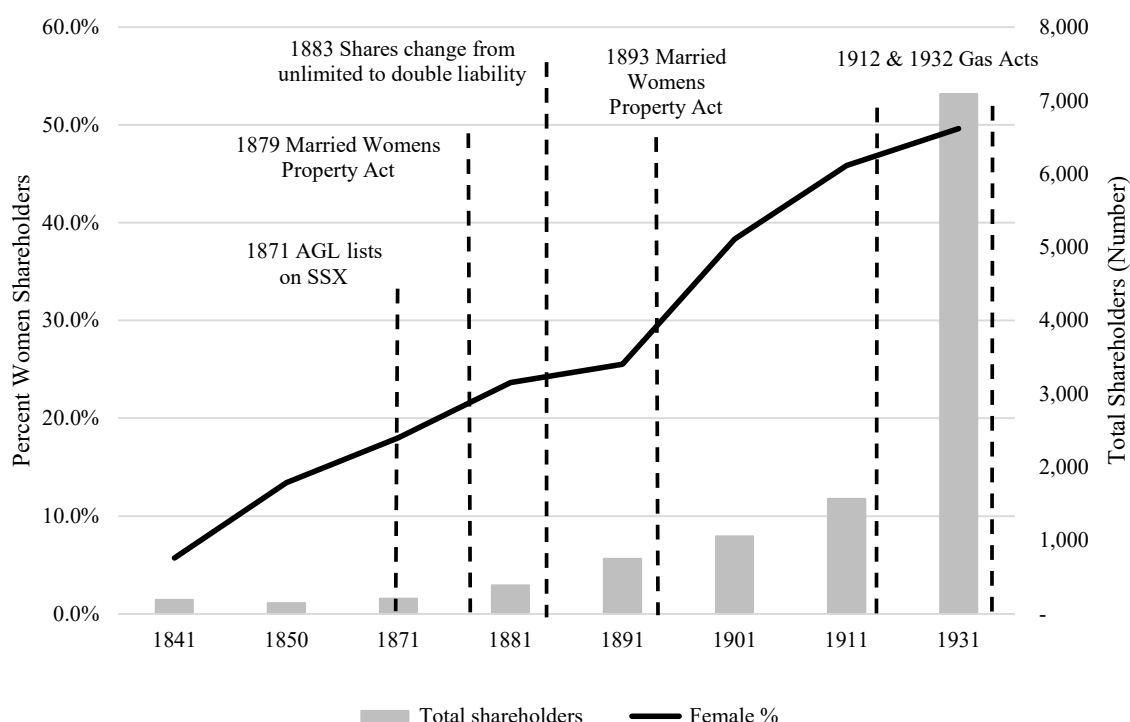


Figure 2. Key events in the history of female investing in the Australian Gaslight Company, 1841-1931

Sources: As per Table 1

FEMALE INVESTMENT PRACTICES AND PATTERNS

Female share trading

How did women acquire and dispose of shares? In 1871 the Sydney Stock Exchange commenced business and AGL was the second company to be listed for trading. Shares could be traded through brokers on the Sydney exchange, increasing the pool of potential shareholders and decreasing the search and other transaction costs associated with a share sale. Prior to this date, finding a buyer or seller could be more difficult. The shares of companies like AGL were bought and sold as legal transactions, normally at par value, in a variety of ways, which included through the intermediation of a range of actors particularly sharebrokers,

auctioneers, lawyers, and advertisers in newspapers (Lipton 2018, p. 809; Ginswick, 1961, pp.46-47). Intra-family transfers, including bequests, and for reasons of coverture, were other more personal means by which shares were exchanged.

We do not know with certainty whether women acquired and disposed of their shares differently from men, or indeed whether they traded more frequently or retained their shares for longer periods. However, information on share transfers at AGL provides some indications. Our data comprises all share transfers recorded during three transfer periods: 1846-50 (232 transfers), 1859-61 (146 transfers), and 1869-71 (183 transfers). The fraction of female transferors (sellers) is approximate to that of all female investors for 1846-50 and 1869-71 but a little lower in 1859-61. The female share of transferees (buyers, receivers) was rising with each period, indicative perhaps of the growing female share of the company's investors.

	1846-50	1859-61	1869-71
Total transfers	232	146	183
Female transferor (sell)	30	13	32
	13.4%	8.9%	17.5%
Female transferee (buy/receive)	16	13	34
	6.5%	8.9%	18.6%
Reasons for transfer			
<i>Transferor (sell)</i>			
- Coverture	1	2	1
	3.3%	15.3%	3.1%
- Other	29	11	31
	96.7%	84.6%	96.9%
<i>Transferee (buy/receive)</i>			
- Bequeathed to female	0	3	6
	0.0%	23.1%	21.9%
- Other	16	10	28
	100.0%	76.9%	78.1%
Total bequeathed	5	9	19
Female percent of bequeathed	0.0%	33.3%	31.6%
Intra-family transfers	15	11	15
Bequeaths	2	4	8
Non-bequeaths	13	7	7
- Male	11	5	7
- Female	2	2	0

Table 2. Female Transfers 1846-1871 (Select Years)

Sources: SLNSW, MLMSS AGL 9875, sub-series 7, boxes 132-4.

Note: The transferor is the shareholder selling (or transferring) their shares while the transferee is the shareholder that is taking ownership (via acquiring or through bequeath or gift).

We reviewed each transfer form in the three sample periods to ascertain the reason for the transfer. In most instances, there were no additional notes on the form, suggesting that the transfer was between two contracting (and usually paying) parties. However, transfer forms were notated when the transfer was made by a female shareholder because of marriage (coverture) or if the transferor had deceased and bequeathed shares to the transferee. For example, in September 1849 Mary Ellinor Lang, a spinster from Sydney, transferred 10 shares to Robert Campbell, a Port Philip (Melbourne) schoolmaster. The transfer form recorded that Ms Lang was “now Campbell” and “late Sydney, but now of Melbourne” and the transfer form was signed by Mr Campbell on behalf of both parties.

How frequently was coverture a reason for a woman to transfer her shares? Not that common, at least from our sample. We found four transfers in total that were identified as due to coverture, making up around 3% of female transferees in 1846-50 and 1869-71, and 15.3% in 1859-61. But in other cases, shares that traded and involved a married woman were held in trust by her husband (George Oakes holding shares in trust for his wife Lucy Mansfield; June 1846) or by an attorney (Thomas Barker for Jane Elizabeth, wife of Donald Larnach; November 1848) consistent with common law.

Were women investors commonly bequeathed shares by other family members? In the early years of AGL, shares were rarely bequeathed. In 1846-50, there was a total of 5 transfers out of 232 (2.2%) due to a deceased shareholder bequeathing shares, and none of these went to a woman. By the 1860s and 1870s, however, bequests made up a larger proportion of all transfers; 6.2% of transfers between 1859-61 and 10.4% of transfers between 1869-71. Around a third of all bequests went to women for these latter two periods, a proportion higher than their shareholding numbers would suggest and were 22 to 23 per cent of all female acquisitions. Bequests also increased in importance as a reason why a woman “acquired” shares; during 1869-71, 6 out of 34 (21.9%) of transferees received shares by bequest as opposed to acquisition or (potentially) gift from a family member.⁷

Finally, were women investors more or less likely than male investors to receive shares from intra-family transfers, for example as a gift from a family member? To identify intra-family transfers we matched the surname and addresses of each transferee and transferor. Transfers involving shareholders with surnames in common were defined as intra-family, recognising that we may be understating intra-family transfers if family members held different surnames (Khan 2022). Intrafamily transfers were 6.5% of all transfers in 1846-50, 7.5% in 1859-61, and 8.2% in 1869-71. Leaving bequests to one side, transfers within families were more likely to involve male transferees than females. Transfers to women were consistent with the female share in the first two periods but none of the 15 transfers identified for 1869-70 were to women. In particular, we noted several males transferring shares to infant male family members, and then holding these shares in trust or through power of attorney. We conclude that, in contrast to bequests, other family transfers to females, whether by sale or gift, declined across the period sampled. Taking account of coverture, bequests and other transfers, families offer a limited and declining explanation of *how* women acquired or disposed of shares. Overall, analysis of transfer records indicates that women commonly acquired or disposed of shares outside their

⁷ While most bequests were to women, there were a couple of cases in 1869-71 of bequests made by women.

family and that, on average, they ‘traded’ about as frequently as did men. However, family members may have influenced women’s investment decisions as we will investigate below.

Were women independent investors?

We noted earlier that the increase in female investors in the BNSW in the 1820s was a device used by male investors to increase their voting power in the firm. However, overseas research has generally reached the conclusion that most women were independent shareholders who took their own decisions about their investments (Acheson et al 2021; Laurence et al 2009; Green & Owens 2003; Acheson & Turner 2011; Rutterford & Maltby 2006; Doe 2010; Robb 2017). Acheson et al (2021) examined women investors in Britain’s railway companies in the late nineteenth and early twentieth centuries. Independent women, they argued, were shareholders who held shares in their own name rather than jointly with others. They argue that women who owned shares in their own right had control over trading, dividends, capital gains and votes associated with their shares. By contrast, in joint holdings some individuals may have been more influential than others. Acheson et.al find that between 70-88 per cent of women were sole shareholders, a larger share than for men (30-70 per cent), and thus that women choose to invest by themselves rather than share risks with others (2021, pp.483-84).⁸

Joint shareholding, by contrast, was very uncommon amongst AGL shareholders so we cannot use single or joint shareholding to analyse female independence. An alternative approach is to use isonymy or surname in common. Hilt (2008, p. 664) uses surnames in common to see if kinship was important in New York companies in the 1820s that utilised graduated voting systems, finding that 26% of shareholders had the same surname. Khan (2022) defined related investors as shareholders who shared the same surname, but also drew on household information from population censuses to confirm kinship. Fleming et al (2023) used surnames and addresses in common to identify independent female investors in three Australian companies in the 1920s and 1930s, noting that most females (and males) were independent.

The AGL shareholder lists allow us to match shareholders by surname, but we do not have shareholder addresses to use as a second matching variable. Therefore, we could assume that a female who has no male or female shareholder with the same surname in the company is an independent investor.⁹ This definition is relatively strict, and most likely results in measurement error as it captures independent women who might have a common surname such as Brown, Jones or Smith but are counted as investing with a family member. To reduce measurement error, we also construct a “rarity score” for each surname in the AGL shareholder lists (1,359 unique surnames) and estimate the probability that a woman is independent given the commonality or rarity of the surname. If our rarity score is correct, *on average*, then the strict definition of independent female (same surname) sets a conservative lower bound, and our estimated independent female (based on surname rarity) sets a reasonable upper bound for the percent of independent women (see Appendix for further details).¹⁰

⁸ Some joint shareholdings particularly for men were due to the presence of trustees and executors of wills. Rutterford et al, 2023.

⁹ Accepting that some familial relationships might be between individuals with different surnames.

¹⁰ The surname rarity method also avoids the effects of the growth of shareholder numbers over time that reduces the lower bound result.

	1850	1881	1891	1901	1911
Total No. Investors	149	389	752	1059	1570
Total Female	20	92	192	406	720
Total Male	129	297	560	653	850
Female (%)	13.4%	23.7%	25.5%	38.3%	45.9%
<i>Lower Bound</i>					
Independent Female (%)	65.0%	46.7%	44.8%	43.6%	35.4%
Independent Male (%)	57.4%	65.3%	55.7%	47.8%	37.5%
<i>Upper Bound</i>					
Estimated Independent Female (%)	82.5%	72.4%	71.6%	71.3%	67.2%
Estimated Independent Male (%)	79.6%	83.5%	78.2%	74.0%	68.7%
<i>Mid-Point Estimate</i>					
Estimated Independent Female (%)	73.8%	59.6%	58.2%	57.5%	51.3%
Estimated Independent Male (%)	68.5%	74.4%	67.0%	60.9%	53.1%

Table 3. Independent Women Shareholders in AGL, 1850 – 1911

Sources: as per Table 1

Using this methodology, between 67 and 82 per cent of women invested independently of relatives. Taking the midpoint between our methodology and the lower bound, the spread is 51 to 74 per cent. It is reasonable to say, therefore, that at least half of women shareholders in AGL were independent investors between 1850 and 1911, in that they did not share the same family's surname with another shareholder. It is likely that these women controlled the cash flow and voting rights attached to their shares, albeit that there is little evidence that women were active in the corporate governance of the company.

What influence did women hold in the company? Shareholdings and voting power.

Our analysis so far has examined the number of female shareholders over time, but without evidence of how many shares they owned in AGL and their voting power. Archival records on the shareholding of investors and the number of votes each shareholder held is available for two benchmark years, 1850 and 1894.¹¹ In these years women, on average, held fewer shares than men: in 1850 females were 13.4% of shareholders by number but they owned only 8.6% of shares on issue; by 1894, the gender discrepancy between average shareholdings had

¹¹ The 1894 list was incomplete, showing only shareholders with surnames between the letters K and Z. There were 357 shareholders on this list, 252 males (70.6%) and 105 females (29.4% by number). A comparison of the proportion of females in the K – Z list with a complete, names-only 1894 list indicates that the K – Z list represented 43.8% of shareholders and that it contained slightly more females than the total shareholding population in that year – the annual June 1894 shareholder list had 815 shareholders, 606 men (74.4%) and 209 women (25.6%).

diminished somewhat so that females were 29.4% of shareholders by number and owned 26.1% of AGL (Table 5).

While this suggests that women as shareholders held less influence in the company than their numbers implied, AGL did not adopt a one-share one-vote rule in its constitution. Rather, there was a difference between cashflow rights (all dividends were proportional to the number of shares a shareholder owned) and control (or voting) rights. This was not unusual for Australian, U.K., or U.S. companies during the eighteenth and nineteenth centuries. At least 80% of UK companies between 1720 and 1844 had graduated voting rights (Pargendler & Hansmann 2013, p.587). There are several theories why companies adopted graduated voting as opposed to one share one vote rules (Hilt 2008; 2013; Musacchio 2008; Bodenhorn 2014; Pargendler & Hansmann 2013; Hansmann & Pargendler 2014). This literature generally suggests that the pressing corporate governance issue of the nineteenth century was not the separation of ownership from managerial control; rather, it was to discourage looting or tunnelling (expropriation of resources for the benefit of majority owners) by larger, at the expense of smaller, shareholders. Since small shareholders were often also consumers, so graduated voting rights protected consumers from the possibility that larger shareholders would increase prices to benefit themselves. Thus, one solution was the graduated voting rules found in corporate charters and constitutions (Hilt 2008, p. 649).

Hilt (2008; 2013) and Pargendler & Hansmann (2013) note a strong overlap between investors and consumers in enterprises that were granted, or by location enjoyed, local monopolies, such as turnpike and bridge companies (in the U.S.) (Hilt 2008, pp. 659-660; Hilt 2013, p.627) and canal companies and gas lighting companies in the U.K. (Pargendler & Hansmann 2013, pp. 587, 588). Whether this was due to such companies wishing to protect smaller shareholders from looting or tunnelling by larger shareholders or to ensure that companies were controlled by their consumers and not by external, profit-maximising investors is open to debate.

In the U.K. investors in gas lighting companies tended to be local merchants, manufacturers and professionals who looked to benefit from gas services (Pargendler & Hansmann 2013, p. 588). By pooling resources, they could take advantage of economies of scale and provide services that would not be possible with their own resources. This might have also been the case for AGL. Ginswick (1960b, p.27 and Table III p.48) notes that merchants and gentlemen were the two largest shareholder groups in AGL in its early years, although this declined from the 1850s after it became legally possible [easier?] to sell and inherit shares (Ginswick 1961, p. 46).

AGL's voting rules were set out in its constitution in 1837. Votes were allocated disproportionately to smaller shareholders. Shareholders could hold a maximum 100 shares (increased to 150 shares in 1840) preventing any one shareholder dominating the register (Ginswick 1961).¹² Votes were allocated in graduated fashion, with 1 vote for 1 to 4 shares, 2 votes for 5 to 9 shares and so on (see Table 4 below). Shareholders could have a maximum 5 votes once their shareholdings was 20 shares or greater. Thus, smaller shareholders were

¹² The maximum number of shares able to be owned by an individual (or institution) changed several times, but details are not available for all changes. In August 1935 the company stated that shareholders had passed a resolution to increase the maximum shares able to be owned from 5,000 shares to 10,000 shares (see J.B. Were 1936).

protected from larger shareholders dominating voting and from (potentially) directing AGL resources in ways that benefitted them but to the detriment of smaller shareholders.

Shares	Votes
1-4	1 vote
5-9	2 votes
10-14	3 votes
15-19	4 votes
20+	5 votes

Table 4. AGL Voting Rights by Shareholding

Sources: 1837 Act.

It is possible that the mismatch between cashflow and voting rights due to the graduated voting rules would benefit AGL's female investors who held, on average, fewer shares than male investors. Bodenhorn (2014, p.433) finds that U.S. banks with graduated voting rules had a higher proportion of smaller shareholders and a more diverse investor base including more females, charitable trusts, and remote investors. The majority of shareholder lists available in the AGL archives only list the name of the shareholder (the exception is the 1837-1850 lists) and not the number of shares (or votes). As mentioned above, two shareholder lists, 1850 and 1894, exceptionally named the shareholder, number of shares, and (for 1894) the number of votes held by each shareholder. Using the 1894 list we can confirm that the voting rules set out in 1837 still applied.

We calculated female and male shareholder cashflow (shareholding) and control (voting) rights and we report these in Table 5. As stated above, in 1850 females were 13.4% of shareholders and owned 8.6% of shares; but under the voting rules, females controlled 12.9% of votes. In 1894, females were 29.4% number, owned 26.1% of AGL but controlled 31.3% of the company by votes. Thus, the graduated voting rights largely offset the disadvantage of being a small investor. Despite having smaller shareholdings, females on average had 3.8 votes in 1850 and 4.4 votes in 1894, not too dissimilar to male shareholders of 4.0 and 5.0 votes respectively. Thus, in 1850 a single female share counted for 1.49 votes compared with a male share that counted for 0.95 votes, providing females disproportionate control rights of the company. By 1894 the votes/shares ratio was 1.20 votes per share for females and 0.93 votes per share for males.

1850					1894			
Shares	Number	Percent	Average	Median	Number	Percent	Average	Median
Female	645	8.6%	32.3	25.0	9,836	26.1%	93.7	34.0
Male	6,822	91.4%	52.9	37.0	27,893	73.9%	110.7	48.5
Total	7,467	100.0%			37,729	100.0%		
Votes	Number	Percent	Average	Median	Number	Percent	Average	Median
Female	76	12.9%	3.8	5.0	461	31.3%	4.4	5.0
Male	514	87.1%	4.0	5.0	1,011	68.7%	4.0	5.0
Total	590	100.0%			1,472	100.0%		
Proportion (Votes/Shares)								
Female	1.49				1.20			
Male	0.95				0.93			

Table 5. AGL – Cashflow and Voting Rights 1850 and 1894

Source: 1850: SLNSW, Jules Ginswick Papers MLMSS 9034, 4 (33); 1894: SLNSW, AGL MLMSS 9875, sub-series 7, box 134, item 11

Note: 1894 shareholder lists only available for surnames K-Z. See footnote 9.

We have little or no evidence, however, of whether female shareholders actually used their disproportionate voting power at the company's meetings. Attendance by female shareholders at meetings of Australian companies seems to have been very uncommon in the nineteenth century (Fleming et al 2023). Several authors have noted that graduated voting rules could create an incentive for individual shareholders to hold shares in multiple names (especially family members) to control more votes (Hilt, 2008). We conjecture that this was the case at AGL, at least for some families in the early years of the company. Ginswick describes how John George Richardson used family ownership to circumvent the maximum share ownership limits and it is estimated that he controlled almost 10% of AGL between 1843 and 1850 by parcelling out shares to his children and his wife. In 1845 Henry Smyth held nearly 450 shares "either in his own right or in trust, for which he held the proxy votes and powers of attorney" (1961, p.46). More generally, Ginswick (1960b, p. 27) notes that infant shareholders were amongst the earliest owners of AGL. These shares were controlled by their parents and ostensibly used to circumvent the maximum share and graduated voting rules. For example, in 1843 merchant Alexander Brodie Spark held 50 shares (5 votes), his two infants A.B. Spark junior and F.M.A Spark held 150 and 50 shares respectively, meaning that the merchant held 15 votes directly or under power of attorney, corresponding to about 3% of AGL. Ginswick concludes that, at least during its early years, AGL was characterised by "a concentration of holdings", suggesting that the maximum ownership and voting rules were able to be circumvented by those owners wishing to leverage greater influence over the direction of the company.

Women as consumers

Therefore, in our period women appear to have had little say in the decisions of the company they owned; in addition to curtailed voting rights, they appear to have rarely attended company meetings nor were they found among its office holders. Many female investors were also AGL customers and, it appears, the company was more focussed on this role for women. In the 1930s, as AGL fought off competition from electric companies and faced the predations of government and the interwar depression, their focus was on building loyalty among household gas consumers in the form of female 'homemakers'. In 1933 AGL established a Home Service Club that was focussed on running cookery demonstrations, courses, and charitable food events, at the company's principal retail outlets, that would build social capital with female customers and increase their sales of gas cookers.

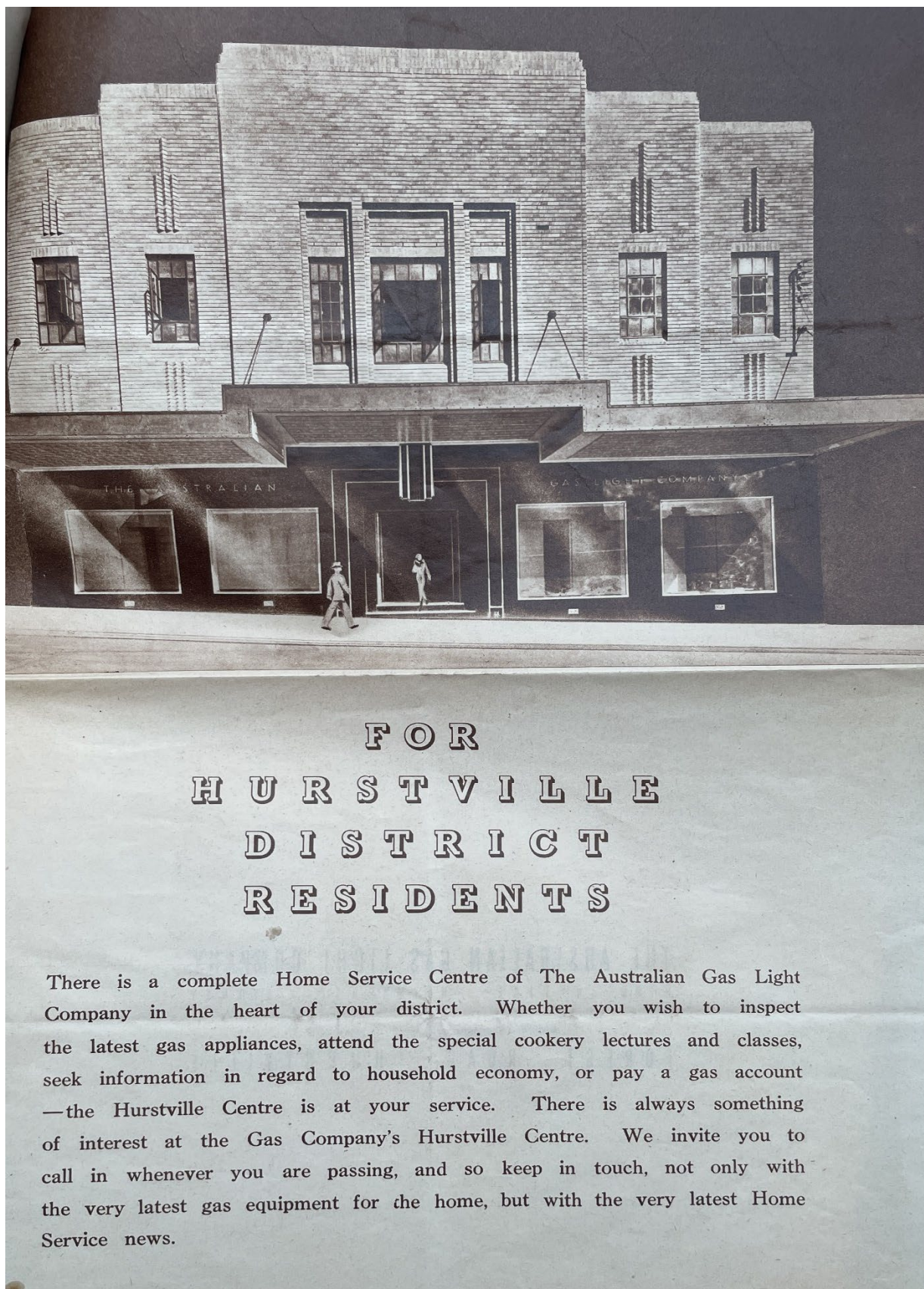


Figure 3. AGL Home Service Centre at Hurstville

Source: SLNSW, Ginswick Papers, MLMSS 9034 3 (33)

While the focus was on cookery, the bolder claim was:

“of providing facilities for women to improve their knowledge on general home topics and to furnish them with useful information, helpful advice and practical assistance on a wide variety of domestic subjects-anything from cooking to room decoration, reading and gardening (*Labor Daily* 16.11.1933, p. 11)”

Company publicity pushed home the idea with a pamphlet entitled, ‘Every hour of the day gas helps the modern housewife’. Hour by hour it pointed to the various uses of gas around the house for cooking, hot water, heating, and even refrigeration.

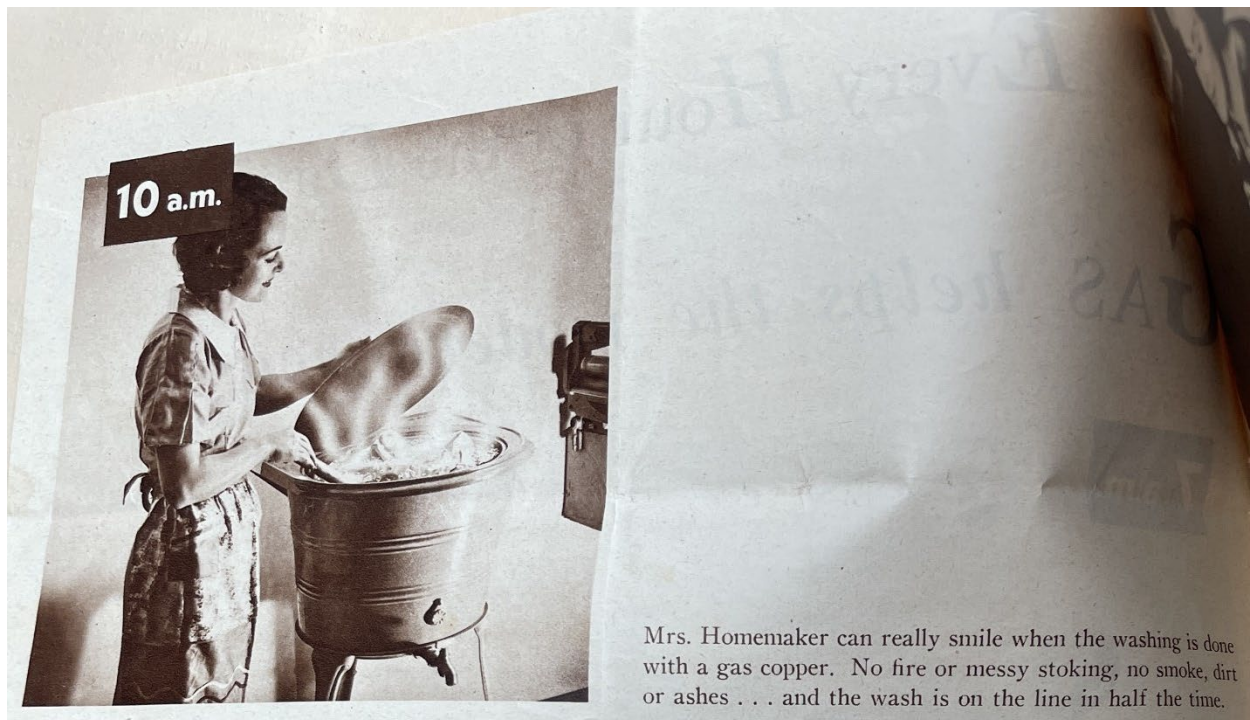




Figure 4. Gas-related domestic duties

Source: SLNSW, Ginswick Papers, MLMSS 9034 3 (33)

There were limits to social capital, though, as female consumers organised themselves to take umbrage at the company's pricing policies several times in the 1930s. In 1936 Portia Geach, artist, feminist and founder and President of the New South Wales Housewives Progressive Association, appeared before the Board of Inquiry looking into AGL's proposal to introduce a minimum or fixed charge into gas pricing (*Northern Star*, 13.08.1936, p. 9). In 1939 the AGL chairman met with a delegation of women complaining about the price of gas (*Workers' Weekly* 29.08.1939, p. 1). When asked by the AGL chairman if the company should be entitled to a return on its investments, Geach had replied 'no' and drew unfavourable comparisons with the state-owned Electricity Commission. The 1939 delegation was led by the State Women's Organising Committee of the Communist Party and argued that the government must act if the company will not reduce its prices. The women behind these protests were clearly quite a different group from those who were investors in the company!

CONCLUSION

This paper contributes to an evolving historical literature on the economic position of women in Australia and, more specifically, on their role as company investors. The extensive archives of AGL, one of the largest, most enduring companies in Australia, has enabled us to focus on the changing experience of women in a specific company across the first century of its existence. We confirm other studies in Australia and internationally, of the growth of female shareholders, and we extend the evidence back to the very early days of company formation in colonial Australia.

Our results reveals that the number of AGL's female investors grew from 11 to 3519, while the female share increased continuously from around 5 to virtually 50 per cent in barely a century to 1930. Our knowledge of early female investors reveals little beyond their marital status, but later we see a diversity of occupations and the growth of married investors, most of whom lived locally, many probably being customers. We know that women acquired and disposed of shares in a variety of ways and that most of them probably acted independently of family influences. On average, women held fewer shares than men but the graduated voting rights introduced by many companies to prevent tunnelling behaviour by large investors mostly compensated for their smaller holdings when it came to voting power. However, the purchase of shares by individual males in multiple names (at least in the early years), along with the lack of female participation in corporate governance – such as meeting attendance and office holding – suggests women in this period had little influence over the affairs of the company that they increasingly owned. The focus of the latter, instead, was on women as consumers.

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APPENDIX. ISONOMY AND SURNAME RARITY SCORE

The use of isonomy to identify family relationships has been a key methodology (Khan, 2022) in understanding historical demographics and genealogy.

We are not aware of disaggregated information on Victorian census data between the 1850s and the 1880s. As an alternative approach, we use a large language model from Claude.ai (<https://claude.ai/chats>) to construct a rarity index. This approach is similar in spirit to equations 1 and 2 in Clark et al. (2015).

The rarity index computes the *expected* relationships and is designed to balance minimising false positives and false negatives. If we determine the family tie solely based on sharing the same surname, then a false positive (negative) arises when unrelated (related) individuals share (do not share) the same surname. This approach essentially assumes isonomy, where every surname is rare, leading to the assumption that people who share the same surname have a higher probability (i.e. 100%) of being related. For common surnames, such identification increases false positives, hence overestimates the true family connections and underestimates the true independent investments.

The novelty of our approach lies in using a rarity index to provide *confidence intervals* by adjusting these rarity scores. Specifically, a high rarity score assumes isonomy, implying that individuals sharing the same surname are related. This increases the number of false positives and results in a bias towards more related investing. Conversely, assuming a low rarity score, which indicates that a given surname is common, leads to more independent investments and an increase in false negatives. Our rarity score offers a framework for more accurate analysis by providing a boundary for evaluation.

Calculation of the Rarity Score

The rarity index quantifies the rarity of surnames in nineteenth-century Australia. Using *Claude.ai*, we evaluated 1,356 unique surnames from a combined sample of all shareholder lists. Our prompt was as follows:

"Could I give you a list of surnames from 19th century Australia and the UK, and could you rate them with a rarity score? For example, 'Smith' may be very common and should be rated very low on such a scale."

After several iterations, the AI engine returned a rarity ranging from 1 to 10, where a score of 1 indicates a very common surname and a score of 10 indicates a very rare surname. In our calculations, a rarity score of 5 suggests a 50% chance that two individuals with the same surname are related.

We provide two examples below to illustrate our calculations.

Example 1

"Smith" receives a rarity scale of 2/10. There are a total of five investors (male and female) who have Smith as their surname in 1850.

Estimated Female Male Relationship = $1 * (\text{rarity} / 10) = 1 * (2 / 10) = 0.2$

Estimated Independent Female = $1 * (1 - \text{rarity} / 10) = 1 * (1 - 2 / 10) = 0.8$

Given that "Smith, Penelope" is a common surname, she is more likely to be an independent investor because of a higher measurement error (i.e. a higher likelihood of a false positive) if

we used the struct definition that a relationship existing because both people has the same surname.

Example 2

"Smith-Franklin" is a rare surname with a rarity score of 10.

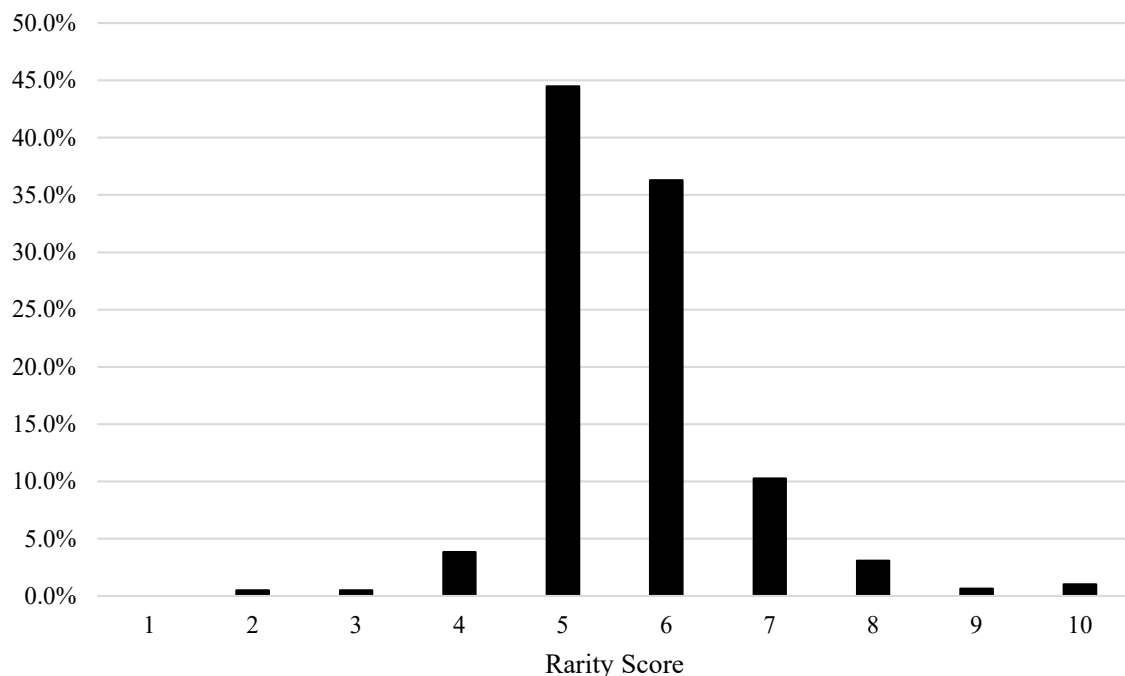
Estimated Female Male Relationship = $1 * (\text{rarity} / 10) = 1 * (10 / 10) = 1$

Estimated Independent Female = $1 * (1 - \text{rarity} / 10) = 1 * (1 - 10 / 10) = 0$

That is, with a rare surname, we have a high degree of confidence that the women with this surname would be in a relationship with another person with the same surname.

The distribution of AGL shareholder surnames (N=1,356) is shown below.

Figure A1. Distribution of AGL Shareholder Surnames by Rarity Score



The most common surnames (Brown, Smith) received a rarity score of 2, indicating that they are relatively common. Fourteen surnames received a rarity score of 10 (very rare). Examples of common and rare surnames in our sample are listed in Table A1 below.

Table A1. Rarity Score – Example of Common and Rare Surname

Surname	Rarity Score	Surname	Rarity Score
Brown	2	Acres	10
Smith	2	Acros	10
Adams	3	Anzino	10
Allen	3	Smith-Franklin	10
Browne	3	Evans-Johns	10

Using the Rarity Score to Estimate Relationships

We first define six indicator variables that are based on the nature of the data. For any investor:

- *co_female*: This returns one if the investor is female, and there are at least one other female investors, but no male investors, who share the same surname in that year; or zero otherwise.
- *co_male*: This returns one if the investor is male, and there are at least one other male investors, but no female investors, who share the same surname in that year; or zero otherwise.
- *both_female_male*: This returns one if the investor is female, and there are at least one other female investors and one other male investors, who share the same surname in that year; or zero otherwise.
- *both_male_female*: This returns one if the investor is male, and there are at least one other female investors and one other male investors, who share the same surname in that year; or zero otherwise.
- *single_female*: This returns one if the investor is female, and no other investors share the same surname in that year; or zero otherwise.
- *single_male*: This returns one if the investor is male, and no other investors share the same surname in that year; or zero otherwise.

We then incorporate rarity score and construct the corresponding estimated variables as:

- Estimated Investing with Another Female (%)
 - $est_co_female = co_female \times rarity/10$
- Estimated Investing with Another Male (%)
 - $est_co_male = co_male \times rarity/10$
- Estimated Female-Male (%)
 - $est_both_female_male = both_female_male \times rarity/10$
- Estimated Male-Female (%)
 - $est_both_male_female = both_male_female \times rarity/10$
- Estimated Independent Female (%)
 - $est_single_female = \text{MAX}(both_female_male \times (1 - rarity/10), co_female \times (1 - rarity/10), single_female)$
- Estimated Independent Male (%)
 - $est_single_male = \text{MAX}(both_male_female \times (1 - rarity/10), co_male \times (1 - rarity/10), single_male)$

Results for all estimated relationships are presented in Table A2 below.

Table A2. Relationships between AGL Shareholders, 1850 – 1911

	1850	1881	1891	1901	1911
Total No. Investors	149	389	752	1059	1570
Total Female	20	92	192	406	720
Total Male	129	297	560	653	850
Female (%)	13.4%	23.7%	25.5%	38.3%	45.9%
Estimated Independent Female (%)	82.5%	72.4%	71.6%	71.3%	67.2%
Estimated Independent Male (%)	79.6%	83.5%	78.2%	74.0%	68.7%
Estimated Investing with Another Female (%)	6.0%	10.2%	7.3%	6.9%	7.3%
Estimated Investing with Another Male (%)	18.9%	8.4%	11.2%	8.8%	8.5%
Estimated Female-Male (%)	11.5%	17.4%	21.1%	21.8%	25.4%
Estimated Male-Female (%)	1.5%	8.2%	10.6%	17.2%	22.8%