Social Capital and Elite Persistence in Late Victorian and Edwardian England

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Abstract

This thesis investigates the persistence of elites amidst the rapid changes of late nineteenth century Britain. It gathers new data and employs new methods to examine the complexities of persistence in both economic and social terms.

The research is motivated by the historical literature on aristocratic decline, the economic history literature on social mobility, and the financial history literature on merchant banking. Methodologically, it leverages 'Big Data' approaches to economic history and quantitative network analysis. It attempts to combine a nuanced historical debate, which captures complex phenomena like identity and class, with robust, systematic measurement.

The first paper examines the persistence of the titled aristocracy. I collect and digitise new data on the population of wealth-holders for this period (2.2m), linking this with genealogical information on the population of title-holders. This allows for the construction of several new measures of aristocratic persistence. Title-holders were uniquely persistent in terms of wealth-holding, regressing towards a higher mean than other wealth elites. In social terms the aristocracy was marked by a remarkable openness to outsiders. This was partly in response to a crisis in the 1880s, but primarily a long-standing process which allowed for the controlled admission of new wealth into the aristocracy.

The second paper investigates the role of bankers within elite London members'

clubs. I collect and digitise 43k club membership records, constructing an inter-club membership network. I then use network analysis to examine changes to the participation, influence and integration of bankers in High Society. This suggests that there was a small 'banking aristocracy', which already held close ties to the titled aristocracy at the start of the period. Despite receiving more titles, this group did not become more socially prominent, it was already near the apex. There was no change to the status of bankers *en masse* as a professional group.

The third paper explores relationships between merchant banks in the acceptance market, a form of short-term trade credit. Creating a new biographical dataset of 105 leading merchant bankers, it builds four inter-bank networks. One network captures client-sharing between banks, while the other three capture professional or social connections between partners at those banks. This shows a correlation between client sharing and these inter-personal connections. These findings suggest that collaboration and information sharing played an important role in the development and structure of the London money market.

Declaration

I certify that the thesis I have presented for examination for the MPhil/PhD degree of the London School of Economics and political Science is solely my own work.

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I declare that my thesis consists of 55,825 words.

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Introduction

It was impossible to foresee, in the spring of 1944, the present cult of the English country house. It seemed then that the ancestral seats which were our chief national artistic achievement were doomed to decay and spoliation like the monasteries in the sixteenth century. So I piled it on rather, with passionate sincerity. [Yet] the English aristocracy has maintained its identity to a degree that seemed impossible [...]. Much of this book therefore is a panegyric preached over an empty coffin.

— Evelyn Waugh, Preface (1959) in *Brideshead Revisited* (1945), p. 8

The half-century before the First World War was a period of unparalleled transformation. In just fifty years rapid economic growth, technological advancement and deepening global interconnectedness had reshaped British society. The material basis of the economy shifted away from land and agriculture towards industry and commerce. Amidst this whirlwind of change, it is hardly surprising that the role of the aristocracy, supposedly an antiquated relic of a feudal past, and of their successors rose to the fore. To contemporaries, these transformations seemed to be ushering in a new era of social progress and modernity. 'A revolution', Joseph Chamberlain declared, 'which has been silently and peacefully accomplished'.[1] Yet this revolution was far from complete, and the aristocracy proved far more resilient

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[1]Cited in Cannadine (1990, p. 41).

than expected.

This thesis investigates the fate of both 'old' aristocratic and 'new' financial elites during this transformative period. By examining the extent of continuity and change among these elite groups, it seeks to illuminate the mechanisms behind their persistence. The survival of the aristocracy and its supposed merger with financial elites are central to debates concerning inequality (Piketty, 2020; Piketty et al., 2014, 2006; Bengtsson et al., 2019), social mobility (Clark, 2014; Clark and Cummins, 2014, 2015; Jackson, 2019; Alesina et al., 2020; Ager et al., 2021), and institutional change (Cain and Hopkins, 2016; Cassis, 1994). While there is an extensive literature on social mobility, this has primarily focused on the role of economic or human capital (Stuhler, 2018; Black and Devereux, 2011; Solon, 1999). This work is motivated by an attempt to integrate empirical insights about social class or capital with our view of elite persistence. I create new measures that account for the complexities and contradictions in the existing literature, which stresses elements of both decline and resilience (Cannadine, 1990; Thompson, 1963; Beckett, 1986; Stone and Fawtier-Stone, 1984). I attempt to balance these elements against each other in a unified framework that accounts for the economic and social dimensions of change.

Two of the most influential theories of elite persistence in this period, Piketty (2020) and Clark (2014), paint strikingly different pictures. Piketty argues that the late nineteenth century saw a dramatic shift from a 'society of orders,' char-

acterised by rigid social hierarchies, to a 'proprietarian society', where property ownership became the primary determinant of social status. He suggests that this shift, exemplified by the rise of a new capitalist elite and the decline of the aristocracy, birthed a new ideology of meritocracy and mobility, which has since been used to justify ever-increasing levels of inequality. Clark (2014), on the other hand, presents an image of a remarkably persistent elite, whose position remained unassailed by the sweeping economic and political transformations of the nineteenth and twentieth centuries. Clark claims that multi-generational social mobility was slow and resistant to external forces, with the descendants of Norman conquerors still atop the social hierarchy today. By considering the role of social adaptation in persistence, I attempt to join these different strands together. A key tenet of this thesis is that elites persist in spite of changed circumstances by successfully adapting. Persistence is about maintaining a distinct identity, while trading one form of advantage for another.

In the economics literature, we typically think about elite persistence in terms of social mobility. This is measured by looking at the correlation in outcomes across generations, for instance in income. Yet a key observation of recent literature (Stuhler, 2018; Clark, 2014; Solon, 2018; Lindahl et al., 2015) is that first-order parent-child estimates of mobility are poor predictors of long-run, multi-generational mobility. Clark (2014) argues that any individual measure of status is a noisy indicator of a deeper, more entrenched 'latent status'. This, he argues,

accounts for the remarkably high persistence of elites. We can think of this as individuals holding various forms of status or capital: economic, human, social, or even genetic. Stocks of capital are determined by the underlying status, and are exchangeable to varying degrees. If different forms of status are interchangeable, a decline in any single measure does not necessarily represent a decline in underlying status.

The mechanisms behind the persistence of underlying status are unknown. Clark (2023) suggests they are genetic, but social mechanisms could equally explain the stability and slowness of mobility. Social networks are resilient to policy interventions and economic shocks. They exhibit homophilic (or assortative) tendencies and are convertible into economic or political power. Work examining the role of social capital in elite persistence is scarce. Nonetheless, the emerging literature on the robustness of elites to shocks (Alesina et al., 2020; Ager et al., 2021) suggests that social capital is central to resilience.

We can think of social capital as a buffer against shocks, or as a channel through which these shocks can flow. Aristocrats provide a unique window into the mechanics of social capital. They were distinguished, not just by wealth, but by their social status relative to similarly wealthy individuals.[2] We can also measure social capital directly, by looking at personal ties between individuals. Economic

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[2]Indeed, an aristocratic title is the example given by Bourdieu (1986) of a non-relational indicator of social capital.

and social persistence are intricately linked. A comprehensive understanding of persistence requires both dimensions.

The tension between continuity and change is a recurring theme in the historical literature on the nineteenth century aristocracy. The most prominent works acknowledge elements of both, though some emphasise decline (Cannadine, 1990; Stone and Fawtier-Stone, 1984; Beckett, 1986) and others resilience (Thompson, 1963; Bush, 1984; Mayer, 1981). The question is not just about survival, but how survival changed the aristocracy. Even Cannadine (1990), the strongest proponent of decline, highlights that in an international context their decline was gentle, quiet and comfortable, and that there were 'elements of continuity and survival' (Cannadine, 1990, pp. 4-5; p. 703). Mayer (1981), the strongest proponent of persistence, calls the First World War an 'expression of the decline and fall of the old order fighting to prolong its life' (Mayer, 1981, p. 4).

At its core, this debate revolves around identity as much as economic status. Central to understanding persistence is the question of whether the aristocracy remained feudal in nature or adapted to capitalist values, and whether their integration with new industrial and financial elites represented a continuation of their dominance or a concession to the rising power of these groups. Anderson (1987), Hobsbawm (1968), and Cain and Hopkins (2016) argue that the aristocracy had long-standing capitalist roots dating back to the English Civil War, and that they successfully adapted. Conversely, Wiener (2004), Bush (1984), Cannadine (1990),

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and Stone and Fawtier-Stone (1984) portray a feudal order, ill-equipped for capitalist society. Work on financial elites suggests a high degree of integration by the end of the nineteenth century (Cain and Hopkins, 2016; Cassis, 1994; Rubinstein, 1991), and the emergence of a 'gentlemanly capitalist' order. These perspectives show aristocratic persistence as part of a complex and long-standing process. Tensions between persistence and change were hardly novel. Despite the richness of the assembled evidence, the absence of any empirical framework has made it hard to compare the relative strength of these forces.

This thesis develops a descriptive, empirical framework for measuring elite persistence in social terms, through genealogies, marriages, friendships, professional relations, and class. It collects new data on individual wealth-holding (2.2m), club memberships (43k), bankers (6k), and commercial elites (1.7k). The first chapter focuses on the titled aristocracy, investigating the relationship between their persistence in terms of wealth and their changing social composition. The second chapter focuses on a newer elite, London bankers. It looks at the structure of their relationships at elite members' clubs and explores the evolution of different forms of social capital. The third chapter looks at merchant bankers and examines how social ties between them encouraged collaborative economic relations between their banks.

The findings reveal a remarkable degree of persistence in the elite, both economically and socially. They show how social ties both reinforced the bounds of

community, and allowed new information and resources to flow in. Aristocratic wealth was highly persistent, though it was bolstered by new entrants. Marriage patterns were remarkably stable, though they had long been open to outsiders. The most noticeable change was an increase in title-grants to 'outsiders'. This reflects the speed of conversion between economic and social capital, which had previously taken several generations. A change in the speed at which economic capital was converted to social capital seems the most likely explanation for the perception of decline. Yet the bounds of the titled aristocracy did not shift significantly. The 'city aristocracy', which was comprised of longstanding merchant banking families, held close ties with the aristocracy across the period, though several of these families only gained titles towards the end. This group appears to have been relatively stable throughout the period. Social ties between these merchant bankers appear to relate to collaborative economic relationships, highlighting the direct advantages of social capital and the self-reinforcing nature of elite communities. These findings highlight the central role played by social capital in elite persistence. This is an aspect that has received little attention in the empirical literature.

This chapter proceeds as follows: the next section looks at the rich historical debate about the identity of the aristocracy, particularly during historical crises; the section after that examines the economics literature on social mobility, focusing on elite persistence and the role of social factors in multi-generational mobility;

finally, I conclude by summarising the methodological motivation and the three papers which form the thesis.

Historical Perspectives

The conventional view holds that the British aristocracy experienced a marked decline in this period. This started earlier among the gentry, but by the 1880s had spread to the titled nobility. In Cannadine's words 'the writing seemed plainly on the wall for the noble and landowning classes' (Cannadine, 1990, p. 28). However, this literature paints a complex picture. There are various forms of persistence, and a complex interplay between community, identity, and economic change.

To measure persistence, we must first distinguish between two different forms. Firstly, the persistence of a specific structuring of society and secondly, the persistence of a group within that structure. There is an important distinction between Thompson's (1963) claim that 'England remained [...] not merely an aristocratic country, but a country of a landed aristocracy' and his claim that the 'landed aristocracy survives into our own times with great social prestige'.[3] Feudalism had disappeared long before the advent of modern democracy. Yet this does not mean that the aristocracy disappeared or even diminished. Persistence is not about preventing revolutionary change, but mastering it. This thesis then, focuses on

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[3]Both from Thompson (1963, p. 1).

persistence in a social sense. The question is whether groups maintain their position within a society, even as that society changes. F. M. L. Thompson, giving his Presidential Address to the Royal Historical Society in 1989, astutely captures this distinction:

> *The class, which before 1914 had an exceptionally high profile as it felt itself to be besieged by Lloyd George's demagoguery and menaced by his land valuation, has performed an astonishing vanishing trick. This has been so effective that most people believe that the landed aristocracy has vanished from public consciousness because it has been obliterated [...]. In fact, because it has been so adroit in self-effacing, while at the same time exploiting the popular addiction to nostalgia, it is alive and well.*

— F. M. L. Thompson, *Presidential Address at the Royal Historical Society*, 1989

If, as David Cannadine argues, 'what looks like unavoidable decline from one perspective appears very much like resilient adaptation from another', we must clearly define the bounds of each (Cannadine, 1990, p. 706). To understand the net result of these processes, we must measure the aristocracy's position across multiple dimensions, locate these phenomena in a broader historical context, create consistent measures of outcomes between social groups, and examine the adaptive process, both at the institutional and family level. It is not enough to know that a particular family maintains it position in the distribution of wealth. To truly

measure family persistence, we must account for the position of those families over time across various forms of status. Similarly, to understand institutional persistence, we must measure changes to the composition of members of those institutions across multiple dimensions.

Feudal society in its purest form had already expired by the passage of the First Reform Act (1832). Yet at the time, Robert Peel, the future Prime Minister, lamented that the monarchy would not survive five years (Beckett, 1986, p. 451). The Duke of Wellington, hero of the Napoleonic Wars, protested that with the Reform Act 'The revolution is made [...], power is transferred from one class of society [...] to another' (Croker, 1884, p. 205). He cautioned that the 'destruction of one description of property, will draw after it the destruction of all' (Croker, 1884, p. 206). The funeral bells would ring out again in the so-called 'troubled decade', with the passing of the Third Reform Act (1884) and the agricultural depression (1873-96) (Cannadine, 1990, p. 25). These pronouncements of aristocratic demise were neither the first nor the last. Aristocratic hegemony was mourned amidst the tumult of the Civil War (1642-51) and Glorious Revolution (1688), during the French Revolution (1789-99) and the Napoleonic Wars (1799-1815).[4] Complaints flew in thick and fast during the campaign against the Corn Laws (1815-46) and in the aftermath of the Crimean War (1853-56).[5] They were

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[4]See Beckett (1986, pp. 448-449), Hobsbawm (1996, p. 54), Dickinson (1979).

[5]See Stewart (1971); Aydelotte (1967); Hanham (1969); Beckett (1986).

repeated with increased fervour in the debate over Lloyd George's *People's Budget* (1909).[6] *The Times* railed against the budget, warning against the dangers of a Liberal majority which permitted the passage of any legislation 'however dangerous, however reckless, and however unworkable' (The Times, 1909b). The Earl of Balfour once more proclaimed that they were 'the victims of a revolution' (Spring, 1984, p. 34). These aristocratic complaints were buttressed by protest from the City, with seventeen leading merchant banks openly denouncing the budget (The Times, 1909a). With his predilection for extravagant language unabated, Balfour claimed after the election of 1910 that the Lords had been 'smashed beyond all recognition' (Cannadine, 1990, p. 53). The First World War, a chance for the titled classes to redeem themselves, exacted a heavy toll. Even Charles Masterman, the liberal reformer, paid tribute to their sacrifice, a 'Feudal system vanished in blood and fire, and the landed classes were consumed' (Masterman, 1922, p. 33). This was echoed in an ominous article, penned by the 9th Duke of Marlborough in *The Times* in 1919 titled 'The Old Order Doomed' (Spencer-Churchill, 1919). The death knell of the aristocracy had tolled not once, but many times. From the thud of an axe falling across King Charles' neck, to the ringing of rifles across blood soaked Flanders fields.

Curious, then, that these aristocratic families appear alive and well today. Despite the prophecies of doom, many appear to have flourished. One hundred years

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[6]See Cannadine (1990, pp. 48-51).

after the Duke of Marlborough wrote that article, his great-grandson the 12th Duke boasts a wealth of £188m, placing him at the top 0.001% of the wealth distribution.[7] As landed estates transformed from productive assets into luxury goods, so too did landed aristocrats transform to meet the challenges of a changing world. The Marlborough family, for instance, continually merged with both new and old elites. Their adaptability is reflected in their strategic unions with old blood aristocracy, like Viscount Chelsea and Baron Alington; banking elites, such as the Barclays and Hanburys; and American plutocrats, like the Vanderbilts.[8] The family's enduring position, and their integration with new elites, suggest renewal rather than decline. These historical threats now appear as temporary setbacks. The composition of the super-rich in Britain has changed remarkably little over the last 160 years. From 1860 to 2020, the proportion whose wealth originated from land has dropped from 17.8% to 13.0%. Considering the huge structural transformation of the economy in this time, as well as the influx of wealthy foreigners, this seems like a relatively limited change.[9]

Despite their persistence, the aristocracy confronted significant economic and social threats in the late nineteenth century. The most visible threat was financial, as falling land values and agricultural prices posed a serious challenge. The severity

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[7] The Sunday Times (2020).

[8] From Lundy's *The Peerage*.

[9] Figures taken from Alfani (2024, p. 192; p. 205), the 1860 figures are percent of those with over £100,000 (£8.3m in 2020£) in settled personalty, and the 2020 figures are for those in the top 1,000 wealth-holders, roughly £120m (2020£), the top 0.002% of the adult population.

of this financial threat was the subject of an extensive debate between Thompson (1955, 1960), Spring (1951, 1957, 1980), Hobsbawm (1968), Perkin (1969), and Cannadine (1977). However, the main conclusion was that while debt was commonplace (Spring, 1951), it was almost never overwhelming (Spring, 1980; Cannadine, 1977; Thompson, 1960). Instead, it was a long-standing feature of aristocratic estates that supported their growth (Thompson, 1963, p. 37). The impact of the First Industrial Revolution had already shown that industrialisation was not inherently harmful to their interests (Beckett, 1986). If anything, they flourished during this period, their wealth rising from 4.2x the mean to 5.3x between 1740 and 1858 (Lindert, 1986).[10] Aristocrats were more than just an agrarian elite. Even in the sixteenth and seventeenth centuries, they were heavily involved in pioneering, and 22% of them owned iron-works (Stone, 1965, p. 208). In the nineteenth century, they became heavily involved in coal mining, railways and finance (Beckett, 1986, p. 211).

The second, graver, threat that the aristocracy faced was demographic. Primogeniture meant that the aristocracy was confronted with a constant crisis (Stone and Fawtier-Stone, 1984). In the seventeenth and eighteenth centuries, a high age of marriage combined with high mortality rates meant that the replacement rate for aristocratic families fell below 1 (Beckett, 1986, p. 96). A tight policy on the

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[10]This figure is for the personal estate of all aristocrats, gentlemen and above, relative to the adult male average.

granting of titles meant that the group was headed for extinction. In order to avoid this threat, the titled aristocracy had to recruit from other groups. During Pitt the Younger's premierships (1783-1806) grants increased substantially. By 1838, only 22% of peers had received their title before the Glorious Revolution (1688). The majority of them (55%) had been granted a title in the last 60 years. Only 17 peers, 5% of the total, predated the Tudors (1485-1603). This was in many ways a modern elite. By 1912, this tilt was even more apparent, with only 37 peers heralding back to before 1700.[11] Only in this post-Napoleonic generation did hereditary peers, for the first time, substantially outnumber spiritual peers (Pollard, 1920, pp. 303-304). These demographic pressures meant that the aristocracy was in a state of constant flux. Primogeniture set the aristocracy apart in more ways than one. It meant that the aristocracy was a more distinct class than elsewhere in Europe and helped keep estates intact. However, it also necessitated constant recruitment, both through succession of extended family members and the granting of new titles. The British aristocracy was unusual in its distinction, but also in its admission of external elites.

Earlier attempts to make the peerage an exclusive and limited club had been unsuccessful. In 1719 the Whigs attempted to pass the *Peerage Bill*, which would maintain their dominance of the House of Lords and prevent future monarchs or prime ministers from granting new titles (Thompson, 1963, p. 8). Though the

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[11]These statistics are all from Beckett (1986, p. 96).

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bill was roundly rejected, the granting of new titles remained restrained until the 1780s. As a result of rising political and economic pressures, title grants became much more common from the French Revolution until around 1830. Between 1780 and 1800, the number of peers rose by 41% from 189 to 267. By 1837, the peerage had doubled in size.[12] Pitt the Younger was lambasted for this policy. The *Gentleman's Magazine* captured the essence of this critique:

> *He came into power on the shoulders of the East India Company, who always retained too great an influence over his mind. He was the god of the City; and the City and Stock Exchange were his gods in return. He considered a Coronet a feather, which was light payment for any favour, without caring on whose head it fell.*

– A. F. A., in *The Gentleman's Magazine and Historical Chronicle* (1814), p. 32

Disraeli, prefiguring later complaints about Gladstone (1868-94), accused Pitt of having 'created a plebeian aristocracy and blended it with the patrician oligarchy'. Of particular note is the emphasis he placed on the social ascent of financial elites: 'He caught them in the alleys of Lombard Street and clutched them from the counting-houses of Cornhill'.[13] A century later, the same complaints were made over the 'furious ennoblement of mere financiers', given only

[12]Statistics taken from Beckett (1986, p. 30).

[13]Both from Disraeli (1845, p. 26).

'because their recipients possess heavy bags of money' (The Saturday Review, 1905, p. 770). This was not a new phenomenon. In 1821, 63% of baronets were classified as having received their title on the grounds of wealth (Beckett, 1986, p. 117). A distinctive wealth elite of aristocrats and merchants was gradually being formed. Lindert (1986) shows that between 1670-1875, the wealth gap between the landed and merchant classes, and everyone else, widened substantially. While the dynamics of wealth may have gradually changed, the correlation between wealth and social status were not new. The slowness of conversion helped obscure the process. Families often took three or more generations to convert their wealth into a title (Cannadine, 1990, p. 304), by which time they were no longer 'outsiders'.

If title grants had long been based on political or financial grounds, what distinguished this period? To answer this, we must determine whether there was an increase in upward economic mobility or a stronger correspondence between wealth and title grants. The two main entry requirements for the aristocracy were financial – requiring a landed estate and participation in the London season – and temporal – usually necessitating at least three generations in the wealth elite to gain a title.[14] The temporal qualification helped filter for important aspects of status beyond financial. Maintaining wealth for several generations, and proving your family to be socially and culturally compatible sent signals about underlying

[14]See Thompson (1963, p. 25) and Beckett (1986, p. 41) for discussion of the financial qualification and Beckett (1986, p. 41) and Cannadine (1990, p. 304) for the temporal.

status. Evidence on wealth elites from Rubinstein (1981) and Clark and Cummins (2015) suggests that upward mobility was slow and relatively stable across this period. Rubinstein's work shows that almost all millionaires, both landed and non-landed, came from backgrounds of extreme wealth. However, the presence of financial wealth at the top of the distribution increased substantially over the nineteenth century. Though the number of titles granted was not without precedent, the speed of conversion between economic and social capital was new. Though rare, some families were able to convert their wealth into titles in as little as a single generation by the end of the nineteenth century (Thompson, 1963, p. 299). This shift created new concerns about the culture and identity of the aristocracy.

Yet, despite being a more identifiable class, the culture of the British aristocracy had always been closer to the bourgeoisie than elsewhere in Europe. Market-oriented farming practices and 'gentry agriculture' caught on much earlier in England, with the spread of enclosures and the Agricultural Revolution in the seventeenth century.[15] Hobsbawm (1968) described them as a 'post-revolutionary elite, the heirs of the Roundheads', arguing that 'Their parliaments and governments made war and peace for profit' (Hobsbawm, 1968, p. 18). This vision of an enterprising social elite is clearly at odds with other European aristocracies. The Abbé Le Blanc, visiting in the mid-eighteenth century, was shocked to discover that in

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[15]See Anderson (1987, p. 9).

'London masters dress like their valets, and duchesses copy after chambermaids'.[16] While this group did have its own norms and culture, these were compatible with those of other wealth elites.

In particular, bankers (private or merchant) were compatible with the aristocracy. Title-grants were partly the result of political maneuvering, but also represented a long-standing cultural affinity. They often had direct and frequent dealings with members of the aristocracy (Thompson, 1963, p. 20). The lifestyle of these bankers was highly compatible with that of the aristocracy. While not quite as leisured, senior private and merchant bankers frequently left day-to-day management to more junior partners, leaving them with ample time to engage in other activities (Cassis, 1994, pp. 115-116). Most London bankers lived in the same areas as the aristocracy, with over half having a residence in Mayfair, Belgravia or Knightsbridge (Cassis, 1994, p. 248). While the land requirement clearly became less pressing towards the end of the century, most of these families had a country house. For the earlier generation these estates were substantial. Alexander Baring (1774-1848), Robert Smith (1752-1838), and Samuel Jones Loyd (1796-1883) all had estates of over 25,000 acres (Cassis, 1994, p. 248). These banking families often socialised with the aristocracy, coming from similar educational backgrounds and having memberships at the same clubs (as we shall see in Paper 2) (Cassis, 1994). The growing influence of public schools like Eton or Rugby meant that

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[16]Cited in Hobsbawm (1968, p. 13).

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individuals from these families increasingly shared an educational background and outlook (Cassis, 1994, pp. 98-106). As we shall see in Paper 3, 'gentlemanly' enterprises were highly personal and were sustained by social networks, cultivated partly through shared leisure activities.

Over this period, there was a shift in the activities of aristocrats, who became increasingly involved in the world of finance and commerce. It became common for these aristocrats to act as 'guinea pig' directors. Lord Verulam, for instance, directed more than 20 companies, and his daughter married Edward Cassel, son of Ernest Cassel, the Jewish merchant banker and member of Edward VII's 'smart-set' (Thompson, 1963, p. 306). By 1914, nearly one-third of peers were company directors, usually involved in finance, railroads, insurance, or international trade (Mayer, 1981, p. 89). While many played a limited role, mostly there to add the prestige of their name, several, like Lord Kinnaird and Lord Harrowby, were active, professional bankers (Cassis, 1985, p. 249).

Unsurprisingly, the acquisition of landed estates by banking families diminished across the period. In the nineteenth century, even the largest acquisitions were substantially smaller, around 15,000 acres for Nathan Rothschild (1840-1915) and 10,000 for Everard Hambro (1842-1925).[17] However, it was more common in this period to have estates between 2,000 and 4,000 acres. This was the case for Hucks Gibbs (1819-1907), Egerton Hubbard (1842-1915), Gabriel Goldney (1813-

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[17]These figures all from Cassis (1994).

1900), Charles Mills (1855-1919), Peter Hoare (1869-1939), and Edward Baring (1828-1897). Towards the end of the period, this qualification was further diminished, with Edward Sassoon (1856-1912), Sydney Stern (1844-1912), and Samuel Montagu (1832-1911) all owning less than 2,000 acres. Overall, the acquisition of landed estates by bankers dropped by about half between 1886-1905 and 1906-14 (Thompson, 1963, p. 299). The entrance of this group – nine of the above bankers became first or second generation peers – likely accounts for some of the perceived changes to culture.

For many wealthy individuals, the social and political value of joining the aristocracy justified the steep financial costs. If the value of a peerage was declining, there was no evidence for this in the continued attempts to gain entry. This had always been a balancing act. As early as 1818, Alexander Baring, who spent at least £400k on landed estates, stated 'I pay very fully, but the property is very essential to me, and I am therefore a willing purchaser' (Thompson, 1963, pp. 37-38). Land wasn't about the rents returned, it was about entry into an exclusive and profitable club. The Economist captured this sentiment in 1870, stating that 'it would pay a millionaire in England to sink half his fortune in buying 10,000 acres of land to return a shilling per cent [as] he would be a greater person the eyes of more people'.[18] Even in the face of increasing political tumult, individuals went to great lengths to join the titled aristocracy. Ernest Hooley, for example,

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[18]This is a shilling per £100, so 0.05%. Cited in Beckett (1986, p. 43).

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attempted to break into the aristocracy by becoming a Conservative candidate, donating £1k in order to gain entry into the Carlton Club, and then attempting to donate another £50k in return for a baronetage, though his efforts were rebuffed.[19] The social and political advantages far outweighed the financial cost.

Title-grants, both in the late eighteenth and nineteenth centuries, responded acutely to growing political pressures. In particular, the passing of the Third Reform Act (1884) and Redistribution of Seats Act (1885) saw a substantial decline in electoral corruption and increase in competition. Despite attempts by Robert Peel and Lord Liverpool to curtail the granting of honours and make them less conditional on public services, as political competition grew fiercer both parties attempted to ally themselves with 'new wealth'. This was exemplified by Lord Salisbury's creation of 14 peerages between June 1885 and January 1886, and Gladstone's subsequent creation of 9 peerages in 1886 (Cannadine, 1990, p. 304). Elections became more expensive. The general election funds of both parties rose from around £40k in 1880, to £70k by 1895, and £100k by 1906 (Hanham, 1969, p. 282). Expenditure on party headquarters rose even more, from £10k a year in the 1860s, to £100k a year by 1912. The close elections of 1885 and 1886 meant that funds were scarce for both parties. While the direct 'sale' of honours was rare, Hanham (1969) alleges that through the Liberal party organiser, Francis Schnadhorst, two peerages were effectively sold in return for political donations,

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[19]Hanham (1969, p. 280).

to Sydney Stern and James Williamson. Though this direct *quid pro quo* was not the norm, clearly both parties had an interest in winning the allegiances of monied men. The use of title-grants for political purposes was not unprecedented. In 1711-12, the Earl of Oxford had convinced Queen Anne to strengthen his position in the Lords with the creation of new peers (Beckett, 1986, p. 413). However, political pressures continued to reach new heights.

In this light, the protestations about change and collapse take on a different hue. They represented the rhetoric of an intra-elite struggle as much as anything real. While the Tories decried the Glorious Revolution (1688) as an attempt to abrogate the supreme right of kings (Dickinson, 1979), there is a broad consensus that this strengthened, rather than weakened the aristocracy (Cain and Hopkins, 2016; North and Weingast, 1989). While electoral reform was vehemently opposed by Tory aristocrats like the Duke of Wellington in the wake of the French Revolution, the movement was led by Whig aristocrats like Earl Lauderdale and Earl Grey, the latter of whom passed the Third Reform Act in 1832. Grey unsurprisingly argued that 'the more the bill is considered, the less it will be found to prejudice the real interests of the aristocracy' (Butler, 1914, p. 255). Lamentations for the aristocracy came primarily from those who opposed change, but occasionally from those who feared that they were not adapting quickly enough. Balfour, a stalwart Conservative, warned the Lords against rejecting the *People's Budget*: 'if you win, the victory can at most be a temporary one. If you lose, you have altered the

position, the power, the prestige, the usefulness of the House' (Cannadine, 1990, p. 50). Ultimately, this rhetoric was part of a broader political process and cannot be understood in isolation.

This then is partly a story about institutions, about how they evolve and how elites adapt to them. As politics become plural and competitive, this forces the gradual opening of organisations and institutions (Acemoglu and Robinson, 2005). However, while this accounts for changes in the structure of society, it does not account for the position of old elites within that structure. The opening of those organisations is premised on the benefits this brings to those elites (North et al., 2009). In a broader sense, we can think of this as a story of fragility (Alfani, 2024). Elites persist, but their position is fragile, they must adapt to the times, continuing to justify and legitimise themselves. In 1914, this sense of civic duty was essential, *The Saturday Review*, commenting on the recent waves of peerages made this criteria explicit:

> *it is however in the power of the new peers to prove our criticism harsh.*
> *They may so amend their manners as to become indistinguishable from*
> *those amongst whom they have been promoted to sit, and thus show*
> *that there is something in the old saying "Noblesse oblige".*

–Saturday Review, *The Adulteration of the Peerage*, (1905)

At the outbreak of the First World War, the aristocracy rushed to fulfill this role. By the end of the war, 20% of peers or the sons of peers who served were

dead. This was almost twice as high as the armed forces as a whole, where the mortality rate was 12.5% (Cannadine, 1990, p. 83). Given the substantially higher volunteer rates, the mortality rate for the aristocracy was far beyond that of any other group.

Since then, the aristocracy has found new modes of legitimisation. Friedman and Reeves (2020), examining the public representation of elites through *Who's Who*, show that in recent decades they have shifted from emphasising their distinction to emphasising their ordinariness: spending time with partners, friends or pets. Shifts in their visibility, for instance as Lord Lieutenants, have done little to alter the political makeup of the Shire Counties (Thompson, 1963). While less visible on the national stage, the aristocracy has taken on a more global role, engaging in philanthropy, patronage of the arts, and charitable endeavors (Wasson, 2006).

Economically, the trends impairing the aristocracy have reversed. They were provided compensation during the nationalisation of the coal industry (1947) and subsidies for historic houses. More recently, they have received substantial agricultural and heritage grants from the European Union (Wasson, 2006, p. 195). Great landowners still own between one-fifth and one-third of land in England and Wales, and one-half in Scotland (Wasson, 2006, p. 194). Land prices have recovered substantially, from £60 an acre in 1945, to £2000 in the 1980s, and as

much as £25,000 today.[20] Despite a decline between 1870-1900, between 1800-2013 farmland appreciated faster in real terms than either gold or the FTSE All-Share index (Jadevicius et al., 2018), significantly outpacing growth in either between 1945-2013. The Duke of Westminster, one of these landowners, finds himself the 11th richest person in the UK today, the 5th if we exclude anyone born overseas.[21] The aristocracy's endurance is a testament to their adaptability. They found new modes of legitimisation and new allies, while maintaining their position at the top of the social hierarchy.

The aristocracy certainly faced pressures, both financial and demographic, but its adaptation was part of a long-standing process that had been ongoing since at least the Civil War. While it did change, the continued demand for membership suggests that it successfully adapted, rather than collapsed. Though aristocratic Britain might be dead, the aristocracy was not.

Elite Persistence and Social Capital

Let us now turn our attention to the economics literature and the varied interpretations of elite persistence found there. This literature suggests that the decline of elites across multiple generations is remarkably slow. Social capital, though

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[20]In real (2013£) terms this is £1,600 in 1945, £4,400 in the 1980s, and £25,000 in 2013. Taken from Wasson (2006, p. 194) and Jadevicius et al. (2018, p. 88).

[21]The Sunday Times (2023).

integral to elite persistence, has received limited attention.

The main way we might think about elite persistence from the perspective of the economics literature is in terms of social mobility. The traditional way of thinking about social mobility is as a first-order autoregressive process at the individual level, between two generations. This means that a child's position in the distribution, typically of income, depends solely on the parent's position. We can express this as $y_{t+1} = \beta y_t + \epsilon_t$. The outcome y can be any measure of individual status. In this traditional conception of social mobility, surveyed in Solon (1999) and Black and Devereux (2011), we have a geometric model of multi-generational mobility. If the correlation between parent and child is 0.5, then we expect the correlation between parent and grand-child to be $0.5^2 = 0.25$. In this world, almost all income advantages disappear within three generations (Becker and Tomes, 1986). The most recent estimates for English social mobility for this period, which use this first-order assumption, estimate a rate of between 0.262 and 0.366 (Long, 2013), implying regression to the mean within 2-3 generations. However, there is no reason to think of social mobility as a first-order process at the individual-level for a single measure of status (Solon, 2018). Any individual measure of social status may not capture an individual's status across all dimensions, and the status of parents may not capture the entire family endowment. This can upwardly bias mobility measures, yielding inaccurate estimates of long-term social movement (Lindahl et al., 2015; Stuhler, 2018).

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This resilience to change is apparent in the emerging literature on the robustness of wealth elites to shocks. Even in extreme cases, elites show significant bounce-back. Alesina et al. (2020) show that despite the efficacy of the Chinese Communist Revolution and Cultural Revolution in reducing inequalities in wealth and education in the short-term, pre-revolutionary elites quickly re-emerged as an economic and social elite. The authors suggest that this probably arose from human capital transmission within families and social capital embodied in kinship networks. Similarly, Ager et al. (2021) examine the fortunes of southern elites, comparing those who held their wealth in slaves to those who held wealth in other forms. They found that emancipation had a limited effect. The sons of these slaveholders had mostly recovered from the wealth shock by 1900, and the grandsons had completely recovered by 1940. They also suggest that inherited ability and human capital do not explain the recovery of slaveholders' sons, but that social networks may play an important role in recovery. Slaveholders with connections to other elite families recovered the fastest.

Recently the literature has focused on a multi-generational perspective. This has been made possible by two advances. First, increases in the availability of multi-generational data, allowing for three or occasionally four generation linked estimates (Long and Ferrie, 2018). Second, the development of surname methods for linking generations (Clark, 2014). This multigenerational perspective suggests much slower rates of mobility. This is true both in the surname literature

(Clark, 2014; Adermon et al., 2021; Barone and Mocetti, 2021; Braun and Stuhler, 2018; Adermon et al., 2018) and in multi-generational individual measures (Lindahl et al., 2015). In England, during this period, mobility was significantly lower, both in surname measures (Clark and Cummins, 2014, 2015), and using individual instrumental-variable measures. These methods both help account for measurement error in a single measure of a single generation. This literature suggests that variation in one measure of status, or one form of capital, between one generation and the next overstates the overall movement of families within the status distribution.

Clark (2014) argues that the high transmission of social status and its relative constancy over time suggest an underlying law of mobility. In particular, he suggests that measures of individual status are noisy measures of 'latent status', the underlying factor determining the long-run trajectory of the family. In this world, income and wealth are determined by this underlying status, but there are tradeoffs between different forms of status. This explains why inequalities are more persistent than the extrapolation of the parent-child correlations suggests (Stuhler, 2018). There are a few ways to get closer to the underlying status: by averaging at the surname level, as Clark does; by instrumenting on grand-parents outcomes (Lindahl et al., 2015); and by averaging across multiple measures (Eeckhout, 2023).[22] The logic is that for each outcome measure, for example y_t, measur-

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[22]Though Santavirta and Stuhler (2024) argue that the 2SLS and surname estimates are essen-

ing the earnings of a family in generation t, we are measuring the underlying family status, plus some random component, so $y_t = x_t + u_t$ where x_t is the underlying status, and u_t is the random component. This is because there is a component of luck to the individual outcome measure, and because individuals make different trade-offs between forms of status or types of capital. Clark (2014) argues that we can reduce this random component, by measuring outcomes at the family or group level; because while $y_i = x_i + u_i$, if u_i varies randomly around x_i, then $\bar{y} = \bar{x}$. He uses rare surnames as a proxy for these extended family groups. This allows us to estimate the true rate of multi-generational persistence by capturing the underlying 'latent status', transmitted via a first order process. Identifying the contribution of different forms of status to this latent status sheds light on the mechanisms behind persistence.

This theory generates a number of predictions. If observable features of status are driven by an underlying status that is more highly correlated, we would expect the decline in correlations to be slower than a geometric rate. This prediction is confirmed by multi-generational empirical work. However, we would also expect instrumental measures, which estimate latent status by using the outcomes of grandparents, to produce the same results as surname measures. In reality these results are somewhere between surname measures and traditional measures (Vosters, 2018). If there is an underlying law of mobility, we would expect these

tially identical if the parent and child samples fully overlap.

rates to be time-invariant. While the work of Clark and his co-authors suggests that it is, this is not a consensus view (Braun and Stuhler, 2018). Normatively, individual fluctuations might be considered intrinsically interesting or useful (Torche and Corvalan, 2018), though distinct from measuring the trajectory of a social group.

One of the central assumptions of Clark (2014) is that individuals are grouped by identifiers that do not correlate with the error term. Torche and Corvalan (2018) argue that while the covariance between u_i and x_i should be 0, the covariance between the measurement error of x and y is not necessarily 0. That is, there can be correlation in the error term between generations. For instance, this might occur if a family systematically invests more in social status than in economic status, or if a shock causes families which are biased towards economic status to switch to investing in other forms of status. This is important, because it may shed light on why some families persist more than others. For instance, if we averaged aristocratic and non-aristocratic families at the same part of the wealth distribution, it would appear that they have the same latent status. In fact, the aristocrats have a higher latent status, because measuring their economic capital systematically underestimates this underlying factor. They will therefore be more persistent, despite appearing to have the same latent status. If averaging a single measure of status at the surname level captured all aspects of 'latent status' as a first-order process, then there should be no difference in the trajectories of different

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groups that start at the same point. As I show, this is not the case. It is better, then, to average at the family level across multiple dimensions, to better account for family preferences for different forms of capital.

Nonetheless, the observation that multi-generational mobility appears slow, relatively constant over time, and robust to shocks requires explanation. Clark (2023) argues that the primary mechanism is genetic. This, he claims, is evidenced by correlations in outcomes between distant relatives, which have not changed over the past 400 years and are constant across social classes. While he does not claim that genetic transmission causes the observed correlations, he argues that transmission follows the expected pattern if this were a cause. Collado et al. (2023) attempt a similar exercise, using Swedish records, which capture even broader family structures. Conversely, they argue that genetics explains little of the variation in educational attainment. They argue that the additive genetics models explains correlations well when looking at vertical movements in the family tree, but not if you look further afield horizontally. Besides genetics, social mechanisms offer a promising avenue for explaining these phenomena. The processes that govern them are relatively time-invariant, and are minimally affected by economic shocks.

Bourdieu (1986) provides the seminal definition of social capital. He describes capital as 'accumulated' labour with the 'capacity to produce profits and reproduce itself', and social capital as 'obligations' convertible into economic capital. He cites a nodal attribute, title-holding, as an example of accumulated social cap-

ital. This is one of the key advantages of studying the aristocracy. It provides a direct measure of the social capital of an individual. I use a broader definition of social capital, similar to that found in the networks literature. This encompasses not only direct obligations, but resources accessible through one's connections and consequently through position in the broader social hierarchy. This framing has both a relational component, the resources accessible through connections, and a nodal component, with an individual's attributes signalling their network position. To understand elite persistence, we need to consider all forms of capital: economic, social, human (skills cultivated through lifetime investment), and genetic (an endowment acquired through parental mating).

The production, exchange, and convertibility of these different forms of capital are all essential to elite status. Weber's (1991) concept of 'status groups' highlights another key feature of elites, the necessity of maintaining social distinctions. More broadly, we can think of this as a tension between producing new social capital and maintaining a monopoly over social capital. Bringing in outsiders creates paths to previously inaccessible resources, producing social capital for the elite group. At the same time, it provides those outsiders with access to previously exclusive resources, potentially reducing rents. This process enhances the elite group's connections while diluting its exclusivity, akin to moving from a monopoly to a more competitive market for social capital. Thus, the admittance of newcomers is both part of the production and exchange process. This explains the focus on selectivity

and conditioning of newcomers, which can help maximise access to their resources, while minimising access to elite resources from outsiders. The optimal strategy for maintaining social capital depends on the level of competition. Pareto (1901) argues that elites persist by incorporating successful outsiders and constantly circulating. While this represents one possible equilibrium, there might be another where a unified elite faction monopolises access to both key economic and social organisations (North et al., 2009). In environments where there is economic, social or political competition, elites have to adapt to maintain their position. This involves a delicate balance of exclusion and strategic incorporation of outsiders.

There is little literature on social capital and mobility, but existing evidence indicates an important role. Homophily, or the increased likelihood to associate with similar individuals, even conditional on exposure, is a force witnessed in almost every social network (Jackson, 2021). In the elite resistance to shocks literature (Alesina et al., 2020; Ager et al., 2021) this is the most frequently cited reason for their robustness. Divisions within social networks lead to unequal access to jobs, opportunities and resources, unequal information, and differences in norms and culture.[23] Chetty et al.'s (2022) work on 21bn Facebook friendships suggests that two-thirds of differences in upward mobility across communities are accounted for by the extent of homophily in those communities. Social ties to individuals from different classes are the surest path upwards. Clark (2014) argues that institutions

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[23]See Jackson (2021) for a literature review.

are relatively powerless in promoting equal opportunity. Jackson (2021) instead suggests that they have been ineffective in addressing the social roots of the problem. Intervening in social networks is difficult because of these homophilic forces, and the lack of natural randomisation makes studying the effects of intervention difficult. However, in the few instances where this has occurred, substantial effects have been found. Laschever (2013), looking at the random assignment of WWI draftees to different companies, linked to the 1930 census, shows a strong marginal effect of peers gaining post-war employment. Companies comprised 100-250 men, and the marginal effect of an additional peer gaining employment was an increase in the likelihood of employment by 0.8%. This effect is dominated by peer outcomes, rather than peer characteristics. In her work on clubs Kendall (2008) highlights the key element of this. Social relations, especially dense ones, help create productive collaborative relations between individuals. The importance of social characteristics is also evident through studies on differences in mobility for different social groups, whether that be African Americans (Collins and Wanamaker, 2022), the Irish in England (Cummins and Ó Gráda, 2024), or the aristocracy (Paper 1 in this thesis). Measuring social mobility across social dimensions sheds light on this relatively unexplored mechanism.

Despite its role in elite persistence, social capital has received limited attention in the social mobility literature. Recent work on the robustness of elites to shocks has highlighted its importance. This thesis provides preliminary insights

into various channels through which social capital influences the composition and persistence of elites.

Methods

Besides these historical and theoretical motivations, the thesis is inspired by two major methodological strands of the economic history literature: (i) the use of 'Big Data', and (ii) of network analysis. Both approaches promise to substantially advance our understanding of elite persistence, by leveraging individual-level data to quantify complex micro-level processes.

'Big Data' approaches offer several major advantages, including the precise estimation of effects for sub-groups within the population and the linking of data across time and sources (Gutmann et al., 2018). Recent advances in machine learning have transformed data collection (Petitpierre et al., 2023; Tarride et al., 2023; Dahl and Wittrock, 2023; Correia and Luck, 2023) and linking (Abramitzky et al., 2021, 2020). This has made information about large numbers of individuals more accessible than ever before (McGillivray et al., 2020). These features are crucial for the robust comparison of different groups within a unified framework. This allows, for instance, the direct comparison of social mobility rates between the titled aristocracy and any other group in the population.

A central contribution of this thesis lies in the digitisation of the 1858-1907

probate records in full for the first time. This involved scraping images of 259k records, implementing custom image-segmentation algorithms, and using OCR and natural language processing to produce a database of 2.2m individuals. These are then manually linked to genealogical records from *The Peerage*, which in turn is linked to hand collected records on bank partners and directors (6k), and on club memberships (43k). This complex matrix of data enables individual-level analysis of the groups concerned, the ability to redefine and rethink these groups along various dimensions, and to measure relationships between individuals. The data form a 'backbone' upon which further sources can be added, exemplifying the 'cumulative' form of 'Big Data' social science research highlighted by Kesztenbaum (2021). The digitisation and linking of a large number of different sources concerning the individual lives of British elites represents an important foundation, which can be built upon in the future.

Data on large numbers of individuals enables quantitative research on the role of social networks in persistence. Though economic historians typically premise empirical work on the assumption that individual units are independent of each other, in reality individual interactions may be very important. Economic theory frequently stresses the importance of strategic interactions between units, as well as spillover effects.[24] In recent years, quantitative network analysis has become more prominent in economic history, as suitable data have become more available

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[24]For a literature review see Esteves and Geisler Mesevage (2019).

and assumptions about unit independence or collider bias have come under more scrutiny (Esteves and Geisler Mesevage, 2019; Schneider, 2020; Kelly, 2019). Network analysis has been used in the economic history literature on trade (Erikson and Samila, 2015, 2018; Shea et al., 2011; Costa et al., 2011), banking (Accominotti et al., 2021, 2023; Calomiris et al., 2015; Hilt, 2018; Mitchener and Richardson, 2019), innovation (Andersson et al., 2017; Cook, 2011), apprenticeships (Leunig et al., 2011) and political economy (Aidt et al., 2022).

This thesis focuses on a theory that is essentially social in nature, that of 'gentlemanly capitalism' (Cain and Hopkins, 2016), but which has not previously been the subject of quantitative network analysis. The literature on network analysis and historical elites is slim, but two pioneering works highlight its importance in understanding elite alliance formation and persistence. Padgett and Ansell (1993) and Hillmann (2008) look at the rise of the Medici in fifteenth century Florence and Parliamentary alliance formation before the English Civil War, respectively. Both emphasise two key characteristics of successful alliance formation: (i) the role of brokerage, or 'bridging' structural holes in the network, and (ii) the importance of embeddedness in multiple networks. This thesis builds on this literature, examining how relations span class distinctions, how different forms of capital interact with each other, and how different types of networks relate.

Contribution

The thesis consists of three papers, examining: (i) the economic and social persistence of the titled aristocracy, (ii) the relations between bankers and aristocrats in elite members' clubs, and (iii) connections and collaboration between merchant bankers.

Paper 1: The Persistence of the Aristocracy

The first paper examines the persistence of English and Welsh title-holders between 1858-1907. The literature on the decline of the British aristocracy has lacked well defined tools and measures. This paper aims to address that deficit. Paper 1 makes several methodological contributions, constructing new individual level data on the population of wealth-holders (2.2m), and linking this to individual data on the population of title-holders. Using this data it constructs novel measures of: title-holder wealth, social mobility, and hereditary background. In particular, the chapter distinguishes between: (i) measures of representation, such as those used by Piketty et al. (2006), and average measures, such as those used by Bengtsson et al. (2019) or Bond and Morton (2022), (ii) measures that capture only those families which began the period in the aristocracy (the *family* measure), and which capture the whole group including new recruits (the *institutional* measure), (iii) measures of social mobility, which capture the effect of class, and

(iv) measures of hereditary background, which utilise detailed family trees. These measures allow me to contribute to two important debates: a historical one, concerning the decline of the British aristocracy (Cannadine, 1990; Beckett, 1986; Thompson, 1963), and an economics one, concerning the role of social characteristics in multi-generational social mobility (Collins and Wanamaker, 2022; Cummins and Ó Gráda, 2024). The results show that title-holders were exceptionally persistent in terms of wealth, and that the appearance of decline was mainly the result of a reduced presence among the wealth elite, driven by demographic trends. Titled families experienced less downward mobility than comparable wealth elites, and appear to regress towards a mean substantially higher than the population average. While in financial terms, the group was highly persistent, the composition of the group changed substantially. This reflected both the longstanding openness to outsiders through marriage, and an increase in title-grants during the peerage. Persistence in financial terms was, in part, due to this openness and adaptability, with new entrants substantially wealthier than existing title-holders. Taken together, these tools allow for consistent and robust comparison of these different factors. They demonstrate the surprising persistence of this elite and help illuminate the role of social status in elite persistence.

Paper 2: Friends in High Places?

The second paper looks at the ascent of bankers into London High Society. Existing work has suggested that during this period (1861-1911) the social fabric of elite society was transformed (Cain and Hopkins, 2016). In particular, this literature emphasises the rise of bankers and the formation of a 'gentlemanly capitalist' alliance between them and the aristocracy. Clubs comprised a core tenet of the lives of their members, informing us more about their friendships than any other extant source. This paper reconstructs social networks, creating a new database of elite club memberships gathered from 7 club archives, comprising 43k records. This is linked to records to data I collect on bank partners and directors from *The London Banks*, on peers, and MPs. It uses several measures of position within the broader club network to more closely identify the role of bankers within this social environment. In particular, it applies several concepts from the quantitative network analysis literature, measuring three key aspects of social status: participation in clubs, influence (centrality) within the clubs network, and the integration of different social groups. The results suggest that while there was a distinct, 'banking aristocracy' with close ties to the peerage, the majority of bankers were not part of this group. The links between this group and the peerage predated the period, and did not expand during it. The social elite was relatively persistent. Even if some members of the banking elite were granted peerages in this period, these were primarily pre-existing members of this elite. The extension of titles mostly

affected those already on the periphery of aristocratic society.

Paper 3: Business Among Friends

The final paper examines the social and economic relationships between merchant banks in London, around 1900. In particular, it looks at how social or professional ties between partners at these banks related to their acceptance activities. The acceptance of Bills of Exchange formed the core activity of these banks, and was an essential source of short-term credit to global markets. This paper contributes to a broader literature about the role of social relations in the development of commercial and financial markets. While there were many aspects of 'relationship banking' present in the acceptance market, information appears to have also been acquired through sharing mechanisms. The paper also relates to a debate about the extent of competition in the acceptance market (Cassis, 1994; Chapman, 1986). Using quantitative network analysis, I show that while unique relations accounted for some portion of the acceptance market, around half of clients were shared between multiple merchant banks. Introducing a new biographical dataset concerning 105 merchant bankers, I show that client sharing between merchant banks was correlated with social and professional ties between their partners. This indicates that information was not publicly accessible to all, nor were banks always competing over clients. Instead, they seem to have formed collaborative cliques.

Summary

These three chapters examine the role of social capital in elite persistence from distinct perspectives. They look at the fall of existing elites—aristocrats—and the rise of new elites—bankers. Together, they reveal a remarkable degree of continuity and a long history of gradual integration. Employing a data-driven approach, the thesis creates a shared universe of information on these individuals by linking together various sources. This method allows the data to be reconstituted in different ways. It makes it possible to create new tools and measures, and to build up from individual stories to the bigger picture. This allows for a more nuanced analysis of historical claims, while allowing for robust empirical comparisons. Though the focus is on persistence versus change, this thesis also serves as a cautionary tale about the simplifying assumptions made when discussing this phenomenon. It is an attempt to untangle the complexities of persistence, extending beyond economic measures to think about identity, culture, and community.

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Paper 1

The Persistence of the Aristocracy: Financial and

Social Measures, England and Wales, 1858-1907

1.1 Introduction

The fate of the aristocracy can help shed light on the mechanics behind political change, economic development, inequality and social mobility. It has preoccupied economists from Marx (1867) down to Piketty (2020). In preindustrial Britain the aristocracy dominated society. It exercised hegemony over government, land and wealth. Yet, the nineteenth century presented a profound challenge. From the 1880s Britain witnessed the rise of global trade, industry and mass democracy. In the historical literature this is portrayed as the era of aristocratic decline (Cannadine, 1990; Rubinstein, 1981; Thompson, 1963; Bush, 1984; Beckett, 1984).[1] The phenomenon was not unique to Britain. In France, the advent of the Third Republic (1870-1945) heralded a dramatic decline in aristocratic fortunes (Piketty et al., 2006). This story is one of decline and fall.[2]

Despite this, there is ample evidence of persistence. Aristocrats still feature heavily among the economic and social elite. In the first Sunday Times Rich List, published in 1989, nine of the twenty wealthiest individuals in the UK were hereditary title-holders (The Sunday Times, 1989). Students educated at the breeding grounds of the aristocracy, the Clarendon schools, are 94 times as likely to make it into elite biographical dictionaries (Reeves et al., 2017). One-thousand years

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[1] While this view is not absolute, and elements of both persistence and decline are found in all these works, the emphasis is clearly on decline, though this is more muted in the case of Thompson (1963) and Bush (1984).

[2] This is the title of Cannadine's (1990) book on the aristocracy, itself a reference to Gibbon's work on the fall of the Roman Empire, and Evelyn Waugh's novel of the same name.

after the Norman Conquest, those with the surnames of Norman landowners are 50% more likely to attend Oxford or Cambridge University (Clark and Cummins, 2014). The aristocracy even retains a surprising amount of direct political power. Almost all recent Prime Ministers have had unelected peers serve as secretaries of state. Rishi Sunak, Boris Johnson, Gordon Brown, Tony Blair and Margaret Thatcher all engaged in this practice.[3] In Johnson's government there were 19 unelected ministers (Bright, 2021). Their continued presence at the top of society does not suggest a ruinous fate.

So what explains these contrasting narratives? The argument for decline is a longstanding one, meticulously assembled from rich, insightful, but fragmented evidence. Without a solid empirical basis, it is difficult to measure how the pieces fit together. This article quantifies aristocratic persistence, challenging the conventional narrative of decline. It provides a broad perspective, accounting for changes in absolute and relative terms, for aristocratic families and the institution as a whole, in aggregate and at the family level, and in both financial and social dimensions.

I construct three main sets of metrics. These concern wealth persistence, social mobility and social composition. First, I measure the wealth of title-holders, both from longstanding families (the *family* measure) and including new recruits (the *institutional* measure). Then I measure social mobility at the 'extended family'

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[3]See Coleman and Scott (2024).

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level. I use the rare surname measure pioneered by Clark and Cummins (2015) to examine differences in mobility patterns between those with titled-surnames, those with wealthy commoner surnames, and those from the rest of the population. This method takes inspiration from Collins and Wanamaker's (2022) work on inter-racial differences in occupational mobility. Finally, I measure changes to the composition of the aristocracy through their hereditary background, their marriage patterns, and the granting of titles.

These measures use a new dataset, containing detailed information on the population of title-holders, as well as the rest of the population. I collect novel individual level data on the population of wealth-holders (2.2m) by transcribing the Principal Probate Registry (PPR). I then link this with individual data on the population of deaths (26.1m) from Cummins (2021), and genealogical data on the population of title-holders (3.9k) from Lundy's *The Peerage* database.

I find that the title-holders were highly persistent in terms of wealth. Decline was only in demographic terms, there were fewer title-holders as a share of the population. As an institution, the titled aristocracy were propped up by the entrance of new wealth elites. Compared to other wealth elites, those with titled surnames were subject to less downward social mobility. This lower mobility regime operated for titled surnames independently of their wealth. Differences in mobility are not explained by differences in the transmission of financial capital. Rather, the explanation lies in other forms of capital embodied by their status: social, cultural

or human. There is evidence that the social channel was important. Openness to outsiders was a longstanding feature of the titled aristocracy, but accelerated during this period.

These findings have several important implications. Thematically, they contribute to an emerging literature on heterogeneity in social mobility across social dimensions, which is typically obscured by aggregate measures (Collins and Wanamaker, 2022; Cummins and Ó Gráda, 2024). The findings also support recent work on the robustness of elites to shocks (Alesina et al., 2020; Ager et al., 2021). Methodologically, the paper engages with the economic history literature on aristocratic decline (Piketty et al., 2006; Bengtsson et al., 2019; Bond and Morton, 2022). This literature has been marked by a variety of measures which capture different dimensions of persistence. Measuring the representation of aristocrats among wealth elites (Piketty et al., 2006; Rubinstein, 1981) incorporates demographic forces; and measuring only existing families (Piketty et al., 2006) or including new recruits (Bengtsson et al., 2019) affects the social dimensions of the story. The historical literature (Cannadine, 1990; Beckett, 1986; Thompson, 1963; Bush, 1984) has long emphasised these economic, demographic and social dimensions. I provide a robust empirical framework to evaluate persistence across these dimensions.

The structure of this paper is as follows: The first section provides historical context and definitions. The second section looks at existing literature. The

third details the sources used in this study, while the fourth explains the data construction process. The fifth section presents estimates of aristocratic wealth, social mobility, and social composition. The sixth discusses the implications of these results, and the seventh concludes.

1.2   Historical Context

The aristocracy of the late nineteenth century was a longstanding elite. Its wealth had grown significantly in the aftermath of the Industrial Revolution (Lindert, 1986). This wealth was rooted in land ownership, which was increasingly concentrated towards the end of the nineteenth century. Until the 1870s, these estates remained highly profitable (Cannadine, 1990).

When examining this social elite, it is important to distinguish between several terms that convey specific meanings in the British context. These are the *aristocracy* and the *nobility*. From a broader sociological perspective the term aristocracy refers to a particular type of social elite, with some hereditary characteristics, and traditionally some ties to land, but not necessarily the legal transmission of titles. In the British case, this would consist of peers, baronets, knights and the gentry. The term nobility is more varied by context. Generally defined, this refers to the holders of titles of nobility, usually transmitted through some hereditary mechanisms. Yet in Britain, there is a distinction between the socially recognised

nobility, all those who held titles (peers, baronets, and knights), and a legal definition which includes only those with the right to sit in the House of Lords (peers). Even the social definition is not exactly synonymous with the general use of the term nobility, as it also includes knights, who only occasionally inherited their titles.

This paper looks at a subset of the aristocracy, namely hereditary title-holders, which is roughly equivalent to the 'nobility' in an international context. This is the group of individuals who hold titles, and transmit them through some automatic hereditary process to their offspring. The group comprises of the peers and baronets, and was a *relatively* fixed group with clear legal boundaries and definition. The hereditary background of this group is well documented, in sources such as Cokayne's *The Complete Peerage*, Debrett's *Peerage and Baronetage*, and Burke's *Peerage*, *Baronetage* and *Landed Gentry*. The peerage had feudal origins, and was broken down into five titles: dukes, marquesses, earls, viscount and barons. The baronetage was a more recent invention. An order of hereditary knights, created by James I in 1611. Both groups were of an equivalent size, with around 600-700 concurrent members towards the end of the nineteenth century. I focus on this, as the group of individuals whose social status was inherited directly from their forebears. References to title-holders, or the titled aristocracy refer to this group.

British title-holders were an unusually prestigious and exclusive nobility, though

they lacked the fiscal privileges enjoyed by some of their continental counterparts. They were far smaller than other nobilities, comprising only 0.01% of the population. In places where the nobility did not enjoy specific legal privileges this figure was around 5-8% (e.g. Spain, Portugal and Hungary), but even where they did (e.g. France, Russia, Austria-Hungary or Sweden) it was typically around 1% (Piketty, 2020). In Britain, peers had substantial political privileges, serving as members of the House of Lords. This was the dominant branch of the British legislature for most of the period. Even the House of Commons was dominated by these families, with around 75% of MPs coming from patrician families as late as the 1860s (Cannadine, 1990, p. 14). The civil service, army, church and judiciary were similarly dominated by the younger sons of title-holders.

Inheritance of titles and landed estates was established on the basis of primogeniture. However, the agency of heirs over these estates was limited. The estate was typically passed down on the basis of 'preferential partibility' (Stone and Fawtier-Stone, 1984). Parts of the estate, usually the newer additions, could be parcelled off and sold, traded, gifted, etc. However, the bulk of the estate, including the 'seat', had to be kept together. This was enforced through the practice of entail, which in effect settled the succession of the estate in perpetuity. In Britain, the main mechanism for entail was the strict settlement. An agreement where the heir became a 'tenant for life' on property held in a trust.[4] While

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[4]Though a perpetual entail was not technically legal, the strict settlement effectively enabled

this system was neither universal, nor absolute, it formed the basis of inheritance practices until the 1880s. After the Settled Land Act of 1882, this system began to break down. The tenant was empowered to sell, lease or mortgage the estate without permission from the trustees. However, these powers had limits. They excluded the principal demesne and sales to the tenant, and proceeds from sales were returned to the trust.

1.3 Literature

1.3.1 Historical

Between 1880 and 1910 there was an unprecedented transformation of the economic, social and political landscape. The predominant view is that this was the era of aristocratic decline (Cannadine, 1990; Thompson, 1963; Bush, 1984; Beckett, 1986; Stone and Fawtier-Stone, 1984). This literature focuses on four major factors: the rise of new elites, the challenges of a globalised economy, the advent of mass democracy, and the introduction of new taxes.

The literature on new elites (Cain and Hopkins, 2016; Rubinstein, 1981; Cassis, 1994) focuses predominantly on changes to the wealth and influence of those from a financial or commercial background. Certainly, there was an increase in

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this by giving the son a life interest, while leaving the estate in trust for future descendants. These were usually agreed at the age of marriage, though various contingencies were in place.

the representation of these groups at the top of the wealth distribution. The percent of millionaires from these backgrounds rose from 0-40% between 1830-1905 (Rubinstein, 1981, p. 79-83). It has been argued that a growing social affinity between these bankers and aristocrats (Cassis, 1994) altered the balance of political interests (Cain and Hopkins, 2016).

Aristocrats were confronted with new economic threats. As international commerce increased, the value of land and grain declined significantly. Land prices and agricultural income fell as much as 50% between 1875-1900 (Jadevicius et al., 2018; Beckett, 1984). This presented a substantial challenge to their traditional sources of revenue.

In the political sphere, the power of the aristocracy was waning. The Third Reform Act (1884) enfranchised the majority of adult men for the first time. Nonetheless, it was only at the end of the period that the power of the House of Lords was irreversibly altered, with the election of December 1910 effectively seeing their veto power broken (Cannadine, 1990). Even then, the aristocracy still had significant political influence. In the last Conservative government of the period (1902-1905), 46% of the cabinet were peers, and in Liberal government that succeeded it, this was 31% (Wikidata, 2024).

While tax reforms posed a threat to the aristocracy in the longer term, until the end of this period rises were relatively limited. Minimally progressive probate rates had been introduced as early as 1779 (Buxton and Barnes, 1890), but the ratio

of rates between the top and bottom band was only 3:1. The first major reform was the introduction of Estate Duty in 1894, which replaced existing rates with a marginally progressive unified tax, ranging from 1-8% of the estate. Previous rates had been around 0.5-3% (Buxton and Barnes, 1890). However, significant progressive reform was only introduced at the end of the period. In 1907 the top band increased to 15%, and in 1910 the threshold was reduced from £3m to £1m. Also introduced in 1910 were both a Super-Tax and Land-Tax (O'Hara, 2012). These presented a clear and immediate threat to the aristocracy, and were largely responsible for the crisis that ended the Lords' veto.

While evidence for decline is rich and detailed, it is assembled from piecemeal evidence: individual accounts, newspaper articles, sales records and biographies. Empirical studies on the decline of the aristocracy are more scarce.

1.3.2 Quantitative

Nonetheless, there have been some attempts to quantify the decline of European aristocracies. Piketty et al. (2006) for France, Bengtsson et al. (2019) for Sweden, and Bond and Morton (2022) for Britain. This section discusses the different measures used and their impact on the narrative.

In France, Piketty et al. (2006) finds a dramatic decline between 1780-1800 and 1850-1900. Piketty et al. (2006) use inheritance tax data, measuring the proportion of those with aristocratic surnames among top Parisian estates. This

measure has three important characteristics: (i) it measures a constant set of families, (ii) it measures representation among the wealth elite rather than wealth, and (iii) it measures a broader group than just aristocrats. Measuring a constant set of families excludes the effect of recruitment, which is often key to a group's long-run survival. In the French case, recruitment after 1830 (the cutoff date used) was more limited, relative to the size of the aristocracy, with around 500 individuals granted new titles after this point (Higgs, 1987). However, in England, recruitment was crucial. Measures based on the share of top wealth percentiles incorporate demographic trends. This is particulary important when inheritance is based on primogeniture, as in England. If all aristocrats remain in the top 1%, but the population doubles their representation would be halved. Piketty's measure reflects social visibility as much as economic standing.

Bengtsson et al.'s (2019) work on the Swedish aristocracy between 1750-1900 shows that they remained very wealthy, despite experiencing periods of decline. Using sampled probate data to measure average wealth and wealth shares, they find a steep drop in aristocratic wealth relative to the rest of the population from 1750-1800, followed by a stabilisation around 20x the mean. The study distinguishes between the old (pre-1625) and new (post-1625) aristocracies. As expected, the new aristocrats, which expands its coverage as new recruits enter, becomes relatively wealthier over time. These results show that different cohorts may experience different trajectories. When looking at persistence over a given period, it is

crucial to distinguish the starting families from new recruits.

Finally Bond and Morton's (2022) work examines British peers. They combine the universe of peer probates with aggregate GDP (Bond and Morton, 2022) and wealth share estimates (Bond and Morton, 2024). Their results show that mean peer wealth did not decline, either in absolute terms or relative to GDP until World War II. Bond and Morton (2024) regress peer wealth on top wealth shares, showing that peer wealth followed general trends in wealth inequality. They argue that the decline in peer wealth between WWII and the 1980s was simply a correlate of declining top wealth shares. These measures inform our understanding of aggregate shifts in inequality, and the position of the aristocracy within those shifts. However, they offer limited information about the dynamics of elite persistence or the trajectory of aristocratic families.

This paper builds upon this literature by constructing new measures of aggregate persistence in wealth, the social mobility of title-holders relative to other wealth elites, and the genealogical background of title-holders. These measures are derived from individual-level data on the population of wealth-holders, combined with genealogical data on title-holders. They capture the impact of new recruits, the economic and social dimensions of persistence, and provide a robust comparison at the family level. Crucially, social mobility estimates overcome three limitations of aggregate measures. First, they capture heterogeneity in persistence across families. Second, they track constant sets of families, allowing direct com-

parison with other wealth elites. This is not possible with aggregate measures, because the composition of these groups is not stable. Even if the wealth elite has a high turnover, if its wealth share is constant, then the aristocracy could appear to follow the same trajectory, even though those aristocratic families are actually far more persistent. Third, as these families start at the top of the wealth distribution, their decline alone tells us little. Persistence is about whether they regress towards the mean more quickly or slower than other wealth elites. These new measures offer a more comprehensive and robust framework for examining aristocratic persistence.

These methods build on existing work estimating rates of social mobility for different sub-groups within the population. The work of Clark and Cummins (2014, 2015) suggests that elites in Britain in this period experienced limited mobility. More recently two papers have shown heterogeneity in social mobility along ethnic or social dimensions (Cummins and Ó Gráda, 2024; Collins and Wanamaker, 2022). In particular, Collins and Wanamaker (2022) argue that Black Americans experienced a cap to their upward-mobility, when compared to similarly positioned Whites. Here, I examine the opposite effect. A floor to the downward mobility of the social elite, when compared to other wealth elites. I show that the class dimension is important here, and that aggregate measures of social mobility may mask heterogeneity in outcomes. This goes beyond the findings of Bond and Morton (2024), showing the title-holders follow a slower downward trajectory than other

wealth elites.

1.4 Methodology

Before embarking on a study of aristocratic persistence we must first answer two questions. What is persistence and who were the titled aristocracy? There are a number of ways each can be defined and, as we shall see, these different definitions provide different perspectives.

Absolute and Relative — We can define wealth persistence in either absolute or relative terms. This was a period of rapid economic growth. Aggregate wealth at death quadrupled during this period. It is hardly surprising then that the aristocracy did not decline in absolute terms. I do not go into these findings, which mirror the work of (Bond and Morton, 2022) on peer probates, in detail. Relative measures, on the other hand, tell us about changes to the position of the aristocracy within society. This is the focus of Section 1.7.1.

Presence and Averages — Studies of wealth elites have used two main approaches. The most common is to study the composition of top wealth percentiles, e.g. the top 1% that come from a particular background. This is an approach employed by Piketty (2020), Alfani (2024), and Rubinstein (1981). This measures the

persistence in the *presence* of a group among the wealth elite. As well as tracking average status, it tracks demographic trends. It is frequently used when we do not have information about the whole wealth distribution. We can also measure average wealth relative to the mean, the approach employed by Bengtsson et al. (2019). This tells us about persistence in terms of average wealth, but not in terms of the number of wealthy individuals from this background. Both measures are useful for different reasons. The former tracks might represent the overall influence of a group, while the latter tracks the average economic status of an individual from that group.

Family and Institutional Measures — There are various ways to define a group or class. We could think about the persistence of a constant set of families who originally comprised the group. I term this the *family* measure. We could also measure the persistence of the group as a whole, including new recruits. This I term the *institutional* measure. Again, both measures inform the overall narrative. We want to know how successful those original families were, but also how recruitment strategies affected the persistence of the group as a whole.

Social Mobility – Not only is the level of wealth relative, so is the movement of families. All families at the top of the wealth distribution should regress downwards, towards the mean, over time. We can measure varying degrees of persistence

at the family level. A social group could be considered 'persistent' if constituent families regress more slowly towards the mean than other groups. In particular, we can benchmark members of a particular group against others who begin at the same place in the wealth distribution. This gives us an idea of what mobility might look like for the offspring of title-holders, were they not titled.

1.5 Sources

I use four sources to construct a linked dataset, containing the population of wealth-holders, deaths, and for title-holders detailed genealogical data. These are: the Principal Probate Registry (PPR) calendars, which is used for information on wealth-holding; Lundy's *The Peerage*, which contains genealogical information on title-holders; and two sources of mortality data, the Annual Reports of the Registrar General's Office, used for descriptive statistics; and individual level Death Registers, used for social mobility estimates.

1.5.1 PPR

I estimate wealth at death using a complete transcription of the Principal Probate Registry calendars, 1858-1907. These records contain information on wealth at death, date of death and aristocratic title. I collect information from 258,701 scanned images. These contain information for the population of wealth-holders

in England and Wales dying with wealth over the probate threshold. In total, I collect 2.2m unique probate records. I report all wealth in 1907£, adjusted using the ONS historical CPI index (Allan et al., 2004).

These probate records are the most commonly used source on historical wealth-holding (Lindert, 1986; Rubinstein, 1981; Wedgwood, 1928; Harbury, 1962; Perkin, 1978; Nicholas, 1999; Rothery, 2007; Clark and Cummins, 2015; Cummins, 2021). However, with the exception of Cummins (2021) and Clark and Cummins (2015) these rely on small hand-collected samples. Collecting them *en masse* allows me to disaggregate the data by social background, and to estimate social mobility.

The advantages and disadvantages of English and Welsh probate records have been extensively discussed. In particular, the issues of wealth at death versus living wealth, *inter vivo* gifts, the asset classes included, etc. (Bond and Morton, 2022; Daunton, 1989; Rubinstein, 1991; Morgan and Moss, 1986; Lindert, 1986; English, 1984). I will briefly discuss the most significant.[5]

Alvaredo et al. (2018) adjust for life-cycle effects using mortality multipliers for their nineteenth and twentieth century wealth inequality estimates, but find that these adjustments have no significant impact. Cummins (2021), Bond and Morton (2022) and Bond and Morton (2024) make no such adjustment. These effects only matter insofar as relative mortality changed across this period, among those who

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[5]Other issues include: (i) probates were also given as banded valuations until 1881, I simply take the midpoint. These bands are narrow, there are 79 bands in total, each comprising an average of 1.3% of probates; (ii) it was not mandatory to have a probate granted below a minimum threshold, this is addressed in the next section.

were eligible for probate, or might have been under a different mortality regime (I discuss this further in Section 1.7.2).

Inter vivo gifts or tax evasion could be a concern for probate data. However, low rates of inheritance tax (see Section 1.2) meant that this appears to have been limited in the period before 1910 (Daunton, 2002; Bond and Morton, 2022). Indeed, until 1910 *inter vivo* gifts were only taxed within 1 year of death (Rubinstein, 1981, p. 3). This was changed to 3 years in 1910 (Atkinson, 2018). The issue of using trusts to evade taxes only became a significant concern from the 1920s onwards (Cummins, 2021).

The probate valuations report the *gross* rather than *net* value of the estate. Nonetheless, the proportion of the estate that comprised of these liabilities was stable across the wealth distribution. Green and Owens (2013) look at the distribution of assets and liabilities in full probate inventories, for different bands between <£1000 to £100,000. They find that liabilities were between 10.9% to 15.1% of the gross value across all wealth bands.

The most important feature is that before 1898 probates only include unsettled personalty. This is the personal (non-real estate) property of the testator which is not held in settlement (i.e. trusts). From 1898, unsettled realty is included, but again only as part of an aggregate figure. This issue confronts every work contending with the period. In my results, and those of Bond and Morton (2022) and of Cummins (2021) there are no clear discontinuities in average wealth in 1898

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(see Appendix 1.A.1). Realty at the top of the wealth distribution was usually settled (Stone and Fawtier-Stone, 1984). While a part of the estate was missing, the lack of discontinuity indicates this component was relatively constant. It was mostly settled wealth, which continued to be excluded. Even when restrictions on entailment were lifted, the proceeds generated from sales would usually go into settled personalty, and so would still not appear in probate records (Stone and Fawtier-Stone, 1984). There were also few recorded sales of these estates in the period before 1910 (Cannadine, 1990, p. 110).

Neither are there any clear breaks in the the *distribution* of wealth in 1926, when settled land and realty were first included (Cummins, 2021; Alvaredo et al., 2018). Both forms of wealth appear to be highly correlated and consequently are distributed in a similar manner. Green and Owens (2013) show that the composition of estates was relatively constant across the wealth distribution. While personal, 'movable' wealth is not be a perfect proxy for overall wealth, the two are closely related. Nonetheless, this is explicitly a study of the personal wealth of aristocrats. Of the wealth they had complete discretion over, rather than that of the estate, managed by a board of trustees. Naturally, much of this unsettled wealth was derived from income from the settled estate.

1.5.2 Death Records

I use two sources concerning mortality to estimate the size of the non-probated population. I use reports from The *Annual Reports of the Registrar General* for aggregate results, and individual death registers for social mobility estimates.

The *Annual Reports of the Registrar General* give summary statistics on births, marriages and deaths from 1837 onward. I collect and digitise the annual mortality by age series, for England and Wales. This is grouped into multiple age brackets. I group all adults (those aged 20+), and use mortality information on them to estimate the eligible non-probated population (by excluding non-adults). There are 26m deaths for the period 1858-1907, of which 14m are of adults.

The individual death registers are from Cummins (2021). This gives individual-level records of each death registered in England and Wales. Unfortunately, it does not report age at death before 1866. This means I estimate the adult proportion of this data for these eight years. I therefore use the aggregate reports where possible, namely all aggregate estimates.

1.5.3 Lundy's *The Peerage*

I include genealogical information on title-holders from Darryl Lundy's *The Peerage*. This is a genealogical database of British title-holders and their extended families. It uses a variety of sources: the *Royal92.ged* database, SN's *Royalty*

database, Cokayne's *The Complete Peerage*, and Burke's *Peerage and Baronetage*, among others. It contains information on 3.9k title-holders living between 1858-1907, of which 1.4k die. The coverage of the database is very good in this period. (Cannadine, 1990, p. 11) estimates that there were 573 British peers in 1880, Lundy's database contains 561, 97.9% of the total.

1.6   Data Construction

The data construction process consists of two stages. Constructing the Principal Probate Registry database, and linking it with the sources on genealogies and deaths. This section contains a summary of the construction process, more details are given in Appendix 1.B.

1.6.1   Data Collection

I scrape the population of probate calendars for 1858-1907 from an online image database, *probatesearch.service.gov.uk*. This is 259k images in total. I transcribe this using custom image segmentation algorithms implemented in *OpenCV* and using *tesseract*. I parse the text using regular expressions to extract the following variables: surname, forenames, wealth, title, date of death. I apply some checks to data quality. I manually check all probates with a value of over £1m. I manually check the classification of all title-holders identified in the probate data. I

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automatically remove all Irish and Scottish probate calendars using regular expressions.[6]

1.6.2 Linking

I hand match all entries labelled as title-holders in Lundy's *The Peerage*. There are 1,764 title-holders in *The Peerage* who die in the period 1858-1907. Both sources contain a variety of identifying variables: full name, exact date of death, an individual's title-rank, their specific title, their exact address, the executors of the estate, or family members (for an example see Appendix 1.B.4).[7] It seems unlikely that there are any false matches created by this process.

Table 1.1: Match Statistics, by Title Rank

Title	Count	Matched (%)
Duke	48	85.4
Marquess	44	75.0
Earl	271	88.2
Viscount	87	87.4
Baron	349	88.0
Lord	53	83.0
Baronet	912	79.4
Total	1764	83.0

Note: Based on Lundy's *The Peerage* and PPR Calendars. 'Lord' is only used where a more specific title, i.e. Duke-Baron, is not given.

I match 83.0% of entries from *The Peerage* with the probate calendars, giving

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[6]These were sometimes sealed in London, but the full details of the probate are not reported.

[7]Title-holders often held multiple titles. *The Peerage* contains a full list of titles, whereas the PPR typically only records the primary title. I match first on primary title, then on any other title. As titles are always unique this always gives unique matches.

1,464 unique matches. This is similar to the match rate obtained for peers by Bond and Morton (2022) for 1858-2018, where they match 77.4% of hereditary peers. See Table 1.1 for the match statistics (for an explanation of why some individuals might not be matched see Appendix 1.D.2).

1.6.3 Estimation

To combine these sources into an individual-level database containing the entire population of adults, it is necessary to estimate several variables: the number of non-probated deaths, the wealth of those dying without probate, and the age of each title.

Deaths

The number of non-probated individual in each year is simply the number of adult deaths, minus the number of probates that list that death year. We can calculate this at the surname-level with the number of deaths, and the number of probated deaths by surname.

Unfortunately, the individual death registers do not list age at death for the first 8 years of this period (1858-1865). Using the Death Registers in combinations with the Annual Reports of the Registrar General, which do contain age at death for the whole period, it is possible to accurately estimate non-probated adult deaths at the surname-level (the estimation procedure and evaluation are in Appendix

1.D.1). This accounts for variation in child:adult mortality ratios over time, and differences in child:adult mortality by surname. It does not account for shifts in differences in child:adult mortality ratios between surnames during these 8 years, which are likely to be limited.

Non-Probated Wealth

To calculate the wealth of non-probated decedents, I employ the standard HMRC procedure (Cummins, 2021; Turner, 2010). By this estimate 99% of aggregate wealth is captured within the probates, even though they comprise less than 20% of the population. I then estimate upper and lower bounds for non-probated wealth. The upper bound is that each non-probated individual had the maximum allowed below the mandatory reporting threshold. The lower bound is that they had nothing. Estimates for these bounds are presented in Section 1.7.1 and in Appendix 1.E.4 for Section 1.7.2.

I follow Bond and Morton (2022) in assuming that all title-holders were probated. Title-holders could be missing because: they do not have enough wealth, their estate is hidden from tax authorities, or it is held in different jurisdictions. By assuming title-holders were all probated, I may slightly over-estimate their level of wealth. However, assuming that all non-matched title-holders should appear in the non-probated population, with £0 wealth would heavily underestimate it. There are very few title-holders anywhere near the cutoff (see Appendix 1.D.2),

and as tax evasion was relatively limited, the most likely explanation seems to be that their personal estate was eligible in different jurisdictions, such as Scotland, Ireland or overseas.

Dating Titles

There are various methods of classifying the age of a title-holder's lineage. Either through genealogical or heraldic means. The genealogical method is to search back through the patrilineal line to find the oldest, unbroken title-holder. The heraldic method is to search through the list of titles each individual had, and find the date each was created, and the oldest among them. I employ the second method, which allows for horizontal transmission of titles within families.

1.7 Results

This section splits the results into three key aspects: firstly, persistence in terms of aggregate wealth; secondly, persistence in terms of wealth at the family level, that is social mobility; finally, persistence in terms of the composition of the group. Title-holders were exceptionally persistent in terms of wealth, both in aggregate and at the surname level. In aggregate, they were bolstered significantly by the recruitment of wealthier newcomers. This was not an entirely new phenomenon. The titled-aristocracy was recruiting a large number of outsiders, even at the

beginning of the period. Nonetheless, that process accelerated over these fifty years, mostly as a result of title-grants.

1.7.1 Wealth

Average Status

Figure 1.1 shows the mean wealth of title-holders relative to the rest of the population. The red line corresponds to the *family* measure, title-holders who held titles that existed before 1862. The black line is the *institutional* measure, including all title-holders.

The most striking finding is that the title-holding aristocracy was highly persistent in relative terms. Their wealth is constant across the period, with only a slight dip between 1890-1900 in the *family* measure. In the first 5 years, title-holders from existing families had wealth at 234x the population mean, in the last 5 years this was 232x. In absolute terms an even larger gap opened up. The average wealth left at death for the whole population roughly doubled during this period, from £302 to £770. For title-holders from pre-existing families it increased from £70,713 to £179,183. If we include new entrants, the average rose to £205,258.

The long-tailed distribution of title-holder wealth means that the death of particularly wealthy individuals induces noticeable peaks and troughs. Within title-holders there is substantial spread of wealth. Yet, the number of 'poor' title-

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Figure 1.1: Mean Wealth of Title-Holder, Relative to Population

holders is small. Only 5% are below the population mean, itself skewed by the long-tailed distribution of population wealth, and none are below the population median. Still, the range of title-holder wealth is impressive, ranging from 5400x the mean to just 0.01x. Yet, the trends in wealth don't vary substantially across title-holders. If we split the data into peers and baronets, both are equally stable across the period, though peers were 44% wealthier on average.

The wealthiest title-holder, in relative terms, was Sir Andrew Barclay Walker, 1st Baronet, a brewing magnate who died in 1893 with £3.1m in 1907£. This is just shy of the wealthiest recorded title-holder, Lord Wentworth Blackett Beaumont, 1st Baron Allendale, an industrialist raised into the nobility in 1906, who died in 1907 with £3.2m.[8] This was an extreme level of wealth. For reference, the richest titled Rothschild who died during this period was Sir Anthony Nathan Rothschild, 1st Baronet, who died with £1.7m, and the wealthiest Rothschild without a British title, Lionel Nathan de Rothschild, died with £2.7m.[9] In contrast, the poorest title-holder, both in relative and absolute terms, was Sir Edward Blount, 8th Baronet Sodington, who died with a personal wealth of just £5. His family had been ennobled in the early 17th century, but suffered greatly during the English Civil War, with their country house burnt to the ground, their estates confiscated, and the progenitor of the family imprisoned (Cokayne, 1902, p. 202). Overall, the top 1% of title-holders held 16.7% of its wealth, and the top 10% held 59.6%.

We can also measure the prevalence of 'rich' or 'poor' title-holders by looking at the number of individuals over a certain relative threshold. I look at the number of individuals with wealth more than 1000x the mean or below the mean.[10] I measure the correlation between the average wealth of title-holders, and the number of title-holders in each year who were either 'rich' or 'poor'.

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[8]All information on title-holders biographies is taken from *The Peerage* unless explicitly stated.
[9]All in 1907£.

[10]For a discussion of this method see Alfani (2024, p. 56).

Year-on-year fluctuations in average wealth are more highly correlated with the number of extremely rich title-holders than fluctuations in the number of poor ones. The correlation between the number of 'rich' title-holders, and the mean wealth relative to the population is 0.88, whereas the correlation with the number of 'relatively poor' is -0.18.[11] Year-on-year variation in mean title-holder wealth was mostly the result of the occasional deaths of the exceptionally wealthy.

New entrants bolstered the wealth of the titled aristocracy significantly. If we include new families in the measure of wealth (the *institutional* measure) then the average wealth of title-holders is 15% higher than if we only include pre-existing families (the *family* measure). The relative contributions of new and old title-holders is made clearer if we look at mean wealth at death for title-holders with 0 to 1 titled predecessors, versus those with two or more. Throughout the period, new title-holders are much wealthier. This rises from about 2x as wealthy at the beginning of the period to 3x by the end. There is an interesting dynamic here. As the number of non title-holding wealth elites increased relative to title-holders, the pool of eligible candidates increases, driving up demand and increasing the price of entry. As the surrounding wealth elite expands, the gains from recruitment increase.

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[11]Though it should be noted that by 'rich' and 'poor' I mean relative to other title-holders, as shown above, title-holders were much wealthier on average than the rest of the population.

Presence

Yet, taken from another perspective the titled aristocracy seem to be in decline. This is the view we might get from Rich Lists, or from their representation among top wealth percentiles. I present results on this in Figure 1.2. The data are noisy. There are only an average of 278 individuals dying in the top 0.1% per year, and only an average of 10 of these are title-holders (for context there are 29 title-holder deaths per year). The graph shows the percent of the top 0.1% of wealth-holders who were title-holders. It is immediately evident that while the average wealth of title-holders remained constant, their representation among the wealth elite declined. This share dropped by approximately 25% between the period before 1875 and the period after. This decreases in 'presence' might account for the accounts of decline given by Rubinstein (1981), and more descriptive historical work.

However, it is important to note that this is driven by demographic phenomenon, namely a long-run decline in the share of title-holders in the population. Their share of total deaths is 18.2% lower from 1875-1907 than it is in 1858-1874. While there is a sharp rise in the number of non-titled deaths, 23.2% higher after 1875, primogeniture ensured that the number of titled deaths were virtually constant. This was partly reversed by the admission of new recruits. If we include these, then the demographic decline of the aristocracy becomes more muted, especially after 1890. While these estimates show the declining presence of title-holders

Figure 1.2: Titled Representation in Top 0.1%
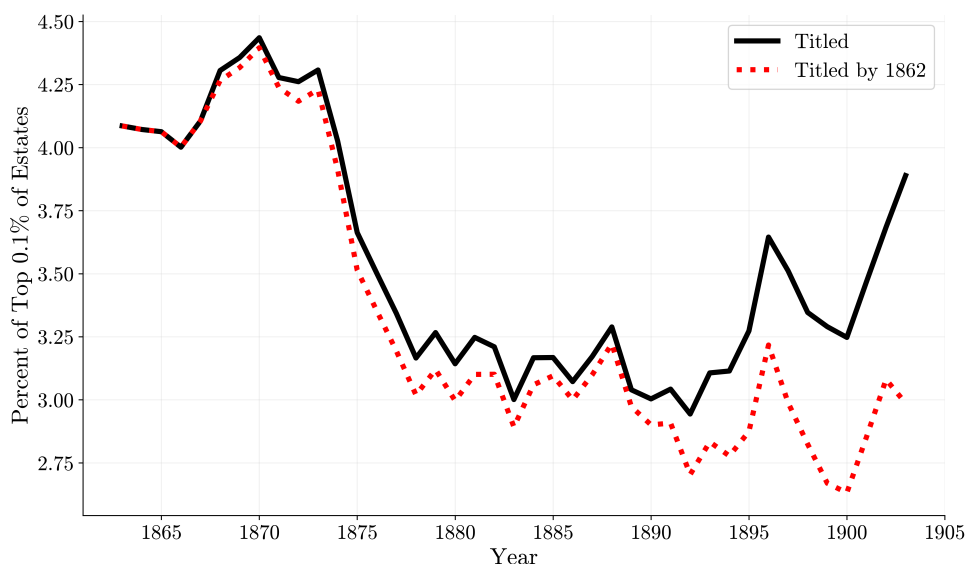
Note: Based on 2.2m PPR records, of which 1.4k concern title-holders, records of 13.9m deaths from Reports of the Registrar General, 1858-1907, and genealogical information from Lundy, 'The Peerage'. Non-probated wealth estimated using HMRC procedure, see Cummins (2021); Turner (2010). Gives percent of top 0.1% of estates in the population which belonged to title-holders. The red line shows those whose titles existed in 1862 or before. Shaded region is minimum/maximum values possible with different procedures. Plotted as 10-year rolling average.

in society, they tell us little about average status. Indeed, decline in this measure is an almost inevitable outcome of population expansion in settings where title inheritance is based on primogeniture.

1.7.2   Social Mobility

This section estimates rates of social mobility for title-holders, and compares them to those of the rest the population and of other wealth elites. The previous results establish that the wealth of title-holders did not decline, on average. This section

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looks at movement in terms of wealth, at the extended family level. It uses the rare surname method, pioneered by works such as Clark and Cummins (2015), to provide a direct benchmark for persistence, comparing the movement of extended families from different social groups. We expect title-holders to regress to the mean over time. The issue is whether they move down more quickly or slowly than other wealth elites.

Rare Surnames

Rather than measure parent-child mobility directly, I compare generations of individuals from the same extended family. To do this I construct a sample of individuals with rare surnames. There are two motivations for doing so, one practical and one theoretical.

The practical reason is so that we can compare the movement of families where we don't have linked genealogical data. This data only exists for title-holders and their families, so we would have no one to compare their mobility patterns against.

The theoretical reason for using rare surnames is because this helps us to measure underlying status. Preferences and trade-offs between different aspects of status mean that any single measure is a noisy indicator of status. We can think of this as

$$w_{it} = x_{it} + u_{it} \tag{1.1}$$

where w_{it} is an individual i's wealth at time t, x_{it} is their underlying status, and

u_{it} is some random component linking the two together. The noisiness of this estimator will lead to attenuation bias, because the random component downwardly biases the parent-child correlation.

This can be addressed using family or extended family averages. The ideas is that an extended family shares the same underlying status, and these random components should average out. Rare surnames can be used to identify these extended families. There are critiques of this method, notably Torche and Corvalan (2018). However, the central criticism is that rare surname estimates capture between-group mobility, rather than overall mobility. They don't capture movement within the surname group. In my setting, between-group mobility, that is the trajectory of the extended family or dynasty, is exactly what we want to capture.

I define rare surname groups using the same rarity thresholds as Clark and Cummins (2014), adjusted for the length of the period. For double-barrelled surnames I take the first part of the surname only.[12] A threshold that is too high may result in limited information about status being captured by the surname, whereas lower thresholds risk more unrepresentative data. I present robustness checks rerunning the regressions with different rarity thresholds in Appendix 1.E.2. The baseline estimates define rare surnames as those with between 3-250 deaths between 1858-1907. I estimate intergenerational wealth elasticity for two generations,

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[12]This is because otherwise we might bias the sample against certain families of title-holders, who often have unique double or triple barrelled surnames, which could make it impossible to link them this way with future generations.

1858-1882 and 1883-1907.

Due to the highly skewed distribution of wealth, I use the natural logarithm of wealth (in 1907£), at the surname level, normalised by the average in each generation. I define this measure M_{st} as follows. I first define the average log wealth A_{st} at the surname-period level,

$$A_{st} = \frac{1}{N_{st}} \sum_{i=1}^{N_{st}} ln(w_{ist}),\qquad(1.2)$$

where N_{st} is the number of individuals in surname s at time t, and w_{ist} is the wealth of individual i in surname group s at time t. Then I define M_{st} as:

$$M_{st} = A_{st} - A_t,\qquad(1.3)$$

where A_t is the average of A_{st} across all rare surnames, at time t. There are 67,777 rare surnames which have at least one decedent in each generation. These rare surnames follow the same wealth distribution as the population of surnames (see Appendix 1.E.1).

Group Specific Mobility

I use these measures of rare-surname wealth to measure the social mobility patterns of three groups: titled surnames, matched wealth elite surnames, and the rest of the population. I define titled-surnames as any surname with a decedent who was

titled by 1882 (Generation 1). I then estimate the regression:

$$M_{st+1} = \alpha + \beta_1 M_{st} + \beta_2 M_{st} \times Group_{st} + \beta_3 Group_{st} + \epsilon \qquad (1.4)$$

The intercept α is zero by definition, the term $\beta_1 M_{st}$ gives the underlying intergenerational wealth elasticity for the population. For each group (titled or matched) I add a constant term and an interaction term. This follows the approach in Collins and Wanamaker (2022, p. 105). The interaction term $\beta_2 M_{st} \times Group_{st}$ gives the additional intergenerational wealth elasticity for members of the group. The constant term $\beta_3 Group_{st}$ gives the difference in wealth in Generation 2 for members of the group.

The coefficients on the constant and the interaction terms represent two different mobility regimes. These are represented in Figure 1.3. The blue line shows the baseline regression to the mean for the underlying population, with a intergenerational wealth elasticity of 0.5 and a constant of 0. If the interaction term β_2 is positive, this means a slower regression to the population mean. For instance, if it is 0.25 for members of the group, then the overall intergenerational wealth elasticity for these surnames would be 0.75. This is shown in red. Here, the size of the group membership effect is dependent on the wealth of the previous generation. It operates through wealth transmission. If the constant term β_3 is positive, then the next generation members of that group experience a flat wealth bonus. In this

Figure 1.3: Social Mobility Regimes
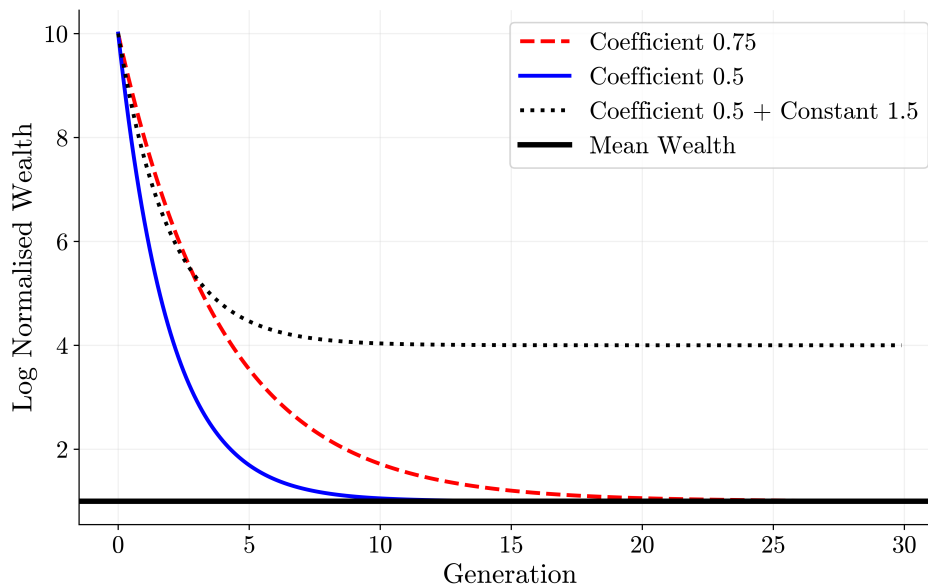
Note: This figure plots expected regression to the mean under different social mobility regimes. The blue-line shows a baseline intergenerational wealth elasticity coefficient, with no constant bonus. The red-line shows a different elasticity. The black line shows the same elasticity, with a constant added.

case group members regress towards a higher mean than that of the population. This is shown in black. Here, group members have the same intergenerational wealth elasticity as the population, 0.5, but experience a flat wealth bonus of 1.5 log-normalised wealth in the next generation. In this world, being in the group has an effect on the wealth of the next generation, independent of the wealth of the previous generation.

While a higher intergenerational wealth elasticity indicates differences in how wealth is transmitted, regression towards a higher mean indicates an effect external to the wealth of members of the previous generation. We might think of the former

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as a more financial class of explanation, while the latter relies on non-financial explanations, for instance social, cultural or human capital. Of course, a mixture of these explanations is possible.

Matched Group

We also want to know the extent to which these patterns are unique to titled families. While these patterns could be specific to title-holders, they might simply result from the position of these families in the wealth distribution. For comparison, I create a matched wealth elite group. This allows me to examine what wealth in Generation 2 looks like, for families starting at the same position as titled families, but without the title. This counterfactual operates similarly to Collins and Wanamaker (2022), but instead of looking at Black sons as if they had White fathers, we are looking at titled children as if they had non-titled parents. I achieve this by sampling rare-surnames from the wealth distribution as closely as possible to titled surnames. As the population of surnames is much larger than that of titled surnames, this produces an identical distribution (Appendix 1.E.3).

Regression Results

Table 1.2 presents the results. These are descriptive regressions showing social mobility in terms of intergenerational wealth elasticity and log-normalised wealth bonuses. The results show that those with titled surnames experienced less mobil-

ity than either matched wealth elites, or the rest of the population. Their distinctive regime is characterised not by a higher intergenerational wealth elasticity, but by a constant wealth bonus. Those with titled surnames regressed at the same rate, but towards a higher mean than that of the population. While equally wealthy non-titled surnames do not exhibit a trajectory that is significantly different from the rest of the population.

Column (1) presents the intercept (intergenerational wealth elasticity bonus) and slope (constant bonus) estimates for titled-surnames, Column (2) adds controls for: the number of individuals in each rare-surname group, a linear and squared term for the average year decedents in Generation 1 died, and the average distance in years between Generation 1 and 2. Columns (3) and (4) present the same estimates, but for the matched wealth elite group instead.

In both specifications including terms for titled-surnames the coefficients on the constant effect are significant, while the coefficients on the wealth elasticity bonus are not. None of the coefficients for those with surnames from the matched group are significant. This indicates that a lower mobility regime was a distinctive attribute of those with titled-surnames, but one that did not scale with their wealth. It was unique to title-holders, and not simply a result of their position in the wealth distribution. The lack of interaction with the wealth term suggests a non-financial mechanism, perhaps social, human or cultural capital.

Using these coefficients and their associated standard errors, we can project

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Table 1.2: Rare Surname Integenerational Wealth Transmission Regressions

	(1) Titled	(2) Titled	(3) Matched	(4) Matched
Intercept	−0.01	330.07	0.00	373.56
	(0.01)	(1047.20)	(0.01)	(1048.88)
Parent Wealth	0.54***	0.50***	0.54***	0.51***
	(0.00)	(0.00)	(0.00)	(0.00)
Parent Wealth × Group	−0.14	−0.02	0.00	0.07
	(0.07)	(0.07)	(0.08)	(0.07)
Group	2.48***	1.73***	−0.17	−0.32
	(0.39)	(0.38)	(0.39)	(0.38)
Controls	NO	YES	NO	YES
R^2	0.33	0.36	0.33	0.36
F-Stat	1.1×10^4	5.4×10^3	1.1×10^4	5.4×10^3
RMSE	1.85	1.85	1.89	1.89
Observations	67777	67777	67777	67777

Notes: Intergenerational wealth elasticity measured using rare surname method. I use log wealth, normalised to the mean, averaged at the surname-level, for rare surnames (3-250 deaths, 1858-1907).[a] Titled-surnames are those with a titled decedent in Generation 1. There are 644 titled rare surnames. Matched group produced by sampling closest non-titled surname-group in wealth distribution (without replacement) in Generation 1. Controls are for: the number of individuals in each rare-surname group; the average year decedents in Generation 1 died, as linear and squared terms; the difference in years between average Generation 1 and Generation 2 deaths.[b]

***: $p < 0.001$; **: $p < 0.01$; *: $p < 0.05$

[a] Surname mobility estimates can be measured either using surname averages or surname type averages (for a discussion of this see Clark (2014, pp. 296-97) and Clark and Cummins (2014, pp. 519-520)), the former captures surname or family level movement, whereas the latter captures the movement of the group as a whole. I use the former, which allows for the estimation of separate constants for different types of surnames using information on two generations.

[b] As a robustness check I run single regressions containing both the matched and titled groups. The coefficients concerning the matched and titled groups are identical to two decimal places.

Figure 1.4: Expected Regression to the Mean, Title-holders and Wealth Elites
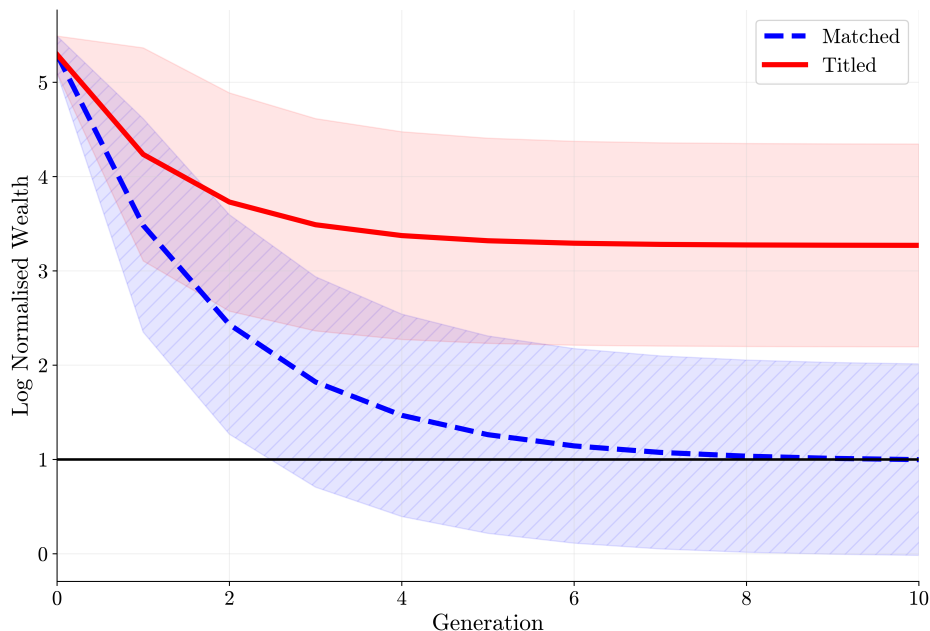
Note: Projected from regression columns (1) and (3). This figure is intended to provide a rough projection. It begins using average log-normal wealth in Generation 1, and the associated standard error. It calculates the next generations wealth as $M_{t+1} = M_t \times (\beta_1 + \beta_2) + \beta_3$, and the standard error as a linear combination of the variance associated with the baseline and interaction elasticity coefficients, the constant term, and wealth's starting variance (for details see Appendix 1.E.5). The shaded region represents a 95% confidence interval.

the expected regression to the mean for future generations, starting at the average wealth of someone with a titled or matched surname (Figure 1.4). Despite the marginally higher intergenerational wealth elasticity of those with matched surnames, the constant bonus applied to titled surnames means that even in generation 2 they are wealthier. Regression to the mean takes longer for those with matched surnames, around 10 generations, perhaps indicating higher *transmission*

of wealth. However, they regress towards the population mean. Titled surnames converge in just 6 generations, but to a substantially higher level of wealth. The combination of intergenerational wealth elasticity, and this bonus mean that they converge to a level around 26x the mean.

Robustness

To ensure that differences are not the result of the estimation procedure, we need to address several concerns over robustness. These are: life-cycle bias and selection bias.

Life-cycle Bias—Systematic differences in age at death could impact reported wealth. Here, the expected difference in adult mortality between these groups is small. By 1850, the aristocracy exhibited a very similar adult life expectancy to the rest of the population (Hollingsworth, 1977). The Registrar General's Office, decennial report (1871), show that while the proportion of adult (20 plus) gentry and aristocratic deaths that was above age 55 was relatively high, around 77%. This was not dissimilar to elite occupations, like magistrate, clergyman, or banker, all of which had similar or higher proportions dying above 55, at 94%, 90%, and 74% respectively.

Rare Surname Selection—Rare surnames might not be representative of the population as a whole. I show in Appendix 1.E.1 that rare surnames follow a similar distribution of wealth to the population of surnames. I re-estimate the

above regressions using different thresholds for rarity in Appendix 1.E.2. The estimates are not sensitive to different thresholds for surname rarity.

1.7.3   Social Composition

I now look at persistence in terms of social composition. While those from a titled background were highly persistent in terms of wealth, this was in part due to the recruitment of outsiders (see Section 1.7.1).

Entrance to the aristocracy was governed by two mechanisms, title-grants and marriages. I devise a novel metric, 'hereditary background', drawing on long-run genealogical data, to examine their joint effect. I then turn to examining the two channels separately. The results show a significant shift in the background of title-holders during this period. These shifts primarily reflect the long-standing openness of the titled aristocracy, though there were important changes during this period. In particular, changes to the origins of new recruits, and to number of individuals granted new titles. Together, these results indicate the importance of recruitment, both as an established strategy and as a response to crisis.

Hereditary Background

I construct a new measure of the hereditary background of title-holders. This has the advantage of combining various phenomena: marriages, births, deaths, and title-grants, into a single measure which summarises an individual's lineage. Ex-

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isting measures of aristocratic openness look at shifts to in-group versus out-group relations. For instance, marriages within the aristocracy (Marcassa et al., 2020). These 'hereditary scores' provide more granular detail on the social background of those from the out-group, in particular, how closely intertwined their family has been with the in-group.

A central feature of genealogical histories of the peerage and baronetage is that they record the extended family tree of each title-holder. For instance, if we look at an example from *Burke's Peerage and Baronetage*, Sir Ernest Pennington Burrows, 3rd Bart., born 1851, we will see that not only is his first titled ancestor, Sir George Burrows, 1st Bart., recorded, but also the family up to Sir George Burrows' great-grandfather (Burke and Burke, 1914, p. 342). The data contains information on 3.9k title-holders alive between 1858-1907, and 186k relatives born before 1907. For each title-holder alive between 1858-1907, I capture an average of 4,765 direct ancestors. Even for those granted new titles in this period, I capture 1,243 ancestors. This represents between 10-12 generations worth of ancestors.[13] Most meaningful information about a title-holder's hereditary background should be captured here.

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[13]Though the family tree is often incomplete in an individual layer, so these actually represent a larger number of incomplete generations.

Figure 1.5: Hereditary Score Example
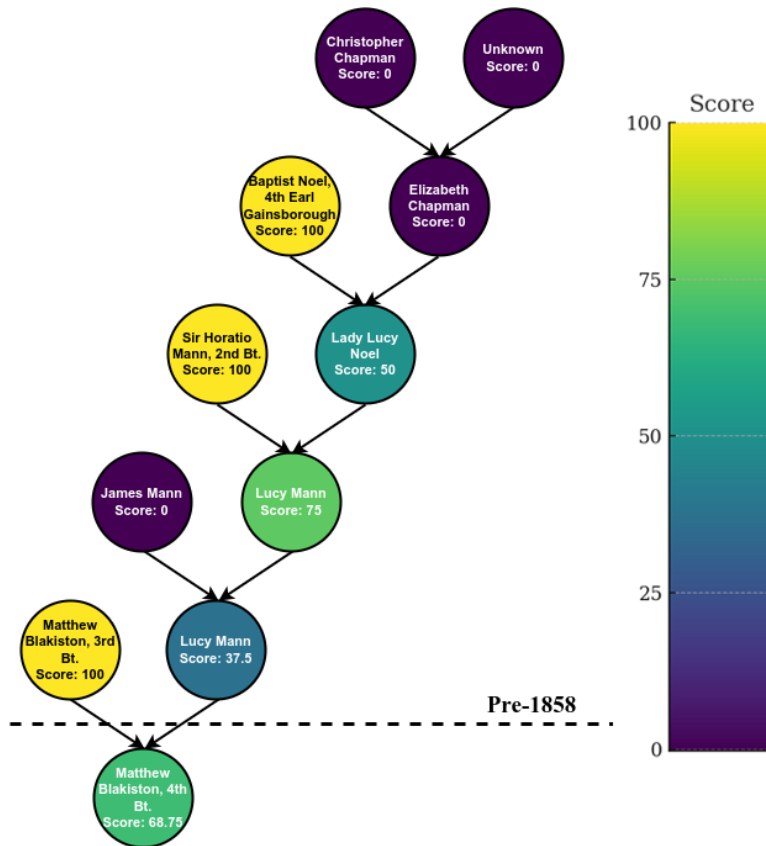
Using this information, we can estimate each individual's hereditary background, starting at the most distant ancestor and moving down the family tree. An individual's score is simply the average of their parents score. The easiest way to calculate this is to think of the genealogical data as a directed network. Each child is connected to two parents. The child is assigned a score: 100, if they are a pre-1858 title-holder, or the average of their parents scores, which is itself either the average of their parents scores, or a specific 'unknown background' value, set to 0 in the baseline specification for unknown parents. This relies on two assump-

tions. Firstly, that if parents had any recent ancestors with links to the aristocracy, they would be reported. Second, that although titles are only passed through the male line, an individual's social background is equally inherited from both sides. Nonetheless, the results are not sensitive to either of these assumptions.

Figure 1.5 provides an example of how this score is calculated.[14] Here, we are calculating the score for Matthew Blakiston, 4th Baronet. We first check if he held a title before 1858. As he received his title in 1862, we proceed up the tree averaging the score of his two parents. His father, the 3rd Baronet, has a score of 100, as he was titled before 1862. The score of the 3rd Baronet's parents is therefore not calculated. The mother, Lucy Mann (junior), receives the average of her father, whose score is 0 because neither of his parents are known, and of her mother, whose score is the average of her parents and so on. As a titled background can only be injected into the family tree through men, the measure effectively captures the proportion of direct male ancestors who were titled, re-weighting for their distance.[15]

Descriptive results are presented in Figure 1.6. This shows, for each year, the

[14]As noted above, most family trees are more extensive than this, but are therefore too complex to illustrate. This illustration is also truncated to exclude parents where both have a score of 0, and instead just shows the child with score 0.

[15]In the robustness section below I discuss several different procedures which account for the background of unknown individuals, the effect of calculating on incomplete maternal trees, and the overall completeness of the family network. In this specification, each man at the end of a branch, e.g. unknown parents or titled before 1858, is taken as a proxy for the value of the rest of their tree. The assumption here is that if someone is titled or if their parents are totally unknown, no information further back in the tree is relevant to their social status. So a titled grand-father has the weight of one-quarter of the tree.

percent of living title-holders with a specific hereditary background score. If you have a score of 100, either you were titled before 1858, or both your parents (and their parents and so on) were title-holders before this period.

Figure 1.6: Hereditary Background of Title-Holders
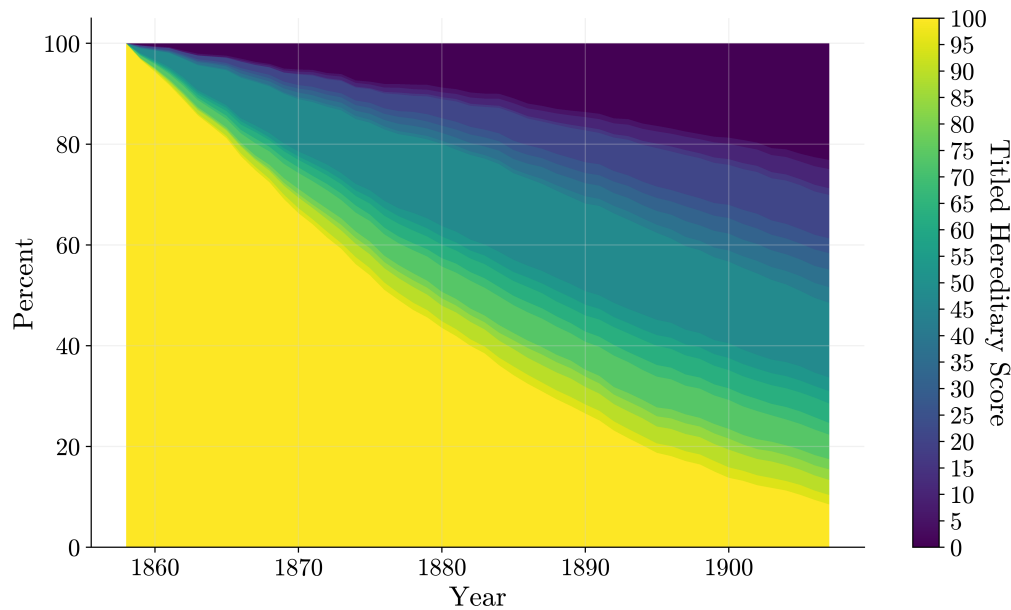
Note: Based on the 3.9k living title-holders in Lundy's *The Peerage*. See Appendix 1.F.1 for details on measurement. A value of 100 means all descendants can be traced to title-holders from 1858 or before, and a value of 0 means no descendants can be traced to this group. By construction all individuals start with a score of 100. The measure shows the dilution of the hereditary background of the titled aristocracy over time.

Across the period the composition of the titled aristocracy shifts substantially. In 1858, all title-holders have a score of 100, by construction. We see the gradual infiltration of those with no titled background at the top, as well as their descendants. However, much more noticeable is the mixing of already titled families with outsiders through marriage. By 1907, the proportion descended purely

from pre-1858 title-holders has dropped to just 12%. While this is still substantial, title-holders from a purely titled background are in the minority. This is in a sense unsurprising, considering that there are only around 1.3k other titled families to marry into. Nonetheless, the extent of this mixing is impressive. By halfway through the period, 20.7% of title-holders are from a less than 50% titled background. By the end, this is 45.8%. This represents an underlying process, but one that was accelerated by increased title-grants from the 1880s onwards.

Robustness

There are three features that these estimates might be sensitive to. These are: the backgrounds of unknown individuals, the completeness of the genealogical network, and the transmission of background through the maternal line.

Background of Unknown Individuals—While it is safe to assume that those individuals who are not listed in these records are not title-holders, it may be too strong to assume that they have no connection to the titled-aristocracy. We can address this by checking whether the results are sensitive to assumptions about their background in the other direction. I conduct a robustness test where I estimate the average hereditary score for individuals where we know both grandfathers, using only direct observation of the grandfathers, rather than relying on the extended network. This removes the reliance on the scores of unknown observations. Each grandfather contributes 50% of the score. This gives an expected score for all

non-titleholders, where we know the grandparents. I re-run the estimation, using this score for all individuals of unknown parentage, as the expected value of a non-titleholder. This is likely to over-estimate their hereditary background, as they are less likely to come from a titled background than those for whom we know grandparents. Still, it has a limited impact on the picture presented (Appendix 1.F.2).

Genealogical Network Completeness—It is possible that the incompleteness of the network could attenuate the results. If for instance, we removed all the title-holders from the network, this would downwardly bias our results. This is a less important concern here because we are unlikely to be missing title-holders, and everyone else who is missing, we can assume is not a title-holder. Nonetheless, if we were missing the titled forebears of non-titled individuals in recent generations this would lead to an underestimation of their score. We can test the effect of indiscriminately removing data, even if this is not a particularly likely scenario. I remove all individuals born before 1700 (20% of the total data). While this does reduce the average hereditary score, the effect is relatively limited (Appendix 1.F.2). This is even though removing data in this way disproportionately effects the number of title-holders in the data. There are 12.7% of title-holders in the missing data, whereas this is only 7.8% in the overall dataset. For this to have had any substantial impact on the overall picture, there would have to be an even more disproportionate amount of missing title-holder data.

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Maternal Transmission—In the baseline specification I assume that the background is passed equally through mothers and fathers. However, we might be concerned on both theoretical and practical grounds that this is not the case. Namely, we might be concerned that while the mother's family is important, it is her father who matters most. This is reflected in the sources, which typically record the father of each woman listed, but not always the mother. This implies that it is his status that matters most. We can adjust for this, by only using the scores of men in the maternal line. I conduct a robustness check, where I calculate this recursively. That is, the mother's score is comprised of her father's score (50%), her mother's father's score (25%), and so on, reweighting for how much information we have about men in the maternal line. This has no noticeable impact on the results (see Appendix 1.F.2).

Overall, this period saw thorough mixing between title-holders and other proximate individuals. These features explain only minor variations in the measure. Next we will look at the extent to which new-comers joined and will use these scores to think about how the hereditary background of joiners shifted over time.

Title-Grants and Marriages

The hereditary background of title-holders changed through two mechanisms. Title-grants and marriages. For both, we need to consider how many 'outsiders' were joining, and where these outsiders were coming from. Each tells a differ-

ent story. While title-grants represented a top-down shift to the composition of the titled aristocracy, initiated by its leadership, marriages represent a bottom-up change, initiated by its members.

Figure 1.7 shows the proportion of title-holders who became titled in a given year who were the first holders of their title. In total 2.7k individuals were granted titles during this period. There is a substantial increase in this as a proportion of title-holders, from 10% at the start of the period to 22% by the end. The raw number of individuals gaining new titles rose substantially over this period, from an average of 5 per year between 1858-62 to 17 between 1903-7. Some of these new titles were granted to the junior offspring of existing title-holders, 8% in total, however that practice was declining over time. It constituted 9.5% of new titles before 1883, and 7.5% after. The titled aristocracy was surprisingly open even at the beginning of the period. However, there was clearly a step change after 1880. If there was a response to the crisis, perhaps it is to be found here, rather than in measures of wealth. This fits more with the view of 'fragmentation' than impoverishment.

There is a significant change in the background of individuals being granted new titles. New grants were primarily given to those without any recorded ancestors in the titled aristocracy, 69.5% of the total. Nonetheless, this rose substantially over the period. In the first ten years of the period, 45.3% of title-holders with 'new' titles had no recorded titled ancestors. By the last ten years, this was 79.2%. Not

Figure 1.7: New Titles Among New Title-Holders
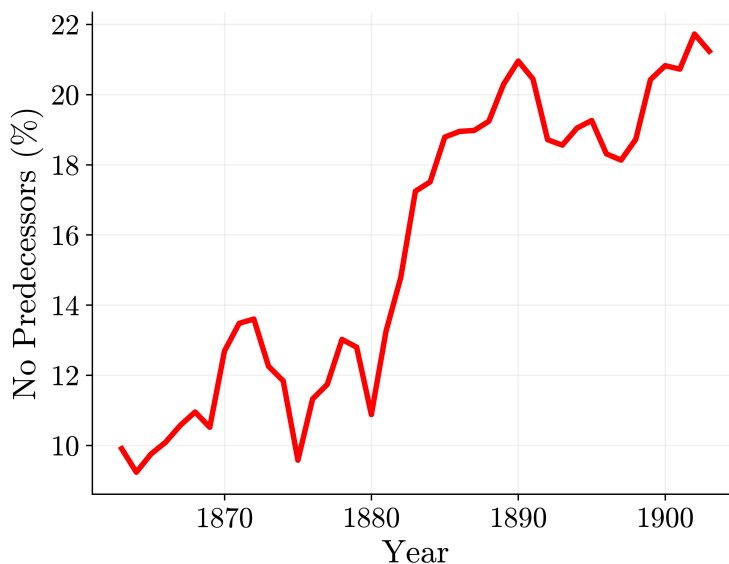
only were more outsiders joining, they were more distinctly outsiders than ever before.

Marriages also show substantial mixing, though the extent of change was more limited. Figure 1.8 shows the percent of title-holder's marriages where the father-in-law was titled. There are 4,320 marriages of male title-holder in this period, of which there are 4,250 where the father-in-law is known. These include marriages of individuals who had not yet received their title, but would later become titled. What is immediately striking is how prevalent marriages outside of the titled aristocracy were. Even in the 1860s less than 30% of title-holders marry the

daughters of other title-holders. These results are similar to those found by Goni (2022) for 1861, and for Marcassa et al. (2020) for the period between 1500-1800. This figure is notably lower for baronets than for peers. Only 16.7% of baronets marry the daughters of title-holders, whereas 36.8% of peers do. The trends are similar for the two groups, though the peerage see a sharper decline in internal marriage (Appendix 1.F.3).

Figure 1.8: Title-Holder Marriages
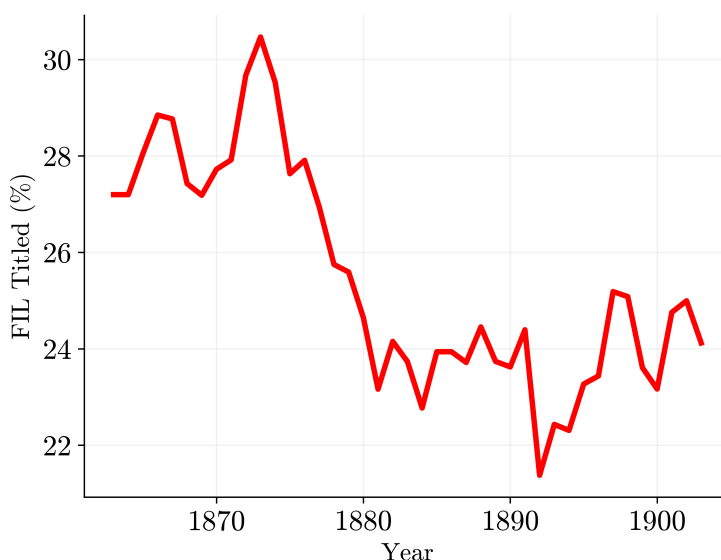
Note: Based on records of 4,250 marriages of title-holders during the period 1858-1907, from Lundy's *The Peerage*, where the father-in-law is known (out of 4,320 total). Shows percent of marriages where the father-in-law was titled. Plotted as 10-year moving average.

While marriages patterns change, they are notably more stable than title-grants. Even the background of marriage partners is relatively stable, though again, distinctly non-titled. In the first half of the period, 71% of marriages were

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to daughters of non-title-holders, in the second half this is 76%. Similarly, the percent of these non-titled father-in-laws with no recorded background in the titled-aristocracy is high, around 78%, but is constant across the period.

From this perspective, attempts at the family-level to incorporate new wealth appear to be a relatively long-standing strategy, whereas the granting of new titles appears to have responded more acutely to this crisis.

1.8   Discussion

The literature on the decline of the British aristocracy, while rich, has been loosely defined. By using systematic measures of persistence, we can assess which strands of the narrative are most important. This is a nuanced debate, where even within a single author's work we find elements of both continuity and change (Cannadine, 1990, p. 4-5). The question, then, becomes one of emphasis. By measuring these contrasting features, we can begin to unravel their impact on the overarching narrative. There was extraordinary persistence in terms of wealth, alongside mostly continuous, but still substantial, social changes. These are not two contradictory narratives, but part of a single explanation of how the titled aristocracy persisted.

We can see this explanation interwoven into the stories of individual title-holders. As we saw in Section 1.7.1, the wealthiest title-holders were all new entrants. However, we see similar stories of social change and financial persis-

tence if we look at more long-standing families. The largest personal estate of an 'old' title-holder dying in this period was that of Edward Henry Stanley, 15th Earl of Derby, who died with 2.1m (1907£) in 1900. On his mother's side, the family had only been titled one generation prior. The mother's father, Edward Bootle-Wilbraham was the first in his family to receive a title, that of 1st Baron Skelmersdale in 1828. He was himself the son of a landowner and of the daughter an East India Company director. Similarly, Edward Henry Stanley's father was the son of both a peer and a reverend's daughter. Undoubtedly the backgrounds of these 'outsiders' changed over time, but relatively open marriage seems to have been a longstanding trait of the aristocracy.

To an extent, recruitment in a system based on primogeniture is inevitable. The number of titled families is limited, increasing the difficulty of finding an assortative match internally. Difficulties in maintaining the male line also mean that titles are frequently rerouted through the family tree (Stone and Fawtier-Stone, 1984). In this period, the average number of offspring for a title-holder was 4.2. This means that in each generation, roughly 6% of titled families would not produce a son. After 4 generations, the chance that the male line has failed in at least one generation is 23%. Relatives outside the main titled line were constantly being brought back into the fold. So if these various forms of recruitment, through marriage, title-grants, and inheritance were relatively common, why the sense of crisis?

The explanation probably lies in who these outsiders were, and how that changed over the period. Historically, these recruits seem to have come from more compatible backgrounds. Between 1700-99, only 10% of new peers lacked a marital or hereditary relationship to existing peers (Stone and Fawtier-Stone, 1984, p. 283), though including marriages makes this difficult to compare directly. Towards the end of the nineteenth century there were more and more new title-grants, and they were increasingly going to outsiders. This social dilution is the focus of Cain and Hopkins (2016) and Cassis (1994). Between 1890-1914 35% of bank partners and directors were marrying aristocrats or landowners (Cassis, 1994, p. 204). Change in terms of marriage patterns appears to have been mostly concentrated in the upper-ranks of the aristocracy. Around 31% of peers married internally, versus 14% of baronets (Appendix 1.F.3). While the decline in internal marriages was slight, it was driven primarily by changes to patterns among peers, whose internal marriages dropped by 33%. More research is needed on who these outsiders were, and how this affected the trajectory of these title-holding families.

This speaks to a broader agenda in the literature on social mobility. For Clark (2014), there are various aspects of status which are noisy indicators of 'latent' status. This observed status is linked to latent status by some random component, which averages out at the family level. We can think of this latent status as the composite of all other types of status or capital: financial, human, social and cultural. These different types of capital can be affected by different forces, and

the relationship between them might change. Systematic shifts might bias the measure if, for instance, there are incentives to switch from holding one form of capital to another. One example would be the mechanism demonstrated here. The terms of trade are favourable towards exchanging social for financial capital. For those holding social capital, this would mean greater persistence in terms of financial capital. If this were the case, surname-measures are a less attenuated estimator for intergenerational persistence in financial terms, but do not reflect shifts in latent status. Developing measures of persistence purely in social terms, helps us distinguish between these explanations. It lets us dive deeper into the reasons for low social mobility at the surname, multi-generational level. Clark and Cummins (2014) and Clark and Cummins (2015) argue that it is within-family capital transmission that is the main determinant of outcomes for future generations. However, they do not distinguish between the roles of social, human, cultural or genetic capital.[16] Dividing these measures along social (or ethnic) lines helps illuminate the role that different forms of capital play in persistence. There is ample scope for future research, identifying the role of social or cultural capital more explicitly.

We can think of this exchange of social and financial capital in the context of broader institutional processes. North et al. (2009) argue that the key conditions necessary for a transition from 'limited access' (autocratic) to 'open access' (demo-

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[16]Though Clark's (2023) recent research emphasises the role of genetic capital.

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cratic) society is open and competitive access to organisations. They emphasise that existing elites will only expand access when it improves their welfare. While they describe this as primarily a political process, we can also think of this as a social process. Elites expand access to rights or privileges for non-elites when it is in their interest to do so. If the economic resources of elite diminish relative to the rest of the population, these incentives strengthen. We could think of this as inflation of financial capital relative to social capital.

However, the implications of this exchange of social for financial capital are unclear. This depends heavily on the mechanisms that govern the production and exchange of social capital, for which there are no clear answers. Bourdieu (1986) divides capital into: economic, cultural and social. In particular, he defines social capital as 'connections', giving the example of a 'title of nobility'. However, while being titled may be a reasonable proxy for certain types of connection, it is not synonymous with 'connections'. Indeed, we have seen how the relationship between these two things can change drastically over time. It is unclear how we should view the formation of connections, for instance marriages. On one hand, we could think of this as the exchange of capital. Title-holders receive financial capital, and in return outsiders receive social and cultural capital. If it were purely an exchange, then we would expect persistence in terms of financial capital to belie a long-run decline in social capital. However, we can also think of these connections as part of the process of producing social capital. Network literature

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emphasises the value of connecting to distant parts of the network (Granovetter, 1973). Marrying into outsider families also brings value new connections, whereas marrying the daughter of another title-holder, already well integrated into your network, might bring relatively little. Rather than viewing changes to marriages and title-grants as emblematic of declining social capital, we could think of them as improvements to production technology. Another route is to think of this as an exchange of 'embodied' cultural capital, rather than social capital. These social changes have an effect on individual character, diluting the particular cultural advantages formerly held by the aristocracy. There is little work which distinguishes empirically between the production and exchange of social capital, or indeed of cultural capital, but the aristocracy offers an promising avenue to explore this further.

1.9 Conclusion

So, did the titled aristocracy collapse during the Second Industrial Revolution? This paper provides evidence that it did not, at least not in a financial sense. Not only did it not collapse, but its persistence in terms of wealth was uniquely high. These findings, by drawing on detailed genealogical data and millions of observations of individual wealth, demonstrate the importance of approaching the question of aristocratic persistence with various, clearly defined measures. These

show a complex, multi-faceted narrative, where social adaption was leveraged for economic persistence.

The use of descriptive measures which track average status, rather than representation among top wealth percentiles, has a major impact on the narrative. While title-holders were less prevalent amongst the wealth elite, an important story in itself, this did not mean that they were suffering from a shock to their wealth. In fact, under the system of primogeniture, this is an inevitable outcome of population growth. The choice to track only existing families or to include new entrants changes the picture significantly. In settings like this, where recruitment was central to the strategy employed by the aristocracy, separating these measures shows us the persistence of those families, versus of the institution. It tells us how much persistence in financial terms was predicated on compositional changes, and how the price of entry changes over time. In the late nineteenth century, new recruits bolstered the wealth of the titled aristocracy significantly, and the gap between them and longstanding title-holders only widened.

By measuring the social mobility of those with titled-surnames, and comparing this with the patterns of those with equally wealthy, but non-titled surnames, I show that title-holders were subject to a lower mobility regime. This mirrors the findings of Collins et al. (2022), and emphasises the importance of disaggregating measures of social mobility. The literature on the British aristocracy contains no equivalent measures, but they are vital to properly benchmark the performance

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of the titled-aristocracy. Here, title-holders did not exhibit higher intergenerational wealth elasticity, but instead the next generation reported a wealth that was constantly higher. This has two important implications. Firstly, that those with titled-surnames were not regressing towards the population mean, and would have found a floor to their downward mobility. Secondly, that their lower rates of downward mobility did not interact with their wealth, and can only be explained by some other factor, for instance social, cultural or human capital.

Despite this exceptional persistence in terms of wealth, the composition of title-holders in social terms changed substantially over this period. This was partly a reflection of longstanding phenomena, and partly a response to the crisis of the 1880s. The share of titles which were new rose substantially during this period. These were increasingly granted to those with no titled ancestors. The percent of title-holder marriages to outsiders only increased marginally, but was remarkably high.

This paper has a number of important implications. Firstly, that the decline of the aristocracy has been over-emphasised in the historical literature. While there are certainly elements of continuity and change, I find stronger evidence for continuity. Even channels that encouraged change, for instance marriage, were the expression of a continuous strategy. The exceptional persistence of the titled aristocracy in terms of wealth emphasises the extent to which existing research on aggregate social mobility may miss important heterogeneity in outcomes. It pro-

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vides some of the first empirical evidence for the role of social capital in long-run family persistence. This has important policy implications. It helps to distinguish between different elements of status that could explain the extreme levels of immobility observed by Clark (2014). In particular, regression of titled surnames towards a level higher than the mean suggests the near-perpetual presence of these elites at the top of society, in the absence of major external shocks.

This research opens several new avenues for exploration. The most obvious is to expand these measures: of new and old entrants, of average wealth and representation at the top, of social mobility relative to other groups, of hereditary background, and of recruitment; to cover other aristocracies, and to look at a longer period. Beyond this, it would be helpful to have better measures of marital matching, both in terms of wealth, which would require linking the marriage data to the probates, and in terms of social or occupational background of outsiders.

Appendix

Appendix 1.A   Data

1.A.1   Unsettled Realty and Discontinuities in Wealth Measurement

One of the concerns we might have about the probate records is that we are downwardly biasing wealth estimates before 1898, because these records don't contain unsettled realty. Here I test for the impact of the introduction of settled realty on the probate valuations of title-holders. Figure 1.A.1 shows the discontinuity in wealth before and after 1898.

Figure 1.A.1: Titled probate valuations, before and after unsettled realty
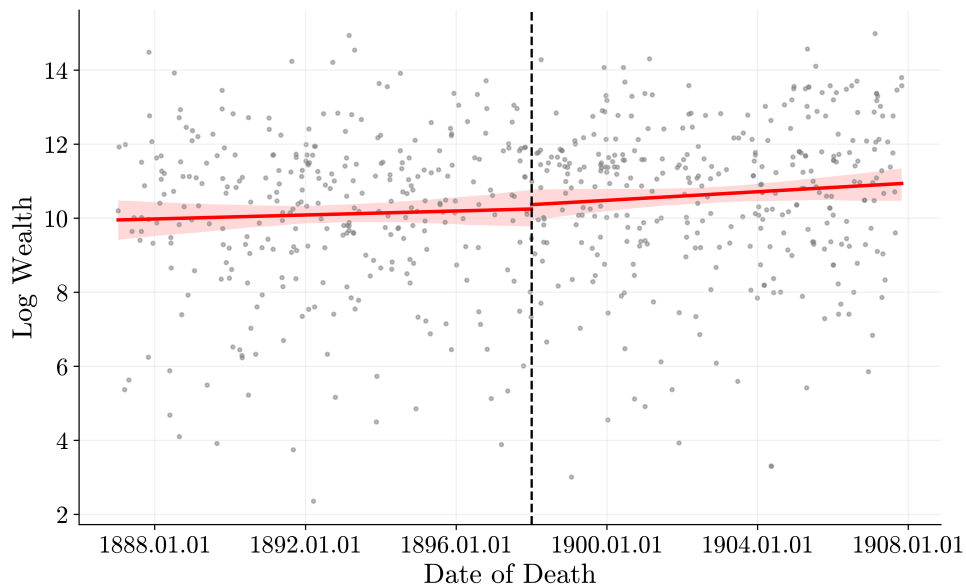
Note: Based on 648 PPR records containing title-holders between 1888-1907. Y-axis is log wealth, in 1907£. X-axis is date of death. Vertical black line is the addition of unsettled realty to probate valuations. Red-shaded area is 95% confidence interval.

To check formally for a discontinuity, I run a regression looking at title-holder probates in the 10 years before and after the discontinuity. I use wealth as the dependent variable, a constant pre/post variable, a running variable for distance from 1898, and an interaction term between these:

$$Wealth_i = \alpha + \beta_1 Post1898_i + \beta_2 YearsSince1898_i + \beta_3(Post1898_i \times YearsSince1898_i) + \epsilon$$

$$(1.5)$$

The α term captures the average wealth pre-1898, the β_1 term captures the break in average wealth in 1898, β_2 captures the growth rate of wealth pre-1898,

and β_3 captures the change in growth rate after 1898. The results are presented in Table 1.A.1.

Table 1.A.1: Wealth Discontinuity Regression

	(1)
Intercept	121500.00
	(31300.00)
Post 1898	-32700.00
	(48700.00)
Years since 1898	-24.24
	(5053.16)
Interaction	17230.00*
	(8349.70)
Observations	648.00
R-squared	0.02
F-statistic	3.76

Notes: Estimates from 648 observations of title-holder wealth at death from 1888-1907. ***: $p < 0.001$ **: $p < 0.01$ *: $p < 0.05$.

The coefficient for $Post1898$ is not significant, and in fact is negative, indicating that there is no significant jump in wealth recorded in probates for title-holders before and after 1898. The interaction term is weakly significant, suggesting that the wealth recorded in titled probates grew more rapidly post 1898 than before, but a change in the growth rate is more suggestive of changes in general economic conditions, than asset inclusion.

Appendix 1.B   Data Construction

1.B.1   Scraping

I scrape 259k images of probate calendars from *probatesearch.service.gov.uk*, held under the *Open Government Licence*. I use the same methodology as Cummins (2021), automating the process using the *requests* and *BeautifulSoup* libraries in Python.

1.B.2   Page Segmentation and OCR

The transcription of the documents is straightforward. However, out-of-the-box OCR methods are unable to reliably predict reading order for these documents, so I implement a simple page segmentation algorithm using the *OpenCV* library.

The calendars come in two formats, 1858-1891 and 1892-1907. The approach is similar for both, I show an example of the first format in Figure 1.B.1. The aim of the image segmentation algorithm is to identify and segment each individual entry into a pair of images (1858-1891) or a single image (1892-1907).

I perform a number of pre-processing steps, and create a pixel map of the text box areas using dilation. In the first pass I identify the headers and columns, by creating countours and then bounding boxes around structured pixels, and applying some statistical rules to detect: boxes that are too small or large, areas where two boxes are conjoined, etc., and apply further processing to these. In the

second pass, I use these bounding boxes, and their position, to segment the image. I use the position of text in the left hand column to create a segmentation grid, as these are more distinctly positioned. Finally, I transcribe these sub-images into text using the *tesseract* OCR engine.

Figure 1.B.1: Image Segmentation, First Pass
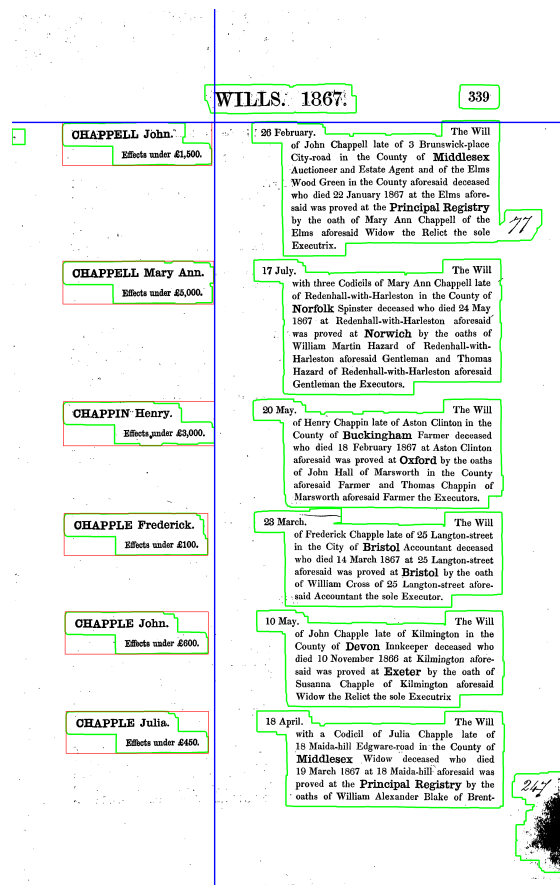
Note: Example from PPR calendar, 1867.

1.B.3 Text Analysis

Text from the OCR process is then parsed into variables using Regular Expressions. I extract the following variables: surnames, forenames, wealth, title, and date of death. I classify each title into one of the following ranks: prince, duke, marquess, earl, viscount, baron, lord, baronet, knight. For an example of a titled probate see Figure 1.B.4.

1.B.4 Example Title-holder Probate

Figure 1.B.2: Probate Entry for Sir Edmund Walker Head

Note: from PPR calendar, 1868.

1.B.5 Data Checks

Besides the manual checks mentioned in the Section 1.6.1, I also compare the constructed data to existing estimates. In 1861, the Principal Probate Registry published a report of aggregate statistics from the 1858 probate calendars, I compare the distribution of my data in 1858 to these (Figure 1.B.3). These follow a

similar distribution to my constructed data.

Figure 1.B.3: Probates, from RGO Annual Report (1861)
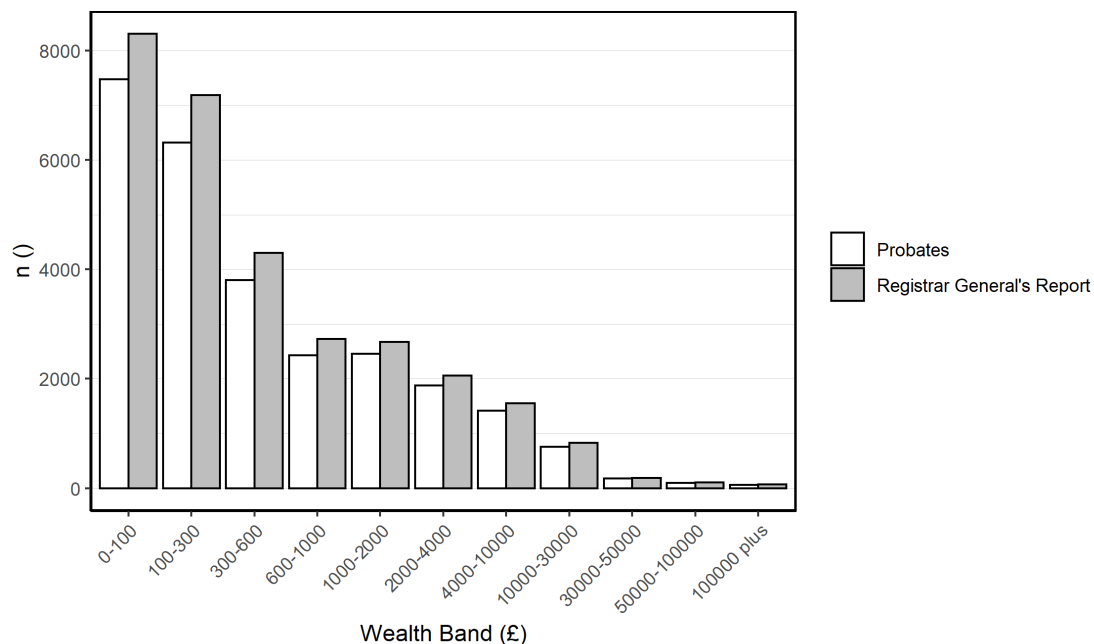
Notes: 'Probate' statistics calculated from 26,868 individual PPR calendars from 1858. RGO statistics calculated from aggregated figures for 29,979 probates from 1858 in Annual Report of the Registrar General, 1861.

Appendix 1.C   Linking

Both the probate calendars and *The Peerage* contain extensive information on title-holders, meaning that matching them is a relatively straightforward and robust process. Below, I present the information given in both sources for one example, the Duke of Bedford. I match these in full, using the original text, not just the variables extracted with regular expressions.

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The Peerage

- Name: Francis Russell.

- Title(s): 7th Duke of Bedford (Primary), 7th Baron Howland of Streatham, 7th Marquess of Tavistock, 12th Baron Russell, 11th Earl Bedford, 9th Baron Russell of Thornhaugh.

- Date of Death: 14 May 1861.

- Place of Death: Woburn Abbey, Bedfordshire.

- Relations: Anna Maria Stanhope (spouse), William Russell (son).

PPR Calendar

- Name: Francis Russell.

- Title(s): Duke of Bedford.

- Date of Death: 14 May 1861.

- Place of Death: Woburn Abbey, Bedford.

- Executors: William Russell (son).

The Peerage also contains information on the date each title was granted, and the parents of the title-holder.

Appendix 1.D   Estimation

1.D.1   Death Registers, Adult Deaths

To estimate surname-level measures, such as social mobility, I need surname level adult mortality statistics. These are available for 1866-1907, but not 1858-1865. I combine the *Death Registers* and *RGO Annual Reports* to estimate surname-level adult mortality for 1858-165.

Using death register data, I calculate the average proportions of deaths which are from adults, for each surname between 1866 and 1907, this is denoted as $\overline{P}_s^a$.

$$P_{sy}^a = \frac{D_{sy}^a}{D_{sy}^c + D_{sy}^a}, \tag{1.6}$$

$$\overline{P}_s^a = \frac{1}{n} \sum_{y=1866}^{1907} P_{sy}^a \tag{1.7}$$

where D_{sy}^c and D_{sy}^a represent the number of child and adult deaths for a given surname in a given year, s represents a specific surname, y represents a specific year, a represents those aged 20 plus, and c represents those under 20.

Using Annual Report data, I calculate the average proportions of deaths that are adult between 1866 and 1907, denoted as $\overline{P}^a$, and the proportion of deaths that are adult for the overall population for each year, denoted as P_y^a. For each year between 1858 to 1865 I calculate the ratio of adult deaths in that year to the

average in 1866 to 1907.

$$R_y^a = \frac{P_y^a}{\overline{P}^a} \quad \text{for} \quad 1858 \leq y \leq 1865 \tag{1.8}$$

I then calculate an adjusted proportion, which is the average proportion of each surnames deaths that are adult between 1866 to 1907, $\overline{P}_s^a$, multiplied by the ratio of the proportion of deaths from adults in that year to the average across 1866-1907, R_y^a.

$$A_{sy}^a = \overline{P}_s^a \cdot R_y^a \tag{1.9}$$

Finally, I multiply this adjusted proportion against the total number of deaths for each surname in each year D_{sy} to get D_{sy}^a, the number of adult deaths for each surname in a given year.

$$D_{sy}^a = D_{sy} \cdot A_{sy}^a \tag{1.10}$$

This gives me a surname level adult mortality estimate for the years 1858-1865. This method should capture changes in the number of deaths, changes in the relative proportion of child and adult deaths, and differences in the proportion of child and adult deaths between surnames. It assumes, however, that differences in adult versus child mortality between surnames are constant over time. Figure 1.D.1 shows the application of this procedure to 1866 data, where we observe this directly, using surname adult death rates from 1867-1907. The estimated number

of adult deaths for each surname closely matches the real data from the 1866 death registers.

Figure 1.D.1: Estimated vs Actual Adult Deaths, by Surname (1866)
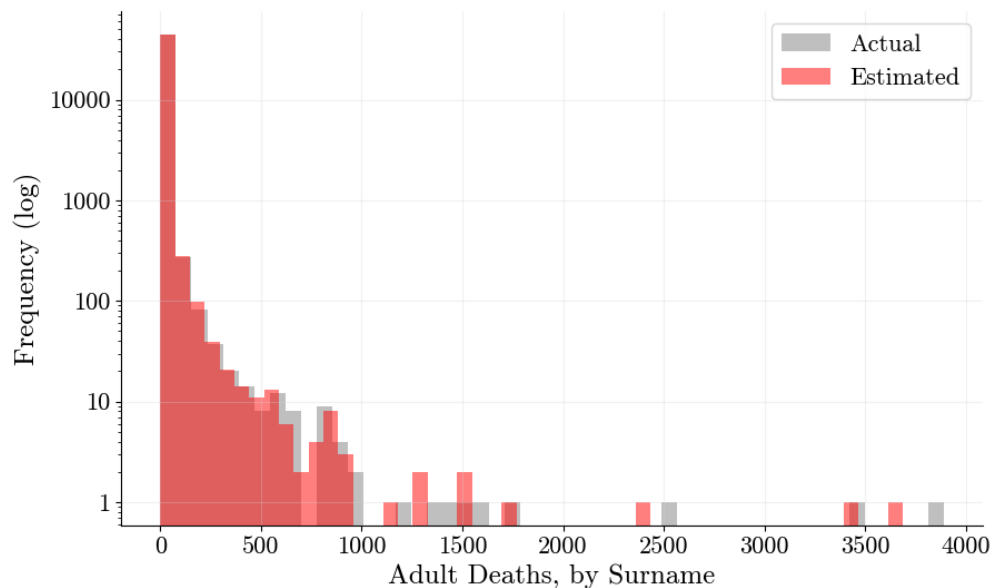
Note: Based on 258k deaths aged 20+ from the *Annual Report of the Registrar General's Office, 1866* and estimated deaths for the same year using the procedure above.

1.D.2   Title-holder Probates

Title-holders could be missing from probates for three reasons: they do not have enough wealth to be probated, their estate is completely hidden or held in trusts, or they are probated in a different jurisdiction. Assuming that all eligible title-holders are probated could inflate the wealth of title-holders, as I exclude those dying below the threshold from my sample. However, the number of these is likely to be small. Figure 1.D.2 shows the distribution of title-holder probates when the

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threshold was £10 (before 1901) and £50 (after 1901).

Figure 1.D.2: Probated Title-holders, against Probate Threshold
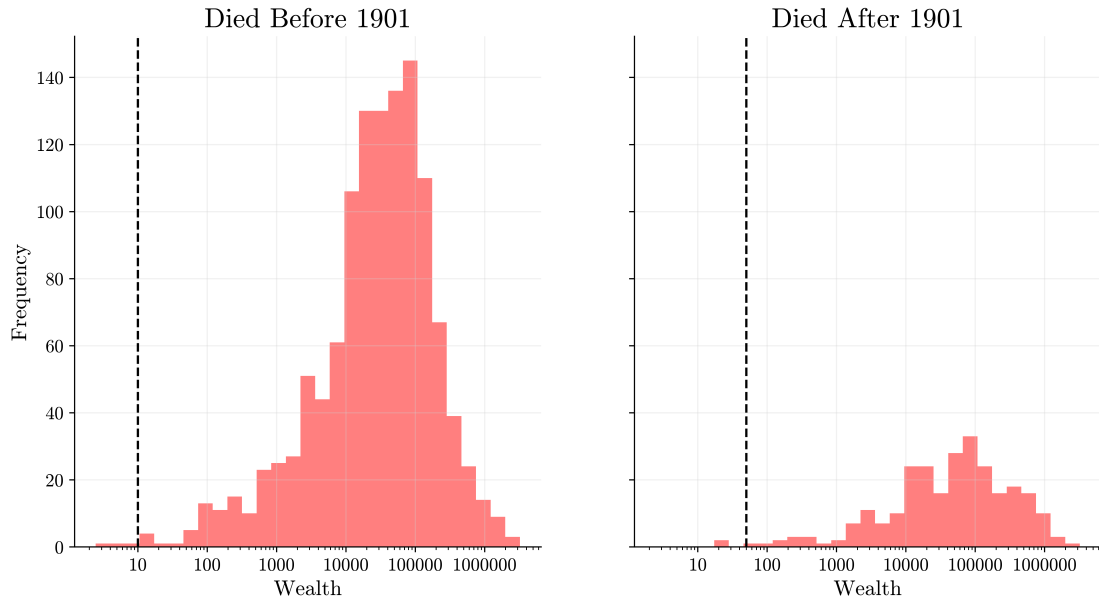
Note: Based on 1.4k probate calendars concerning title-holders. All figures in 1907(£). The figures plot the distribution of title-holding probated wealth when the threshold was £10 (pre-1901) and when it was £50 (post-1901). Individuals can be probated despite being below the mandatory reporting threshold.

The figure includes some probated below the threshold, as this was the *mandatory* reporting threshold, but individuals could still be probated below it. This shows that only a tiny proportion of title-holders are close to being below the mandatory threshold (note the log scale). If the probates follow this distribution beyond the cutoff, there should be almost no unprobated title-holders. Consequently, assuming that all eligible title-holders were probated is going to affect our estimates by far less than assuming all non-matched title-holders died with no wealth.

Appendix 1.E Social Mobility

1.E.1 Wealth Distribution of Surnames

There might be concern that rare surnames do not follow the same distribution as the rest of the population, Figure 1.E.1 shows the distribution of wealth by surname rarity. As can be seen, the distribution of rare surnames approximates the distribution of wealth at the surname level. While common surnames more closely approximate the distribution of wealth at the individual level. These results do not show any particular wealth bias for rare surnames as defined in the paper. In fact, due to the distribution of surname rarity, 'rare' surnames comprise most surnames. For a direct comparison of the distributions of rare and all surnames, normalised as a probability density function, see Figure 1.E.2.

Figure 1.E.1: Wealth Distribution, by Surname Rarity
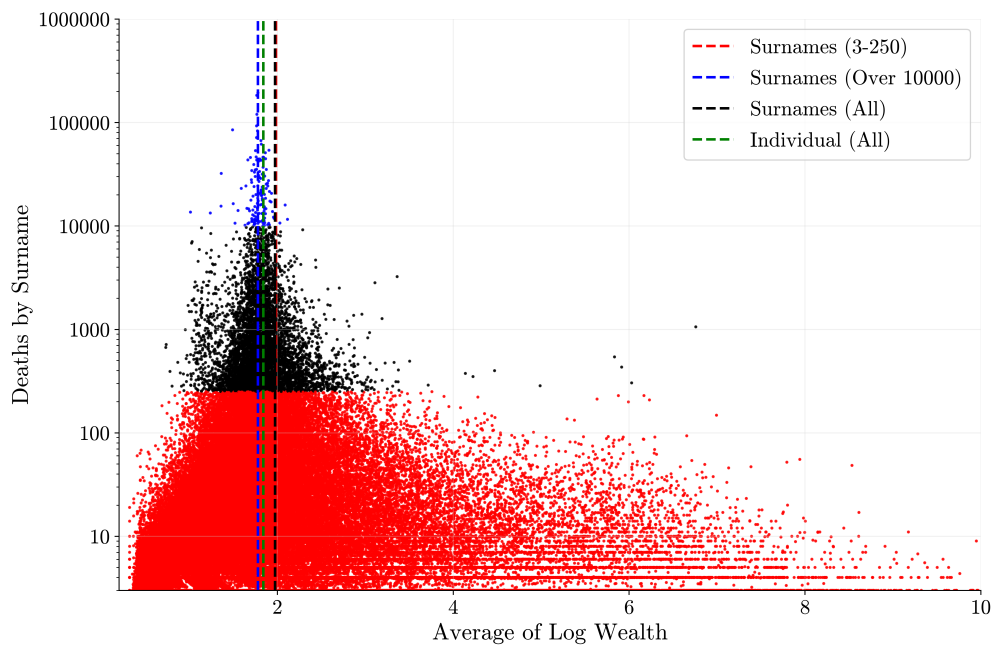
Notes: Based on 2.2m PPR records, and records of 13.9m deaths from Cummins (2021). Distribution of wealth by surname frequency. Rare, 3-250 deaths between 1858-1907, is plotted in red. Common, over 10,000 deaths between 1858-1907, is plotted in blue. All other surnames are plotted in black. The red, blue, and black vertical lines represent the mean average log wealth at the surname-level, for rare, common, and all surnames respectively. The green vertical line gives mean log wealth at the individual level. The y-axis is plotted on a log scale.

Figure 1.E.2: Rare and Common Surname Wealth, Probability Density Function
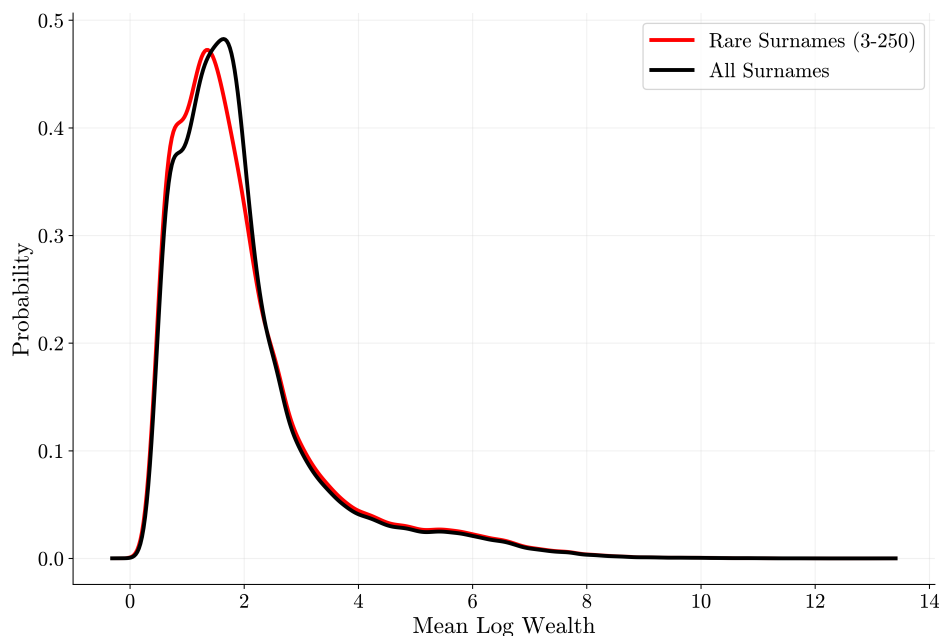
Notes: Based on 2.2m PPR records, and records of 13.9m deaths from Cummins (2021). Distribution of wealth by surname frequency. Rare, 3-250 deaths between 1858-1907, is plotted in red. All surnames are plotted in black. Plotted as a smoothed probability density function.

1.E.2 Robustness to Surname Rarity

To check whether the coefficients are an artefact of the construction of the rare-surname groups, I re-estimate the coefficients in Columns (2) and (4) of Table 1.2, using varying minimum and maximum thresholds for classification as a 'rare' surname (Figure 1.E.3). While larger surname groups do result in a loss of status information about the members of that group, these thresholds have no bearing on the results. Even increasing or decreasing these thresholds substantially has no

effect on the significance of the coefficients of interest.

Figure 1.E.3: Social Mobility Estimates with Varying 'Rareness' Thresholds
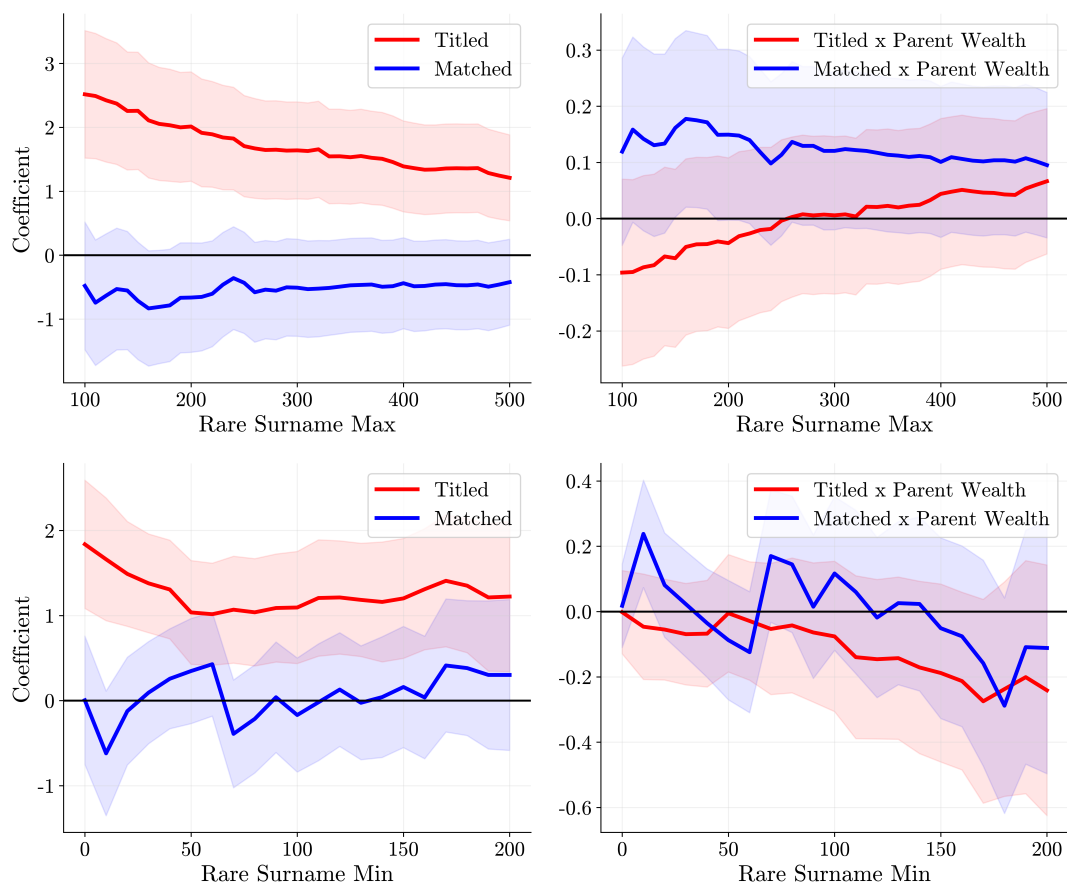
Note: This plots the coefficients of interest from Columns (2) and (4) from Table 1.2, but using different threshold definitions of 'rare' surname. The surname rarity bands are number of deaths between 1858-1907. Error bars represent 95% confidence intervals. The top two panels shows the effect of changing the maximum threshold for rarity, and the bottom two show the minimum threshold. The left two panels show the constant term for both groups, and the right show the interaction term.

1.E.3   Surname Matching

Figure 1.E.4 shows the distribution of wealth for titled and matched surnames.

Figure 1.E.4: Rare Surname Wealth, Title-Holders and Matched
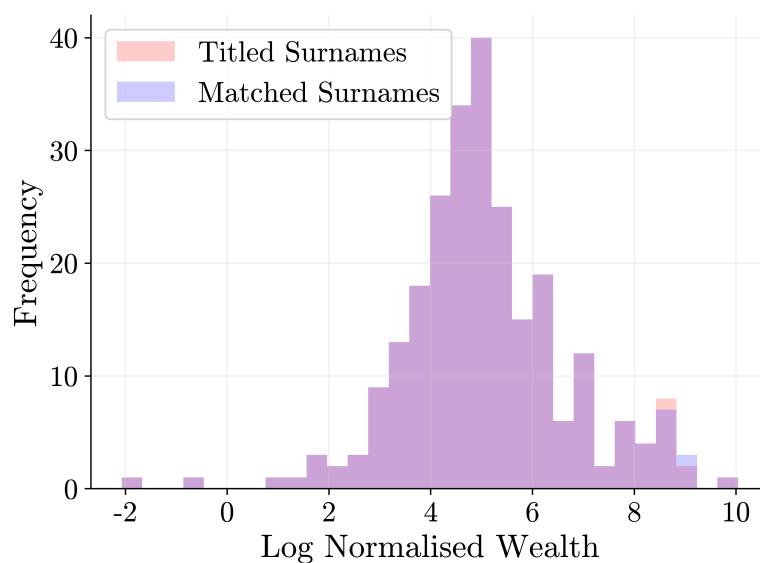
Notes: Distribution of log normalised wealth for title-holding rare surnames, and matched surnames in Generation 1.

1.E.4 Robustness to Non-Probated Estimation Procedure

To check robustness to varying estimates of non probated wealth, I re-estimate the main regression results, using the minimum and maximum possible values for non-probated wealth, possible according to the thresholds for mandatory reporting.

Table 1.E.1: Social Mobility Estimates, Robustness to Non-Probated Estimation Procedure

	(1) Titled	(2) Matched	(3) Titled	(4) Matched	(5) Titled	(6) Matched
Intercept	-2613.05	-2544.36	598.41	641.28	330.07	373.56
	(1368.30)	(1369.96)	(740.28)	(741.86)	(1047.20)	(1048.88)
Parent Wealth	0.54***	0.55***	0.52***	0.53***	0.50***	0.51***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Parent Wealth $\times$ Group	-0.05	0.02	-0.09	-0.01	-0.02	0.07
	(0.09)	(0.09)	(0.05)	(0.05)	(0.07)	(0.07)
Group	1.97***	-0.14	1.69***	-0.09	1.73***	-0.32
	(0.53)	(0.53)	(0.23)	(0.23)	(0.38)	(0.38)
Controls	YES	YES	YES	YES	YES	YES
Procedure	MIN	MIN	MAX	MAX	HMRC	HMRC
R^2	0.35	0.35	0.35	0.35	0.36	0.36
F-Stat	5.3×10^3	5.3×10^3	5.3×10^3	5.2×10^3	5.4×10^3	5.4×10^3
RMSE	2.41	2.46	1.31	1.35	1.85	1.89
Observations	67777	67777	67777	67777	67777	67777

Notes: Intergenerational wealth elasticity estimates for those with titled and matched rare surnames. For method see Section 1.7.2. This presents robustness checks, re-estimating the results with the minimum, maximum and preferred estimates of non-probated wealth, see Section 1.6.3.
***: $p < 0.001$; **: $p < 0.01$; *: $p < 0.05$

1.E.5 Projection Procedure

I calculate the expected wealth of titled and matched surnames in each generation, using the coefficients from Table 1.2, columns (1) and (3). This is meant to give an intuitive insight into what these trends would look like, projected forwards, rather than a precise estimate.

I start by estimating wealth in generation 0, denoted as W_0, and the associated standard error SE_{W0}, from the Generation 1 data on titled/matched surnames. These are just the mean and associated standard error of the wealth measure produced in Section 1.7.2, for titled or matched surnames, which by definition are identical.

For each generation, I then calculate the next generations wealth as:

$$W_g = W_{g-1} \times (\beta_{pop} + \beta_{group}) + \alpha_{group}, \tag{1.11}$$

where B_{pop} is the population intergenerational wealth elasticity coefficient, β_{group} is the additional intergenerational wealth elasticity experienced by the group, and $\alpha_g roup$ is the constant wealth bonus experience by the group.

Then, the standard error for each generation g where $g \geq 1$, I estimate a new standard error. We can calculate the standard errors associated with the

population and group coefficient as:

$$SE_{joint} = \sqrt{SE^2_{\beta_{pop}} + SE^2_{\beta_{group}}}, \qquad (1.12)$$

from this, we can calculate the standard error in the wealth of the next generation as:

$$SE_{W_g} = \sqrt{(W_{g-1} \times SE_{joint})^2 + ((\beta_{pop} + \beta_{group}) \times SE_{W_{g-1}})^2 + SE^2_{\alpha_{group}}}, \quad (1.13)$$

where $(W_{g-1} \times SE_{combined})^2$ represents the contribution of uncertainty in both intergenerational wealth elasticity coefficients to the wealth of the next generation, $((\beta_{pop} + \beta_{group}) \times SE_{W_{g-1}})^2$, accounts for uncertainty in the previous generation's wealth, and it's impact on the next generation, and $SE^2_{\alpha_{group}}$ represents error added directly by the constant term.

Appendix 1.F Social Composition

1.F.1 Measurement

The aim of the hereditary scores is to capture the extent of an individual's family background that comes from the pre-1858 titled aristocracy. I convert the

genealogical data into direct networks, and then sort the network topologically based on dependencies. This means that we calculate the scores of the most distant ancestors first, then work our way down the chain.

Let i denote an individual in the genealogical network, and s_i represent the hereditary score of an individual i. The hereditary score is calculates as follows:

$$s_i = \begin{cases} 100, & \text{if } i \text{ is a pre-1858 title-holder} \\[2ex] \frac{s_{m(i)} + s_{f(i)}}{2}, & \text{otherwise} \end{cases} \tag{1.14}$$

where $m(i)$ and $f(i)$ denote the mother and father of individual i, respectively. If a parent is unknown, their score is assigned a default value of 0.

1.F.2 Robustness Hereditary

To check the robustness of the hereditary scores, we need to check sensitivity to three features: the incompleteness of family tree, the assumption that those with no recorded titled ancestors have no significant hereditary background, and that this background is equally passed through both branches. I present the results of all of these checks in Figure 1.F.2. Panel A shows the baseline specification included in the main text.

In Panel B I investigate the effect of missing data. I remove all individuals in the genealogical network born before 1700, then re-estimate the hereditary score. This changes the distribution of scores, pushing them towards the extremes, as

over fewer generations, the extent of mixing is more limit. Nonetheless, it has little impact on the overall picture, only marginally decreasing the estimated hereditary scores.

Next, I check whether the results are sensitive to assumptions about the background of parents who are not recorded. I estimate a generic non-titled background based on those individuals from whom we know their grandparents. This allows me to calculate a score without relying on network dependencies, which would suffer from the missing data problem. I calculate this as 100 if both grandfathers are titled, 50 if one is, and 0 if neither are.

Formally, we can measure a generic non-titled background score $\bar{g}$, based on individuals for whom full information up the grandparent is available:

$$\bar{g} = \frac{1}{N} \sum_{i=1}^{N} g_i, \quad \text{where} \quad g_i = \begin{cases} 100, & \text{if both grandfathers of } i \text{ are titled} \\ 50, & \text{if one grandfather of } i \text{ is titled} \\ 0, & \text{if neither grandfather of } i \text{ is titled} \end{cases} \tag{1.15}$$

Here, N gives the number of individuals for whom grandparent information is available, and g_i is the score for individual i based on their grandfathers' status. The average score for non-titled individuals in this measure is 7.1.

I then re-estimate the hereditary score, but for all unknown parents, I give

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them a score of 7.1, $\bar{g}$, rather than 0. This is an upwardly biased estimate, because non-titleholders for whom we know grandparents are more likely to have a titled background. Nonetheless, because we have relatively complete data for a long period before 1858, this has a negligible impact on the results, shown in Panel C.

Finally, I check whether just using information on males has an effect on the result. As females could not typically hold a hereditary title, information about their background might not be as pertinent. Further, if the data is more likely to record the male line, then the assumption that because a female is not recorded, she has no titled background, is a stronger one than for males. I calculate a robustness check, where we only rely on the scores of males, even in the maternal line. The idea is that we can approach the score for the mother, by recursively scoring these male partners. That is, half of the mother's score comes from her father, a quarter of it comes from her mother's father, an eighth from her mother's mother's father. As we approach infinite generations, this score approaches the mother's score. Of course, we do not have an infinite number of generations, but we can use this procedure to approach the total score of the mother. In each case I record a total weight, which captures the number of generations of fathers, e.g. 1 generation is only 50%, whereas 3 would be 87.5%. We can then divide the cumulative score by how much of her heritage we have captured, to estimate her expected hereditary background given the men that we know in the female line. On average, for each mother I can calculate 87.4% of her total score, and then

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reweight this.

Let's define $s_{m(i)}$ as the hereditary score of the mother of individual i, calculated using only the male ancestors in the maternal line. We can calculate it as follows:

$$s_{m(i)} = \frac{\sum_{k=1}^{K}\left(\left(\frac{1}{2}\right)^k \cdot s_{m^k(i)}\right)}{\sum_{k=1}^{K}\left(\frac{1}{2}\right)^k} \tag{1.16}$$

Here, K denotes the number of known male ancestors in the maternal line. For example, if we know the mother's father and the mother's mother's father then $K = 2$.

$$s_{m^k(i)} = \begin{cases} 100, & \text{if the } k\text{-th male ancestor of } m(i) \text{ is a pre-1858 title-holder 0,} \\ \\ \text{otherwise} \end{cases} \tag{1.17}$$

The term $\left(\frac{1}{2}\right)^k$ represents the weight assigned to each male ancestor based on their generational distance from the mother. The mother's father ($k = 1$) has a weight of $\frac{1}{2}$, the mother's mother's father ($k = 2$) has a weight of $\frac{1}{4}$, and so on. The numerator $\sum_{k=1}^{K}\left(\frac{1}{2}\right)^k \cdot s_{m^k(i)}$ calculates the weighted sum of the scores of the known male ancestors in the maternal line. Each ancestor's score is multiplied by their corresponding weight and then summed. The denominator $\sum_{k=1}^{K}\left(\frac{1}{2}\right)^k$ represents the total weight, which is the sum of the weights assigned to each known male ancestor. We can then use this as an alternative for $s_{m(i)}$ in the original equation, but accounting for the completeness of information about males in the female line.

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These results are shown in Panel D.

Figure 1.F.1: Hereditary Score Robustness

(A): Baseline

(B): Post-1700

(C): Higher Unknown Background

(D): Recursive Mother
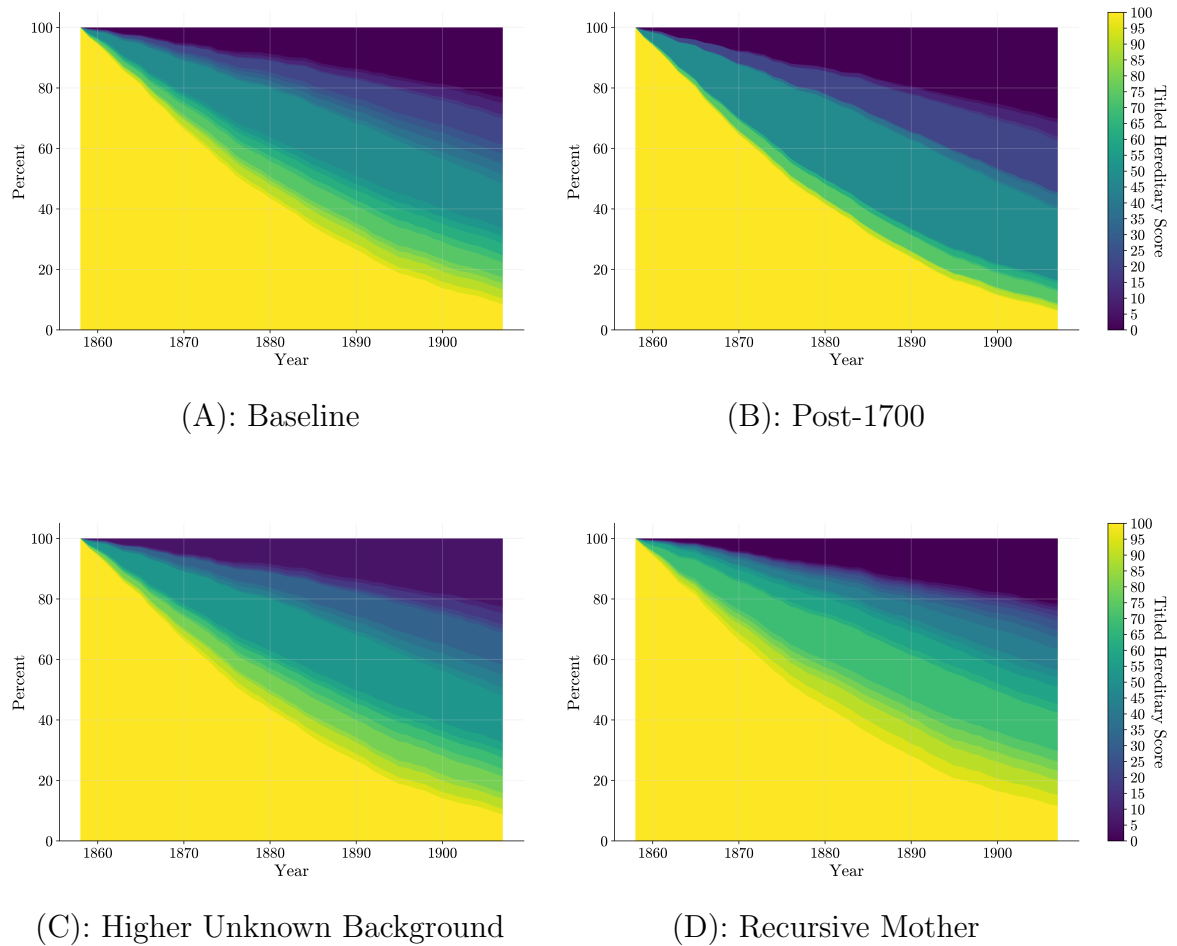
1.F.3 Marriages and Title-Grants, Peers vs Baronets

I present the results from Section 1.7.3, decomposing the data into peers and baronets. Figure 1.F.2 presents the share of marriages where the father-in-law was a title-holder, for both peers and baronets. This shows that baronets were already

substantially more likely to marry outside the title-holding aristocracy. However,

in this period the rate of internal marriage decline more quickly for peers.

Figure 1.F.2: Title-Holder Marriages, Peers vs Baronets
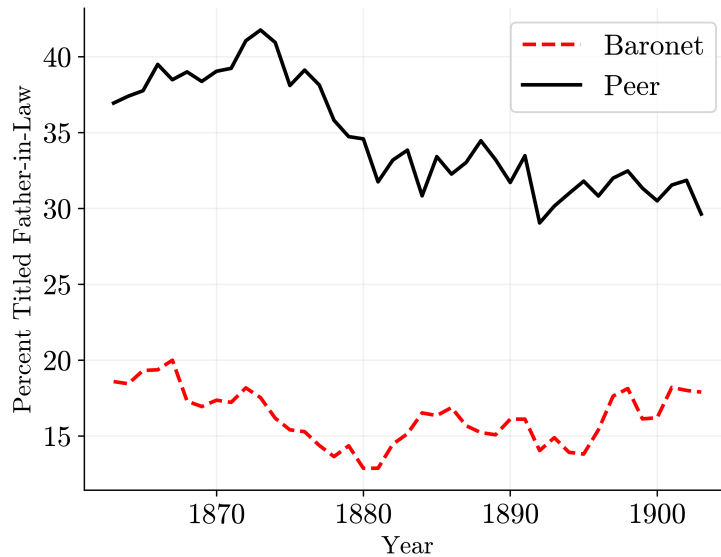
Notes: Based on records of 4,250 marriages of title-holders from the period 1858-1907, from Lundy's *The Peerage.* Shows percent of marriages in which the father is known where the father-in-law was titled. Plotted as 10-year moving average.

Figure 1.F.3, shows the percent of new baronets and percent of new peers in

each year who were the first holders of their title. Here again, at the beginning of

the period new titles were more likely to be created for baronets than for peers.

However, the proportion of outsiders been granted peerages is what changes the

most over this period, increasing substantially in the first half of the period.

Figure 1.F.3: New Titles Among New Title-Holders, Peers vs Baronets
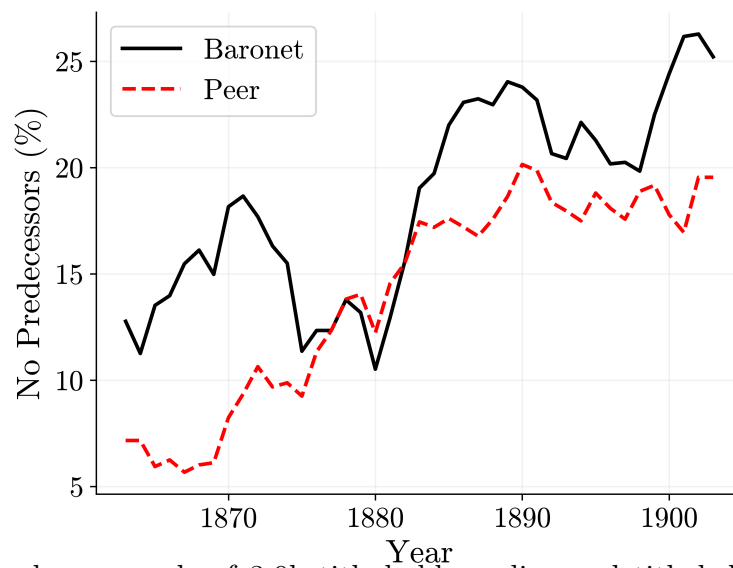
Notes: Based on records of 3.9k title-holders alive and titled during the period 1858-1907, from Lundy's *The Peerage*. Shows the percent of peers and baronets who received their title in a given year, whose primary title was not previously held by anyone else. Plotted as a 10-year moving average.

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Paper 2

Friends in High Places? Victorian Social Clubs and

the 'Gentlemanly Capitalist' Elite, 1861-1911

2.1 Introduction

Writing in October 1886, in the *Pall Mall Gazette*, an anonymous author reminisced about times gone by:

> '*It may be said of clubs as of society generally, 'The old order changes,*
>
> *giving place to the new". - Pall Mall Gazette (1886, p. 6)*

These are the final words of King Arthur as he departs the mortal world. The line, taken from Tennyson's *Idylls of the King*, signals the death of the age of chivalry. Fitting for an era which supposedly saw the collapse of the *ancien régime* and the rise of a new, plutocratic elite.

This paper investigates the alleged growth of banking influence within High Society in late nineteenth-century Britain. Cain and Hopkins (2016) argue that a flourishing gentlemanly capitalist class, primarily composed of bankers, gained significant power and prestige in this period. The growing influence of this group began the eclipse of the landed interest and a political shift towards financial concerns, overseas investment, and commercial profits. In the eyes of some, this stunted the growth of domestic industry, and was the root of Britain's long economic decline (Anderson, 1987). Yet, the influence of this banking community has been fiercely contested (Cassis, 1985, 1988; Chapman, 1986). This debate hinges largely on the definition of the banking community. Cassis (1985, 1988) focuses on long-standing merchant bankers with close connections to the aristocracy, while

Chapman (1986) emphasises the importance of new, less socially prominent families. This paper sheds new light on this debate, using network analysis to provide a robust measure of the social position of members of this group, extending the chronology, and examining this banking group from the perspective of the aristocracy.

The paper makes three key contributions. First, it uses network analysis to quantify changes in the social position of bankers. Though the 'gentlemanly capitalism' hypothesis is implicitly premised on position within social networks, previous studies have focused on individual characteristics. Network measures provide robust benchmarks for changes in social position, for instance, the influence of particular individuals or the integration of different groups. Second, the paper extends back the chronology from 1890 to 1861, providing a clear view of long-run dynamics. Third, the final section of the paper provides new estimates for integration in other measures, marriages and peerages, but from the perspective of the aristocracy. This is less sensitive to the definition of bankers and provides insights into their overall influence. The main focus is on members' clubs, the central social institution of the period. These served as a key arena for the formation and maintenance of social ties among elites.

The results of this study broadly confirm the conclusions of the debate between Cassis (1985, 1988) and Chapman (1986), but provide important nuances. Network analysis reveals that there was a small, highly influential group of merchant

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bankers, who were positioned near the top of the social hierarchy. However, this group was not representative of the professional community of bankers as a whole. These families comprised only a small minority of either club members, aristocrats, or those marrying into the aristocracy. The size of this group suggests that its influence on the social environment of the aristocracy was limited. Moreover, measures of influence suggest that the 'city aristocracy' was already influential in these circles at the beginning of the period. Admission continued to be a gradual process, rather than a sudden revolution. While the aristocracy had a banking element, it was not much stronger at the end of the period than the beginning.

Clubs were the key arena in which social capital was spent. These personal relations constituted a key channel for social influence and power to flow through. Though clubs were certainly not the only source of such relations, they were central to the daily social lives of their members. They inform us about friendships more than any other single source. Demonstrating that this environment did not witness any major shock in relation to bankers comprises three parts. I first demonstrate that the participation of bankers in clubs was no broader in 1911 than in 1861. Next, I examine the position of individual bankers within the inter-club network, to show that their influence in this social world did not grow. Finally, I examine the overarching structure of connections between bankers and aristocrats in multiple clubs, to show that both groups were highly insular across the period.

This approach, which examines social power within a network of relations,

rather than individual markers of status, requires detailed data on the social makeup of clubs. To that end, I construct several new databases, on club members and bank partners and directors. In total this comprises 42,550 membership records for seven clubs, and 8,060 bank partner/director records for over 500 banks, hand-collected in ten yearly panels from 1861 to 1911. I use a variety of methods from network analysis to better understand the social position of bankers. I use centrality measures for different members and compare the distribution of relations with randomly simulated networks. These show that bankers were no more likely to associate with the aristocracy at the end of the period than the beginning.

The paper is structured as follows: Section 2.2 gives a review of the literature, Section 2.3 presents a historical and theoretical framework for understanding clubs, Section 2.4 details the data, and Section 2.5 the matching methods. Section 2.6 gives the results, and evaluates these alongside new marriage and title grant data. Section 2.8 concludes. The Appendix contains details on network notation, centrality measures, simulations, and simulation diagnostics.

2.2 Literature Review

The turmoil of nineteenth century Europe has given rise to two distinct historiographical traditions. One which stresses continuity, and the other change. Mayer (1981), in particular, has argued that the old order persisted. He maintains that

the aristocracy co-opted emerging elites, 'assimilating, delaying, neutralizing, and subduing capitalist modernization' (Mayer, 1981, p. 4). The literature on institutions has long argued that the inclusivity of social and political organisations is crucial to the development of a competitive economy. North et al. (2009) classify societies into two main types: limited-access and open-access orders. In this framework, limited-access orders are defined by elite control of trade, property rights, violence, and socio-political organisations. The aristocratic monopoly on the first two of these had clearly been lost by 1890. Yet, the extent to which elites controlled entry to key organisations is less obvious.

Recently, the change perspective has dominated. Cain and Hopkins (2016) emphasise the emergence of a new phase of 'gentlemanly capitalism' after 1880. In particular, they argue that the growing social prestige of financiers created a tight bond with the aristocracy. This led to a shared world-view with a focus on small government and free trade. New wealth became increasingly important within the landed aristocracy, as free trade saw the collapse of agricultural rents. In their words, from the 1870s 'aristocratic power was in clear decline [and] power and prestige devolved more upon a new gentlemanly class arising from the service sector' (Cain and Hopkins, 2016, p. 125). Similarly, Cannadine (1990) characterised the 1890-1914 period as the 'decline and fall' of the British aristocracy, brought about by collapsing rents, the broadening of the franchise and the 'dilution' of High Society. It is important here not to overemphasise the depth of this

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decline, this was the beginning of the end, and even in this narrative the collapse was drawn-out. In neither view is the collapse of the aristocracy absolute, or even that extreme, but both emphasise a shift in the balance of power. This seems to have been a period in which the aristocratic monopoly on wealth was broken. Rubinstein's (1981) work on probate records shows a disproportionate number of fortunes after the 1850s being made by individuals in finance. The study by Cassis (1994) of 460 London bankers in the 1890-1914 period shows that titles of nobility were common amongst the most elite bankers, with 10% holding peerages and 11% baronetcies.[1] This study examines social shifts in this balance of power, extending the time-frame back to the 1860s, looking at a broader sample, and introducing new measures of social position and power.

While it seems likely that there were a number of aristocratic banking families, this alone is not enough to demonstrate that bankers became increasingly influential in elite society. There are two key issues at play. First, the breadth of this influence. It is one thing to argue that there were a handful of influential banking families, but quite another to assert that social power had devolved onto the banking elite. Second, having the external markers of the aristocracy does not mean that bankers wielded the same social influence. For instance, marriages into the aristocracy were largely from a small number of families which had long held aristocratic connections and influence over High Society. Notably the Barings,

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[1]Though a number of these would have been aristocrats joining the boards of banks.

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Glyns, Grenfells, Mills, and Rothschilds. While aristocratic marriages indicate that these families were high status, they could suggest assimilation, rather than bankers holding social power on their own terms. The truly new entrants to the financial elite, families like the Schroders and Kleinworts, who did not marry into the aristocracy, were not socially notable. Clearly, the bounds of the banking community are crucial to this question. Typically, the bankers being discussed are merchant bankers from two relatively distinct camps: one aristocratic and Anglicised, the other foreign, new, and highly successful. The argument that bankers became newly influential in this period requires that either the Anglicised families were not formerly influential, that foreign merchant bankers became influential, or that influence spread beyond merchant bankers.

2.3 Theoretical Framework

2.3.1 A Brief Description of Clubs

The focus in this paper is on clubs, which formed an essential part of the daily social lives of their members. Milne-Smith's (2006) extensive work on London clubland has framed membership as a 'flight to domesticity', arguing that clubs were a 'surrogate home', forming the social backdrop for the lives of members. Her work is drawn from a number of contemporary accounts, which illustrate the scene well. In 1885, an author at the New York Times wrote that 'it would be a matter

of practical impossibility to the average Englishman to follow any other method of passing his time' (New York Times, 1885). Two accounts of the daily lives of a London bachelor reinforce this view:

> 'He breakfasts, lunches, dines and sups at the club [...]. He lives, moves,
> and has his being within his club' - Society Herald (1888, p. 14)

> 'To an Englishman, if he is a bachelor, his club is his home. It is there
> that he sees his friends, writes his letters, dines, and spends the greater
> part of the day' - New York Times (1871, p. 3)

However, this phenomenon was certainly not limited to unmarried members. Lejeune recounts a story given in the diary of a club member's (great-)grandmother:[2]

> 'We have now been married exactly a year, in which time my husband
> has dined with me but once. Every other night he has dined at Mr
> Brook's Club' - Lejeune (1979, p. 14)

The centrality of clubs to the social lives of their members meant there were strong incentives to join. Barriers to entry were primarily social in nature. The majority of clubs abided by a similar set of rules. There would typically be a set number of members, with some exceptions for supernumerary members.[3] To

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[2]Lejeune records a conversation he had with a club member looking through family diaries. He does not recall if the conversation referred to a grandmother or great-grandmother.

[3]For most clubs this was for members who were overseas for more than 12 months, who paid a reduced subscription.

be eligible for membership a candidate had to be proposed by one member and seconded by another. Thereupon, a number of further sponsors could append their signature to the candidate's application. Candidates would then be put forward for a general ballot of the club's members. Depending on the club, candidates would either be balloted in order of proposal, or would be selected for balloting by the club's general committee.[4] This was important, because at some of the most prestigious clubs, like the Travellers', waiting lists for being balloted were as long as five years. The threshold for entry was high, the minimum being a 90% approval rating, though in some clubs one or two votes against a candidate would see them permanently rejected.[5] Thus, the main criteria for entry was social. Some clubs did also had technical criteria. For instance, the Travellers' required that all candidates had travelled at least 500 miles from London.[6] However, these rarely seem to have inhibited prospective entrants. The financial barrier to entry was low. Entrance fees for the most expensive club in my sample, the Athenaeum, were 30gs while the annual subscription was 8gs, around £3,794 and £1,119 in today's terms.[7]

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[4]Details of these rules are in the club membership books, for more details see the *Data* section.

[5]This was the case in the Travellers' club for instance (The Travellers' Club, 1911, p. 51).

[6]The Travellers' Club (1911, p. 50).

[7]In 2020£ adjusted using the Office for National Statistics' Composite Price Index (1750-1947) and Retail Price Index (1947-2020). This would have been around 0.3% and 0.01% of the annual income of a peer, respectively (Thompson, 1963, p. 25).

2.3.2 Why Clubs?

Not only were clubs daily features of the lives of their members, they served a number of useful functions. Club membership can be considered a form of social capital, defined as 'social obligations [...] which is convertible, in certain conditions, into economic capital' (Bourdieu, 1986, p. 243). Crucially, clubs can convert *bridging social capital*, that is bringing together illustrious individuals, into *bonding social capital*, that is close friendships. This helps create a shared network of information and trust among elites. This social capital, accumulated in clubs, could be spent in a variety of contexts. A response to Kendall's study of modern Texan clubs is illuminating, 'other club members are money in the bank when you need to draw out a favor' (Kendall, 2008, p. 3). Consequently, changes in club membership should capture important elements of changes to social capital.

Clubs were particularly effective at producing social capital and cultural homogeneity because they combined many seemingly contradictory elements. They were at once completely secluded from the outside world and completely open internally; places with gentlemanly standards and less-than-gentlemanly scandals; palaces of entertainment and comfortable homes. I focus on the most prestigious clubs, those of aristocrats and MPs.

These clubs emerged primarily in two waves (Hoare, 2019). The earliest were founded in the 1760s, when aristocratic clients of various coffee and chocolate houses bandied together to acquire their own premises and exclude unwanted vis-

itors. The next wave was in the 1830s, when various clubs formed in response to the passage of the Reform Act (1832), as rallying points for different political campaigns. It is certainly noteworthy that clubs, 'a peculiarly English institution' (Lejeune, 1979, p. 10) constituted the privatisation of what was a burgeoning public sphere in many other nations.

Foremost, clubs provided opportunities for social bonding. The naivety of a new member of White's exposed when, enquiring whether the bar was open, he was informed 'Bless my soul sir. It has been open for 200 years' (Lejeune, 1979, p. 295). Gambling was a central feature of many clubs. Extreme examples of wagers in Brooks's betting books included whether a servant could breathe underwater for twelve hours (he drowned), or if Lord Derby could sleep with 'a woman in a balloon one thousand yards from the Earth' (Hoare, 2019, p. 64). Otherwise unacceptable behaviour was rampant at clubs, with Lord Glasgow asking the club to put his waiter on the bill after throwing him through a window (Lejeune, 1979, p. 13). These scandal-worthy activities helped create a sense of group identity and trust. Members who publicly disparaged other members were promptly expelled. What happened to club members, stayed among club members. Clubs were designed to be inaccessible. In his history of White's, Colson (1951, p. 123) write that if a member 'tells the hall porter he is not in the club if anyone-even his wife-calls, well he is as inaccessible as the Grand Lama of Tibet'.

Yet as the same time, clubs flourished as places to find other people in the pre-

telephone era, and many members even had regular hours of attendance (Taddei, 1999). Internally, and even between different clubs, information flowed freely. As one member recounted in 1869:

> '*Privacy there is none; and if the letter handed you as you sit in the middle of a group should contain intelligence of the death of your dearest friend, or announce the collapse of a bank on whose stability you have staked your fortune, you have to vindicate propriety by assuming an indifference that would do credit to a martyr.*' - *Pall Mall Gazette (1869, p. 10)*

This internal openness and external privacy formed an interlinked network of private information and responsibilities. The club network formed the foundation of High Society such that a 'confirmed frequenter' would know:

> '*what young women are going to the altar, and what young men are going to the dogs; what people have been prevented from going to Court, and what spendthrifts are about to be forced to go through another.*' - *Nevill (1911, p. 142, II)*

Despite being nominally separated from the world of work, clubs were also used for business networking. In her study of members of the publishing industry in Victorian clubs, Joseph (2019) finds that clubs were frequently used for self-promotion, with regular attendance being related to wider press coverage in society

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columns. Similarly, clubs allowed members to entertain distinguished guests, even if they lacked the personal resources to do so. The members of the Garrick Club, for instance, saw fit to invite the Prince of Wales to dine at their club after the Prince had entertained them at Marlborough House on several occasions (Milne-Smith, 2011, p. 120). Club membership provided strong signals about status. The Duke of Marlborough, in his foreword to Lejeune's history of clubs, argues that 'You can, to a very considerable extent, judge a man's tastes, possibly even his character, by the club to which he belongs' (Lejeune, 1979, p. 7). Clearly, membership at the right club could open many doors.

The world of clubs was closely intertwined with politics. In many ways they acted as gatekeepers to the political realm. The Fire of 1834 put much of Parliament out of commission for the three succeeding decades, whilst renovations were completed to the plans of Charles Barry, architect of the Travellers and Reform clubs. In the place of parliamentary lobbies came club backrooms, particularly those of the Carlton and Reform clubs (Thevoz, 2018). Thevoz (2018) conservatively estimates that between 1832 and 1868 88.1% of MPs held a club membership. Clubs even provided a place to stay for a number of politicians. In 1840 one in ten MPs listed their club as their London address (Thevoz, 2018, p. 141). A New York Times article from 1856 characterised these clubs as 'where the wires that ring the call to political parties in England are pulled' (New York Times, 1856, p. 4). This access produced invaluable information. For instance, Lord Stanley,

who was later Minister for Foreign Affairs, recounted first hearing about the collapse of the Aberdeen Coalition at the Carlton Club, before the news was made public (Thevoz, 2018, p. 132).

Clubs, then, constituted a central part of elite communities. They were where members would spend their days, discuss the latest news or gossip, and call in favours. A privileged position meant power and information, as the next section discusses.

2.3.3 Social Power Within Clubs

We can distinguish between various forms of social power that could be important among elites. I construct three distinct measures of social capital within elite society: participation, influence, and integration.

Participation is the simplest measure of involvement in elite socio-politics. In a sense, it is a loose measure, in that it only captures whether individuals share some social trait, for instance, club membership, but does not measure their position within an interconnected network of relations. It is the only measure used by the previous literature. The premise here is that the increased participation of bankers in elite social institutions would indicate a rise in prestige and necessarily imply an increase in influence. However, even if the participation of bankers did not increase, it is possible that their position in the network changed. This is why I construct two further measures, which explore these internal social dynamics.

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The notion of *influence* is largely an individual one. That is, we can best understand it by looking at which specific individuals were in influential positions, and how the types of people in these positions changed over time. This can illuminate who exerts the most influence over the identity of the group as a whole. I categorise social influence into three types: *popularity*, *closeness*, and *betweenness* (Figure 2.3.1, for full details see Appendix 2.B). *Popularity* can be defined as the number of other members an individual is connected to directly through their club. These co-members were the closest relations and easiest source of social capital to draw on. It is also a direct indicator of prestige. *Betweenness* refers to the extent to which an individual is well positioned to connect other members together. For instance, an individual who has memberships at both the Athenaeum and Reform clubs might serve to introduce two individuals who only have memberships at one of these institutions. Members who connect separate parts of the network hold power for a variety of reasons: they have early access to information from different sources and they can act as gatekeepers (Granovetter, 1973). *Closeness* denotes the ease with which an individual can access all other club members. For instance, if a member A had to go through three intermediaries to reach member E, they would be less proximate than if they only had to use one intermediary. Given that each member had specific resources and capabilities at their disposal, ease of access to all members could confer significant advantages. I suggest that the demographic characteristics of individuals wielding these different types of social

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power were relatively stable over time. Mostly they were either peers or members of the "banking aristocracy".[8] This implies that the internal power dynamics of elite society were relatively stable, with aristocratic interests predominant.

Figure 2.3.1: Diagram of different measures of social influence

Popularity

Betweenness
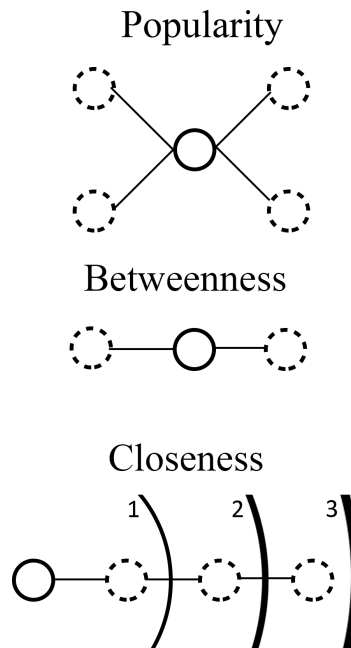
Closeness

Note: Graphical representation of different centrality measures. *Popularity* (or degree) is the number of connected nodes. *Betweenness* is the number of shortest paths between all nodes that a node lies on. *Closeness* is the average shortest distance of that node to all other nodes. For full details see Appendix 2.B.

Integration, on the other hand, is a structural measure. It refers to the extent to which members of the different groups, bankers and peers, preferentially associated with each other. The opposing force is that of *homophily*, which is the tendency to associate with alike individuals. If peers associated only with other peers, and

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[8]By this I refer to a commonly acknowledged social group in the literature on merchant banks, comprised of a specific set of families centred around the Bank of England.

not with bankers, then despite general participation in clubs, both groups would have been relatively insulated from each other. To examine this, we need an agnostic view of what the mixing of bankers and peers *should* look like, in a world without the social forces driving our observed networks. We want to know what their preferences are for associating with each other, conditional on exposure. If bankers mix substantially less with peers and more with other bankers than we would expect, this would indicate that economic success had not yet translated into a full integration of the two classes.

2.4   Data

This paper constructs several new datasets in an attempt to map the structure of this social space for the first time.

2.4.1   Club Membership Lists

Instead of mapping all of Clubland, this paper focuses on the most elite socio-political clubs, as the likely home of a "gentlemanly capitalist" elite. The paper utilises full membership records collected from seven London clubs. These are recorded for the period 1861-1911 in ten year panels. Recording full membership lists allows me to capture network structures fully for the first time. The clubs included are the Athenaeum, Brooks's, the City of London Club, the Oriental

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Club, the Reform Club, the Traveller's Club, and the Union Club. There are three other clubs that we might think, historically, belong in this sample of elite clubs: the Carlton Club, White's, and Boodle's. Unfortunately they lack suitable records.

There are few errata and recordings are highly consistent across entries. Where individual years are missing from the records, the closest available year is used.[9] Unfortunately, Brooks's did not keep annual membership lists, nor did the Oriental Club before the 1870s. Instead, they produced printed volumes listing all members across a given period. The lack of exit dates for members makes it impossible to know the exact membership in a given year. However, each club had a fixed membership size. For these records, membership in a given year is taken as the most recently joined members, up to the membership size. In total this gives 42,550 membership records. Matching between clubs, detailed in the next section, brings this down to 38,183 observations (see Table 1.4).[10]

All clubs in the sample were founded before 1832 and were well-established by this period. Entry relied primarily on social status, though some clubs made special allowances for cabinet members and other notables.[11] These clubs were

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[9]Due to missing records, for the Athenaeum, 1862 and 1872 are used instead of 1861 and 1871; for the Oriental Club 1859 and 1885 instead of 1861 and 1881; and for the Union Club 1872 instead of 1871.

[10]An observation is a unique individual in each period, who has a number of club memberships. It is not the total number of unique individuals, because members are not matched across time.

[11]For instance the Athenaeum allowed Crown Princes, Cabinet Ministers, Speakers of the House of Commons, Bishops, and a few other categories to be elected directly by the committee (Athenaeum, 1911, p. 19).

Table 2.4.1: Sample of club members

Year	Athenaeum	Brooks's	City	Oriental	Reform	Traveller's	Union	Total
1861	1384	600	798	1041	1361	853	1095	6335
1871	1323	600	832	1069	1484	841	1035	6399
1881	1320	600	789	906	1461	833	1059	6244
1891	1341	600	769	901	1466	934	1062	6343
1901	1342	650	803	855	1484	934	961	6343
1911	1319	650	785	899	1428	869	1214	6519
Total	8029	3700	4776	5671	8684	5264	6426	38183

Note: Figures do not sum to the total column because individuals can be members of multiple clubs. The total row is simply the sum of the number of records.
Sources: Athenaeum (1861-1911); Brooks's 1900 Memorial, Brooks's 1940 Memorial; City of London Club (1861-1911); Oriental Club (1859 Rules); Oriental Club (1871-1911); Reform Club (1861-1911); The Travellers' Club (1861-1911); Union Club (1861-1911).

among the most prestigious, with the Travellers, Athenaeum, Brooks's, White's, and Boodle's typically considered the upper echelon. The selectivity of the sample is evident in membership fees, with the Union, City of London, Athenaeum, and Reform comprising four of the five non-professional clubs with membership fees over 30 guineas in 1870 (Taddei, 1999, p. 9).

2.4.2   London Bankers

The main source for partners and directors of London banks is Thomas Skinner's *The London Banks and Kindred Companies and Firms*, an annual directory published between 1865 and 1916. This contains identifying information for partners and directors of all London banks: a mixture of initials, first, middle, and last names; titles; honours; orders; and military rank. Personal details are accompanied by information concerning the banks: name, address, bank type, "bankers",

clearing agent, establishment date, and for joint-stocks, branches, capital, share-price, business hours, and further financial details. A variety of banks were listed, and these have been coded into five main groups, outlined below.

London Banks contains detailed information on a wide range of London firms. The paid-up capital of listed firms ranges from £120 for Sovereign Bank, Ltd. in 1891 to £14,553,000 for the Bank of England in 1911. Unfortunately, the directory only extends to 1865, which is used as a base for this year and is then augmented with other sources. This could introduce bias, as individuals listed as partners in 1865 may have been less senior in 1861. Extrapolating from the annual turnover rates of partners/directors between 1881-1911, we would expect around 80% of partners/directors in year t to be partners/directors in year t-4. To reduce this issue the "1861" partners/directors are then cross-checked with information from 1861 in another annual banking directory *The Banking Almanac, Directory, Year Book and Diary* (1861). This covers the entire UK, though typically in less detail. Entries are updated where firms are listed, but different partners recorded.[12] The other notable issue concerns underreporting of merchant banks between 1861-71. This problem is common across both directories, as the line between merchant and bank was fuzzy, and these firms were often considered merchants rather than banks. Despite not being listed as such, many of these are now considered merchant bankers. I use a variety of secondary sources, mostly bank biographies, to add

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[12]The same process is repeated for 1871, as the closest edition was published in 1869.

partners and directors for merchant banks which are known to have existed, but are not listed in these directories.[13] All merchant banks which are listed after 1881 in *London Banks*, but known to have existed before, are included in this process. The "proper" sampling process, especially for merchant banks, has long been a central source of contention (Cassis, 1985; Chapman, 1986; Cassis, 1988). I try to throw the net as widely as possible, based on surviving historical evidence.

Due to inconsistencies of definition, I have grouped discounting and other types of agent as "agents" and colonial, foreign and joint-stock (deposit) bankers as "joint-stocks". Banks are considered to be "private" if they are private firms, not listed as agents, nor as merchant bankers. Overall, this produces a sample that is relatively similar to Cassis', though because my sample includes more bankers, a smaller proportion of them are directors at the Bank of England. In Cassis' study of 460 bankers, 8% are at the Bank of England, 18% merchant bankers, 10% private bankers, 71% joint-stock bankers, and 2% agents. The details of my sample are given in Table 2.4.2. The sample is relatively stable, though there are notably fewer entries in 1871. This mostly reflects the wave of failures and consolidation following the Overend Gurney crisis (1866).[14]

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[13]These are from Antony Gibbs & Sons, Limited (1958); Ellis (1960); Roberts (1992); Chapman (1986); Cassis (1994).

[14]Looking at the banks listed in 1861-65, not listed in 1871: 6% merged, 4% were foreign banks which closed their London offices, and 35% failed. A further 35% failed at some point between 1861-1916, but are not precisely dated. Unfortunately, for 14% it has not been possible to find further information. Information taken from the Bankers Magazine (1866), Bankers Magazine (1867), Jenkins (2009), the *ScripoWorld* database, and the *British Banking History Society* database.

Table 2.4.2: Banker Sample Composition Over Time

Year	BoE (%)	Merchant (%)	Private (%)	Joint-Stock (%)	Agent (%)	Total
1861	2	7	11	76	4	1089
1871	3	11	18	67	6	777
1881	3	12	18	67	10	1010
1891	3	16	15	64	10	981
1901	2	24	11	59	10	1001
1911	3	24	12	60	9	1040
Average	3	16	14	66	8	5898

Note: Figures do not sum to 100% because bankers can be co-directors. The Average is the mean of the yearly percentiles, not of the overall number of bankers. BoE refers to Bank of England.
Sources: Skinner (1865–1911), Evans (1861) and additional biographies (see Data section).

2.4.3 Additional Data

Fortunately, detailed data concerning the peerage are more readily available. This allows me to corroborate titles given in other sources and prevent mismatches between sons and fathers sharing the same title. The source used is Darryl Lundy's *The Peerage* database. Constructed over 17 years, this contains details of c. 700,000 members of the European (primarily British) aristocracy and their relations. It uses a wide range of sources, notably: Cokayne's *The Complete Peerage*, Burke's *Burke's Peerage and Baronetage*, *Debrett's Peerage*, Reid's *Royal92.ged* database, S&N's *Royalty* database, and various family histories and secondary sources.

Similarly, data from *WikiProject British Politicians* is used to add supplemental information on all MPs and to corroborate listings of MPs given in the club records. This draws from *Historic Hansard*, the *London Gazette*, the *Oxford Dic-*

tionary of National Biography, the *Rush Parliamentary Archive*, and *Who's Who of British Members of Parliament*.

2.5 Matching

I detail the matching process for club and banking records below. I also link with information on peers and MPs, but this can be done with a very high degree of confidence, as details on whether these individuals were peers or MPs are given in both the club and banking records. This information is uniquely identifying.

A combined dataset for each year, comprising all bankers and club members is created through a simple, conservative matching process. The sources are all printed, with few errors, and recording individuals with relatively unique names. Consequently, only exact matches are used.[15] However, it is important not to be overzealous. Non-matches are not extraneous data-points to be dropped, they represent individuals with only a single network connection, and thus inform network structure.

There are two stages to the matching. First I match internally within databases to find network links. So I will check for matches within the banking and club databases. Then I will match between the club and banker databases. I form matches based on the following hierarchy: title matches; full matches (first, middle

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[15]While no fuzzy matching is used, I do expand abbreviated names.

and last names); partial matches (first, initials and last names); initial matches (initials and last name); first-name matches (first and last name). Attempts to match proceed down this hierarchy, but will never go below the minimum level of information provided in the source.[16] For instance, if both entries have a first name, initials, and a surname it will never attempt just a first-name, last-name match. If any of these matches generate multiple potential matches then no match is given. The results are given in Table 2.5.1 (full network graphs are provided in Appendix 2.C).

Table 2.5.1: Matching results

Database	Title (%)	Full (%)	Partial (%)	Initial (%)	First Name (%)	Conflicts (%)
Bankers	2.0	66.7	8.5	14.4	7.5	0.9
Clubs	7.3	49.9	8.3	19.5	12.4	2.6
Bankers-to-Clubs	7.7	45.5	13.6	18.9	11.8	2.5

Note: Conflicts are where there are multiple possible matches generated. These matches are dropped.
Sources: Various, see Data section.

Though the small sample size limits the potential for multiple matches within the dataset, the possibility for Type I errors, i.e. false positive matches, remains. While this process might uniquely match John Smith the banker with John Smith the club-member, it could be an artifact of the limited number of John Smiths in

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[16]For instance, if in one record we had Alexander Friedrich Heinrich Kleinwort and another we had Alexander F. H. Kleinwort, we would accept exact matches down to the partial (first name, initials, and surname) level, on either side. So, Alexander Frederick Heinrich Kleinwort would match, as it would be reduced to Alexander F. H. Kleinwort.

our matching population. There are reasons to suspect that this effect is limited. The names in the matching population are rare, elite names and 61% have middle names. Further, individuals who are members of one of these groups are much more likely to be members of the other than a randomly selected individual.

To test the accuracy of this process I compare my matches against those given by contemporary sources, available for a subset of my sample. The two sources used are Bassett's (1901) *Men of Note in Finance and Commerce*, a biographical dictionary of bankers, and the *Who Was Who* database, an elite biographical dictionary. These provide the names of individuals, already linked with their jobs and club memberships. Clubs listed in these entries are manually checked against a sample of 111 bankers, drawn from the 1901 data. Individually these sources are imperfect, often failing to list all club memberships of a given individual. In this sample only 33% of club memberships listed in *Who Was Who* appear in *Men of Note* and only 48.5% in the opposing direction. However, together they give a sense of whether the matching process was accurate. The results are shown in Table 2.5.2. Type I errors are defined as when my matching finds at least one club membership for an individual not listed in those sources, Type II are when those sources list a membership not found by my matching.[17] These show that in the vast majority of cases, the matching process has correctly identified all memberships. Due to the incompleteness of these benchmarking sources, this

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[17] Only considering the seven clubs I sample in my paper.

should be taken as a lower bound for the accuracy of the matching. Type II errors are interesting, as they probably indicate a small amount of misreporting in the biographical dictionaries.

Table 2.5.2: Matches compared to historical sources

Source	Identical (%)	Type I (%)	Type II (%)
Who Was Who	85.1	11.1	3.7
Men of Note	64.5	32.3	3.2
Combined	83.3	11.1	5.5

Note: Identical means all the clubs listed for that individual which are in my sample show up in my data. Type I means the source does not list all the clubs found in my data. Type II means my data does not list all the clubs found in the source. Sources: Various, see Data section.

2.6 Results

2.6.1 Participation

Despite complaints about hordes of plutocratic foreigners knocking at the doors of high society, the true bastions of power seemed to survive largely intact. The late Victorian period saw the popularity of clubs expand rapidly, primarily through the founding of new clubs. It is difficult to estimate the exact number of clubs, but the *British Almanac* records a threefold rise from 32 in 1860 to 81 in 1910 (Taddei, 1999). Milne-Smith (2011) puts the number of middle-class and gentlemen's clubs in late-Victorian London at around 200.

Looking at the elite clubs chosen for this study, there is only limited change

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in their composition (Figure 2.6.1). The proportion of members who were peers was relatively stable, rising from 3.0% in the first half of the period, to 4.0% in the second half. This increase is mostly the result of an increase in the number of peers rather than the percent of peers who were members of these clubs, which was stable at around 30% across the period. Bankers representation at clubs was completely stable at 5.2% of members in the first half, and 5.2% of members in the second. The slightly smaller proportion who were members in 1871 is likely due to the smaller sample of bankers as much as anything else. The constancy of these figures suggests that the bounds of exclusivity were relatively stable. Peers were not pushed out by 'new' men, nor were clubs swamped with bankers.

Figure 2.6.1: Demographic composition of clubs
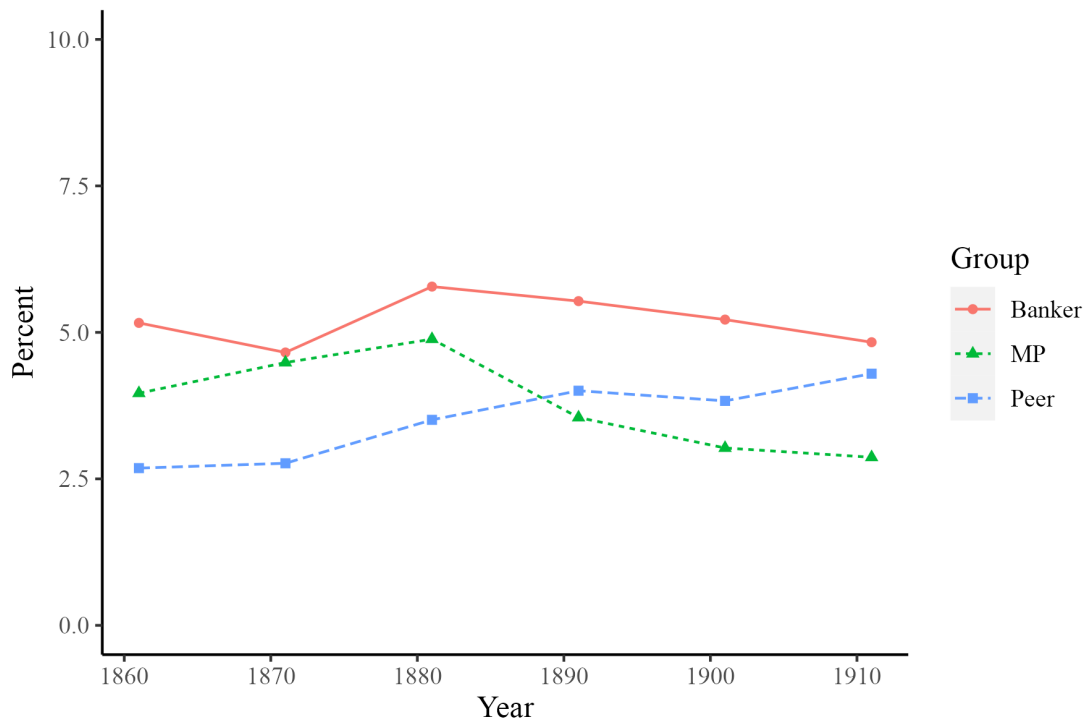
Note: This is the percentage of club members who had a particular demographic attribute. An individual can appear in multiple categories.
Sources: Various, see Data section.

Bankers were most heavily represented at the City of London Club. This club was primarily intended for merchants and bankers, but was explicitly a social rather than professional institution. Like the other elite clubs it counted other notables among its members, though relatively few peers, none in 1861 and only 4 in 1910. Bankers also participated in the more traditional clubs (Figure 2.6.2). However, outside the City of London club participation was much more limited. While specific communities of bankers did participate in the clubland of Pall Mall,

there was almost no net change in their participation over this period. Increases at the Travellers Club were largely cancelled out by decreases at the Athenaeum. Overall, the picture here is one of stability, rather than of bankers penetrating new social arenas.

Figure 2.6.2: Banker membership of different clubs
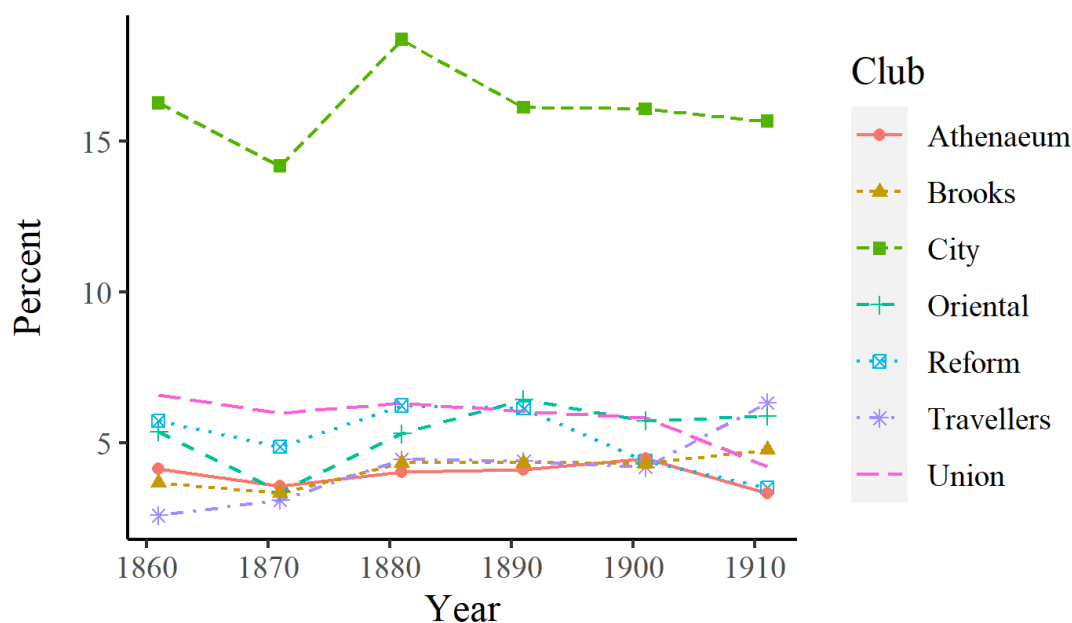
Note: This is the percentage of members of each club who were bankers. An individual can appear in multiple clubs.
Sources: Various, see Data section.

A sizable proportion of bank partners and directors participated in the sampled clubs (Figure 2.6.3), with 34% holding memberships; however this figure was highly stable. It ranged from 30.0-38.4% across the period 1861 to 1911, and the trend was flat. Banker participation in clubs began well before this period, and while it was quite broad, the clubs they frequented were more upper middle-class than

aristocratic. Pinning down the exact origins of banker participation in elite clubs is difficult. Peter Clark's (2000) study of early modern societies suggests they had been constituted by a medley of upper-class interests since the early eighteenth century. Records that remain of some of these early societies do indicate similar compositions. Archives from The Dilettanti, an elite classical art society, in 1736, show that it took around half of its members from the aristocracy of gentry and slightly under a tenth from merchants and bankers (Clark, 2000, p. 212). While it is difficult to compare this directly to later clubs, evidently some social mixing between bankers and peers far predates our period. This limited mixing was not a new phenomenon.

Figure 2.6.3: Social status of bankers
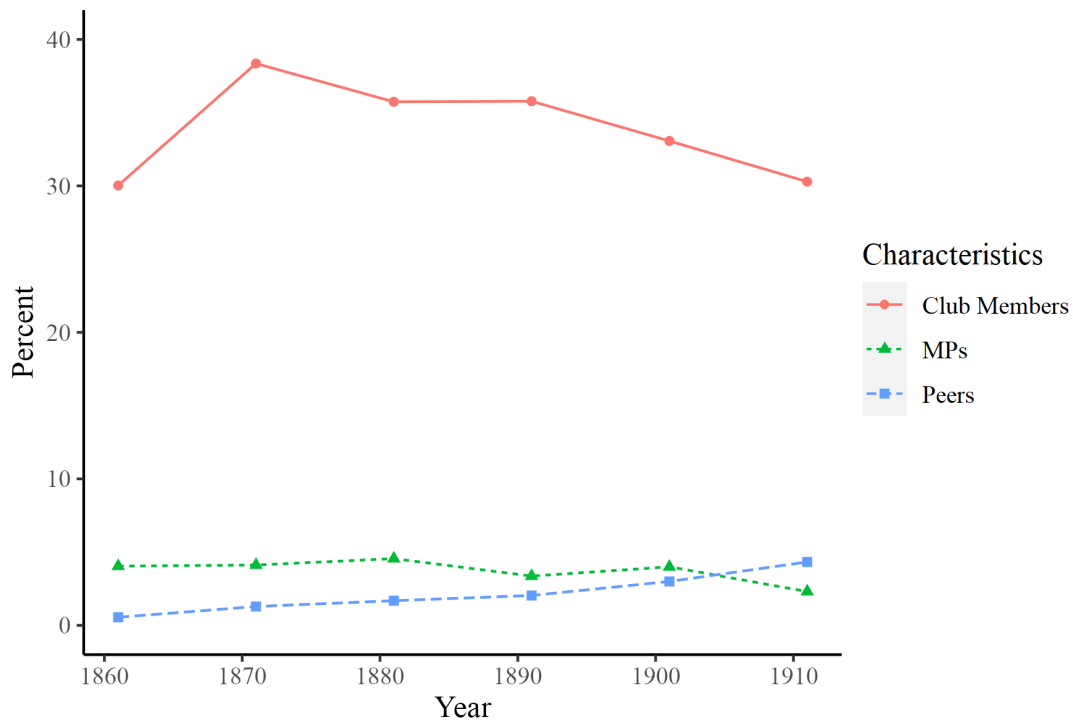
2.6.2 Influence

Given that the participation rates of bankers in elite clubs were relatively unchanged, let us now turn to the position of those bankers who were members. This section examines the influence of different individuals in club society through three measures: *degree*, *closeness* and *betweenness*.

I examine changes in the average position of each group, and changes at the top of the distribution. The aim is to capture both broader changes in the identity

and culture of clubs, and to look at 'power players' within these networks. In all three measures of influence there was almost no change to the average position of bankers. At the top of the distribution of influence, bankers were over-represented. However, if anything, their representation at the top declined over time.

The simplest method for measuring an individual's social influence is to count their club memberships or 'degree' (see Appendix 2.B). This is a direct measure of popularity. It measures the number of club memberships an individual held. In the context of social networks, individuals with a high degree can wield significant influence through informational and social cascades. The 'friendship paradox' is an example of one such cascade (Feld, 1991). This paradox arises from the observation that on average a randomly sampled individual will have fewer friends than their friends do. We can think of this as the sampling bias inherent in friendships. Individuals with many friends are more likely to appear in any given person's social circle. Consequently, people's perceptions of social norms are skewed towards the behaviours exhibited by these popular individuals. For instance, high school students will over-estimate their peers' average drug and alcohol consumption because the students who engage in these behaviours are over-sampled in the friendship lists of others (Jackson, 2019). In the club context, the identity and behaviour of these individuals will be visible to a higher number of individuals.

While an individual's number of memberships, or degree centrality, is one indicator of their influence, it is not the only one. The clubs formed a broader

network, linking together many individuals lacking direct connections. This network could be leveraged to gain access to resources and information outside an individual's immediate social circle. This is what closeness centrality captures. *Closeness centrality* measures how easily an individual can reach all other individuals in the network. It is based on the number of steps needed to reach each other member in the network (see Appendix 2.B). Individuals with high closeness centrality can more easily tap into the resources of others, without having to rely on intermediaries.

Betweenness centrality captures almost the inverse aspect of influence. It quantifies the extent to which others must rely on a particular individual to access other parts of the network. In the club network, most members required intermediaries to connect with members of other clubs. The individuals who served as bridges between otherwise disconnected parts of the network hold considerable power. They had access to diverse information from different parts of the network, and were better positioned to control the flow of information or resources. They function as gatekeepers. Betweenness centrality formalises this concept of bridging influence, measuring how often an individual lies on the shortest paths between all other pairs of individuals (see Appendix 2.B).

Let's first discuss the average rank of bankers. As centrality measures depend on the structure of the network, for instance the number of nodes, I provide each individual a rank within the club network for that year. I then normalise these

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ranks to a 0-100 range. Bankers, as a whole, are almost average in all measures of centrality. The mean *degree centrality* rank of bankers ranges 41-43, for *closeness* between 42-44, and for *betweenness* between 41-44. There is almost no change in the average influence of bankers within the network, either in the number of their connections, the ease with which they access discrete parts of the network, or the extent to which they provide unique bridges between members.

If we look at the top of the distribution, it tells a slightly different story (Table 2.6.1). I measure the percent of the top 50 ranks, by centrality type, who were either bankers or peers. This is approximately the top 1% of the network. Both bankers and peers are substantially over-represented at the top of the distribution. Despite comprising only 5% of club members, they comprise between 10-30% of these top 50 ranks. Bankers were particularly prominent in terms of degree centrality, comprising 21% of the top ranks. These bankers would have been highly visible; they held more memberships than 99% of members. They were also over-represented in terms of betweenness, comprising 19% of the top 50, and in terms of closeness, where they comprised 15%. This means that many of the most influential individuals, in terms of connecting members and being able to reach distant members, were bankers. However, part of the influence was in being able to connect non-banking members to members at the City of London Club. Calculating scores excluding that club (Appendix 2.D) shows that they were still over-represented in terms of betweenness centrality, at around 12% of

the top ranks, but not in terms of closeness centrality. This suggests that their role in terms of closeness was primarily the result of being close to banking communities, but that even without this they still played a crucial role in connecting non-banking parts of the elite network. Perhaps most notably, there is no evidence that bankers were becoming more influential within this community. If anything, the influence of bankers was declining.

Table 2.6.1: Centrality, Percent in Top 50

Year	Bankers	Peers
Degree Centrality		
1861	28%	26%
1871	24%	28%
1881	26%	40%
1891	18%	22%
1901	16%	18%
1911	14%	22%
Betweenness Centrality		
1861	30%	24%
1871	16%	22%
1881	20%	38%
1891	16%	24%
1901	18%	16%
1911	16%	10%
Closeness Centrality		
1861	24%	26%
1871	18%	24%
1881	16%	32%
1891	12%	28%
1901	12%	18%
1911	10%	16%

Note: This table provides measures of centrality in the clubs network, see Appendix 3.C for definitions, and Appendix 2.D for the figures excluding the City of London club. Individuals can be in several groups at once.

Those at the top of the distribution were merchant bankers with aristocratic connections or aristocratic joint-stock directors. Outside of merchant bankers, few individuals from a banking background held membership at the aristocratic clubs. Even for merchant bankers, there were only six families with memberships outside the City of London Club in the 1860s.[18] These were the Gibbs, Bensons, Barings, Browns, Mathesons and Rothschilds. By 1911 this had expanded to include the Arbuthnots, Grenfells, Hambros and Goschens. In this group, even those with foreign origins had all had headquarters in London since before the Napoleonic Wars. The group did not include any of the upstart rivals, like Schröders or Kleinworts. The decline in the influence of 'bankers' at the top of the club network was primarily due to changes in the centrality of joint-stock directors. Merchant bankers were highly stable in their representation at the top of the different centrality measures, they comprised consistently between 8-12% of the top betweenness ranks, 6-8% of the top closeness ranks, and 10-12% of the top degree ranks.

Until the 1890s most influential bankers were drawn from the Barings clan. Looking at the individuals with the highest betweenness in 1891, five of the top twenty were either partners at Barings or members of the Barings family. The only other banker in this group was Everard Hambro. Undoubtedly, the most well-connected banker across this period was James Stewart Hodgson, partner at Barings and brother to Kirkman Daniel Hodgson, Governor of the Bank of

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[18]This is within my sample of seven clubs.

England and MP for Bristol (Ziegler, 1988). Of the seven sampled clubs, he held three memberships in the 1860s, four in the 1870s and five in the 1880s. This was clearly the group best represented in the aristocratic clubs. Though the Barings saw a moderate decline in their memberships following the 1890 crisis, governors and directors of the Bank of England were still frequently found among the most connected members. Augustus Prevost, Governor between 1901 and 1903 (Cassis, 1994, p. 40), held three club memberships over 50 years, first joining the Union Club at the sprightly age of 23.

There is little evidence here of any substantial shift in the influence of bankers in this social world. In 1911 there were 72 merchant banking firms listed in Skinner's directory. Ten families represent only a fraction of these, and an even smaller portion of overall banking families. These families were certainly influential, but their influence did not grow significantly. These families had already adopted the trappings of the aristocracy, and little accommodation had to be made for them.

2.6.3 Integration

This section examines the final channel through which we might observe changes in the relationship between bankers and aristocrats in club society, *integration*. This measures directly preferences for associating between or within groups.

The simplest way to measure this is through the co-membership record of each group. This is, for a given banker, the proportion of their connections who

are also bankers. Preferential association with members of the same group is known as *homophily*. This could either be between two bankers or two peers, at a given club. Homophily therefore measures social segregation, the divisions between different groups. The opposing measure, integration, for a given banker or peer would then be the proportion of relations which are with individuals with the opposing characteristic, i.e. peer or banker respectively. I calculate homophily and integration statistics below. These are simply the average proportion of co-members who were of the same or a different group. For instance, for the banker homophily statistic, I check each bankers' co-members, calculate the proportion who are bankers, and average this out across all bankers.

These measures suggest that peers were a much more exclusive group than bankers, with around 4.7% of peers' co-members being other peers, whereas the figure is only around 2.7% for bankers. Despite being an era of supposed social decline, there is remarkably little variation in these figures over time. The peer homophily statistic, just given, only varies within a range of 0.82%; while for bankers, the range is 0.64%.

However, these figures are heavily determined by exposure, and thereby the demographic composition of clubs. For instance, that banker homophily is lowest in 1871 is mostly due to the limited number of banker members in this decade. The composition of clubs affects co-membership statistics dramatically. If 9,999 in 10,000 club members were bankers, then almost all co-membership ties would be

between individuals who were both bankers, even without preferential association.

To understand the strength of these preferences, we want to measure conditional on exposure. I compare co-membership ties in these observed networks, with randomly simulated networks of the same size, which have the same number of members, the same demographic composition, and are modelled to have matching structural elements, namely the propensity for tie formation, and for individuals to have at least one club membership (as everyone in the club network does). The idea is that these networks, which mirror the structure and demographics of the real network, but randomise individual affiliations, should provide a benchmark for the homophily and integration statistics. In each year I generate 100 random networks (see Appendix 2.E for details on the simulation). Ties in the simulated network are formed randomly, with the same probability of memberships for each individual as in the observed network. I take these simulated values as a benchmark, indexing the observed values around them, with the mean simulated values equal to 100.

Figure 2.6.4: Club co-member preferences, observed vs simulated

The results using this exercise are shown in Figure 2.6.4. Here, we can clearly see the tendencies of bankers and peers to form relationships with members of their own group, rather than mixing with each other. Bankers only associate with peers half as often as they would if their connections within the club network were formed at random. There is no evidence here of an overall integration of the groups over the period. The homophilic tendencies of bankers remain strong across the period, they are consistently around 50% more likely to associate with bankers than if their relations were formed at random. Perhaps, unless these groups completely merged with each other, we would always expect some separation. Nonetheless,

it is interesting that this degree of separation does not change. Peers were even more extremely homophilic than bankers, initially associating with each other 65% more than would be expected by chance. Interestingly, there is a decline in the homophilic tendencies of peers, by around 13%, from the beginning to the end of the period. However, these results suggest that this was primarily from associating with individuals who were neither bankers nor peers.

Just as the founding of ostentatious new clubs gave the impression that High Society was opening up, so might the multitude of memberships held by a few bankers. However, if bankers were becoming more clubbable, they were doing so outside the halls of the ruling elites. Bankers as a whole were not more socially connected with the peerage than in any previous period.

2.7 Discussion

The focus of the paper thus far has been explicitly on social connections. The club membership networks show a small 'city aristocracy', who were influential even as early as 1861. This section briefly considers these social dynamics alongside more conventional markers of status, namely marriages to the daughters of peers, and peerage grants themselves.

There is strong evidence that in terms of social class, bankers were at least upper-middle class. In Cassis's (1994) sample of 460 bank directors and partners

(1891-1913), he finds 43% who married into the '[aristocracy], politicians and senior civil servants, the services, the professions and the church'. The figure is smaller, but still substantial, just looking at marriages to the daughters of 'Aristocrats, landowners, miscellaneous notabilities', at 24%. Bankers had a high social status. However, few of them were at the apex, and few married the daughters of peers. While there was a small but important minority who did marry into the peerage, if we look at it from the perspective of the peers this group seems relatively small. It was also constant over time. I measure the percent of peers' daughters who married individuals who were bank partners or directors between 1861-1911. These bankers are prestigious, but a minority of marriages. Less than 5% of peers' daughters were marrying bankers (Table 2.7.1), and even then, these bankers came from a few select families. Marriage rates were relatively stable, if noisy, across the period. Of the 43 bankers who marry the daughters of peers, 16 were themselves peers. The proportion of peers' daughters marrying bankers is stable.[19] This confirms the view from the clubs. There are some highly prestigious bankers, however, this is not a large group, and does not seem to expand notably over the period.

Admission to the peerage was another sign of social prestige. In this measure, it seems indisputable that the social capital of bankers was rising. However, those families which were granted peerages were not social outsiders, they were already

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[19]Though there may be some life-cycle bias here, as the 1901-1910 marriage partners are younger in 1910, and may not yet have received directorships or partnerships.

Table 2.7.1: Marriages of Peers' Daughters

Period	Total Marriages	To Bankers	To Bankers (%)
1861-1870	155	6	3.9
1871-1880	172	9	5.2
1881-1890	186	12	6.5
1891-1900	221	9	4.1
1901-1910	235	7	3.0
Total	969	43	4.4

Note: This table gives the number of marriages in a period where the marital partner is known, and classifies them as a banker if they were listed as bank directors or partners at any point between 1861-1911.

Source: Author's calculations from Skinner's *The London Banks* and Lundy's *The Peerage*. See Data section for details.

members of the most elite clubs, and married into the most elite families. From 1890-1914, Cassis (1994) finds 46 bankers who were peers, of whom 25 acquired peerages during their lifetime. Between 1861-1911, I find 91 bankers who were peers. Of these, 27 came from a banking background, that is they were not from aristocratic or other professional backgrounds. There were 36 such banking peers who acquired peerages in their lifetime. Across this period, there were 16 individuals from a banking background who were the first in their family to receive a peerage. Of these, 37.5% were granted a peerage between 1861-86, and 62.5% between 1867-1911 (see Table 2.7.2).

There was also a substantial increase in the number of aristocrats who became involved in banking, reflected by the increase in 'banking peers' not from a banking background. There may be some life-cycle effects. If an individual was a bank director or partner between 1861-1911, they are more likely to receive titles at the

end of their life, when it's possible they would have retired. This might mean we are missing some peers towards the start of the period, who would have been listed as bankers in an earlier period. Rather than thinking of the increase in grants representing a sudden shock, it makes more sense to think of peerages as a binary indicator of a continuous social status. As both marriages and club memberships indicate, these families had already, gradually passed the social threshold for admission. As was the case in the late eighteenth century, the sudden rise in peerages was primarily an indicator of external political pressures. These meant that despite having accrued the necessary social capital earlier, grants often happened in waves. While the ascent of these bankers was important for that community, it still represented a small fraction of total peerages. At its peak, peers from a banking background represented 3% of the total.

Table 2.7.2: Number of Living Banker Peers (1861-1911)

Year	All	1st Gen. Peer	Banker	1st Gen. Banker	Merchant	Joint-Stock
1861	11	0	1	0	1	0
1871	16	2	2	2	3	0
1881	24	2	3	1	3	0
1891	30	6	6	4	6	0
1901	41	10	10	5	10	0
1911	57	22	15	7	13	2
Total	91	36	27	16	23	2

Note: This table presents the number of peers in each decade who were listed as bank directors or partners between 1861-1911. 1st Gen. Peer includes all individuals listed as bankers, who are the first holder of their title. Banker refers to those whose biographies list their primary activity as banking. 1st Gen. Banker is the subset of these who are first generation peers. Merchant and Joint-Stock show the number of peers who were primarily from that banking background.

Source: Author's calculations from Skinner's *The London Banks* and Lundy's *The Peerage*. See Data section for details.

2.8 Conclusion

Taken together, the picture is that there was a social alliance between certain merchant banking families and the aristocracy. However, this was not new to this period, and represented a gradual social process. It was limited in its extent, and did not expand to encompass a broader banking community.

The picture given by clubs shows few signs of the formation of a new social alliance. In all measures, marriages, title-grants, and club memberships, changes were only witnessed by a small minority who had been gradually integrating with the aristocracy for many decades. For bank partners and directors as an occupational group increases in social *participation*, *influence* and *integration* in clubs were non-existent. It seems unlikely that these social changes represented a hard shock to the culture or social habits of aristocrats.

While certain bankers participated in elite clubs and held influential positions, this was not a new phenomenon. There was no massive influx of bankers in exclusive clubs during the late nineteenth century. Relatively high participation rates across the period are probably more indicative of the nature of certain clubs than the gentility of bankers.

Given a general lack of representation, it is notable that a few bankers were at the very top of the club hierarchy. Certain banking families, like the Barings, held important positions within this social world. This group of influential bankers was

relatively constant across the period.

In a similar vein to Cassis (1994) and Chapman (1986) this work emphasises the importance of thinking about merchant bankers as a discrete group, separate from the rest of the banking community. It also demonstrates that the aristocracy had limited ties to the rest of the banking community, and that this did not increase. The 'gentlemanly capitalist' alliance, such that existed, did not spring up newly formed, but arose from a longstanding process in which certain merchant banking families acquired social capital. This group was small, and while influential, it neither formed the centre of High Society at the beginning nor the end of the period.

Appendix

Appendix 2.A   Network Notation

Social networks can be represented mathematically by a set of nodes (individuals) connected by edges (relations between pairs of nodes). A typical network can be represented by a 2-tuple (V, E) where V is the set of nodes and $E \subseteq V \times V$ is the set of edges. The network can then be encoded as an $n \times n$ matrix $\mathbf{Y}$, where Y_{ij} equals 0 or 1 depending on whether there is an edge (relation) between (i, j). The club network is a bipartite network, consisting of two types of node: actors and organisations. It can be represented by a 3-tuple (V_1, V_2, E) where V_1 and V_2 are two disjoint sets of nodes and $E \subseteq V_1 \times V_2$ is the set of edges. Following Bomiriya (2014), I let $n = n_1 + n_2$ denote the number of nodes in the bipartite network. Specifically n denotes the total number of nodes, n_1 denotes the number of actor nodes, and n_2 denotes the number of organisation nodes. Thus nodes 1 through n_1 are actor nodes, and nodes $n_1 + 1$ through n are organisation nodes. The bipartite network Y_{ik} can then be encoded by an $n_1 \times n_2$ matrix. In this matrix Y_{ik} equals

0 or 1 depending on whether an individual has a membership at a club. Two members (i, j) can only be connected through a club k.

Appendix 2.B   Network Measures of Influence

Here I detail the various centrality measures used for two-mode networks.

- Degree centrality is defined as:

$$D_i = \sum_{k=1}^{n_2} Y_{ik}. \tag{2.1}$$

, where D_i is the degree centrality of actor i, n_2 is the number of clubs, and Y_{ik} indicates membership of an actor i at club k in the adjacency matrix $\mathbf{Y}$.

- Closeness centrality is defined as:

$$C_i = \frac{2(n_1 - 1)}{\sum\limits_{j}^{n_1} d_{ij}}, \tag{2.2}$$

where n_1 is the number of actors , n_2 is the number of clubs and d_{ij} is the distance between nodes i, j. The numerator is the theoretical minimum distance between actors i and all other actors j, and the denominator is the sum of distances between node i and each other node j.

- Betweenness centrality is defined as:

$$B_i = \frac{1}{2} \sum_{hj} g_{hj}^i, \qquad (2.3)$$

where h, i, j index actor nodes, g_{hj}^i equals 1 if node i lies on a path between h, j.

Appendix 2.C   Network Graphs

Figure 2.C.1: Club Co-Memberships
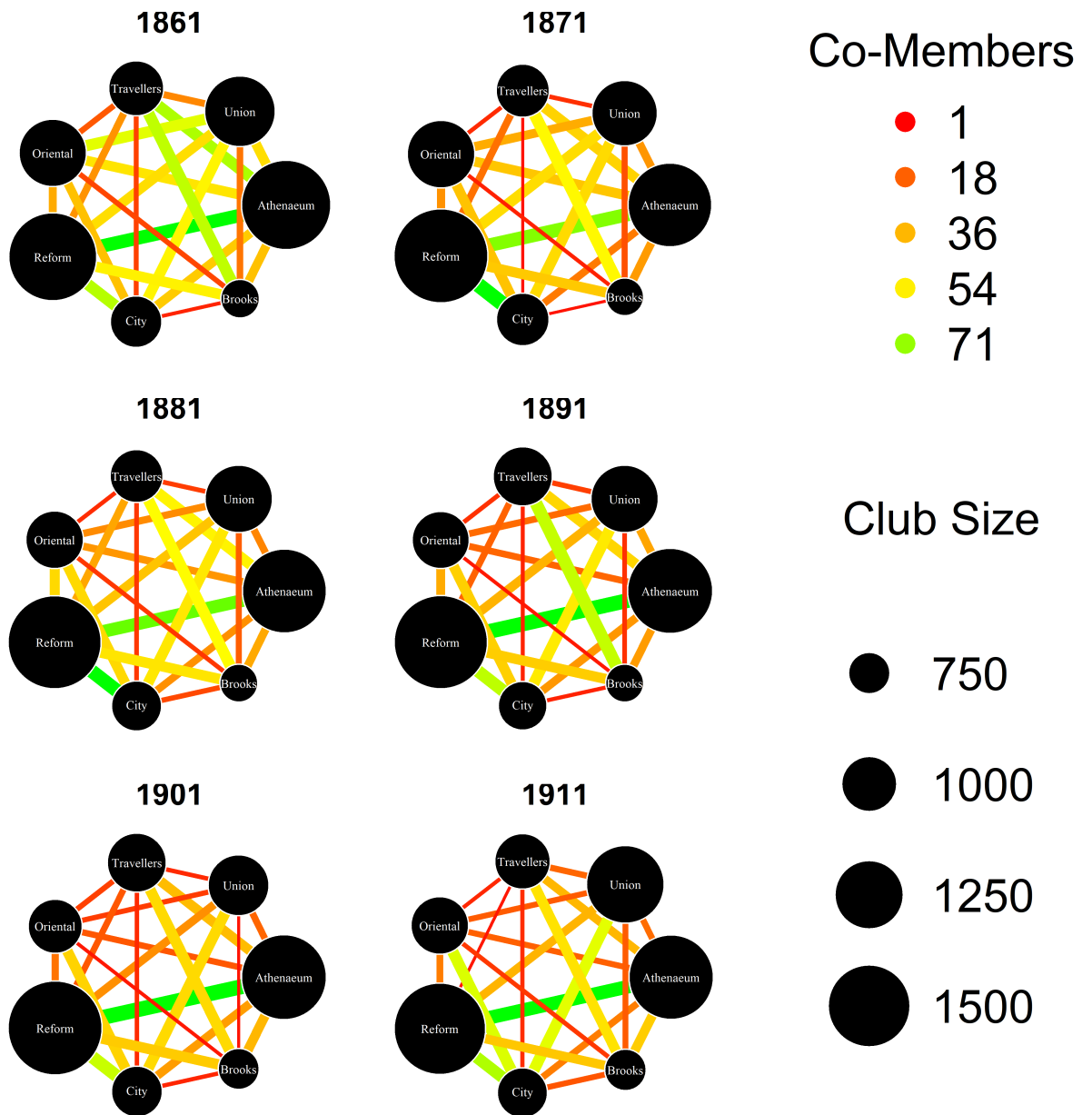
Note: This graph gives the number of co-members between the listed clubs in a given year.

Figure 2.C.2: Club Memberships Network

1861

1911

Actor Attributes

- Banker
- MP
- Peer
- Banker:MP
- Banker:Peer
- MP:Peer
- Banker:MP:Peer
- None
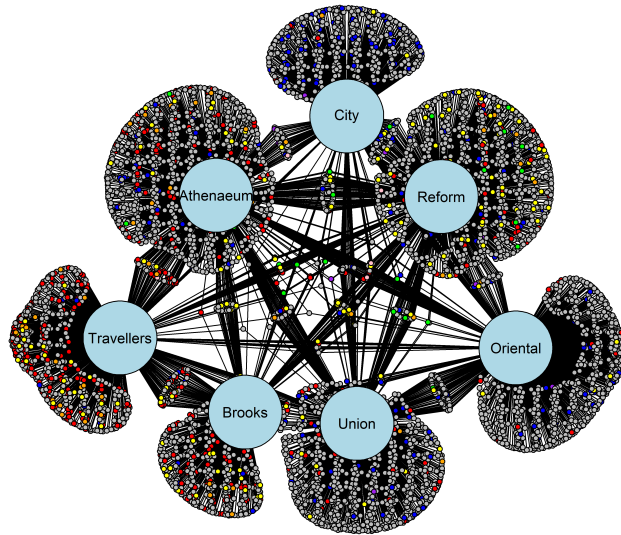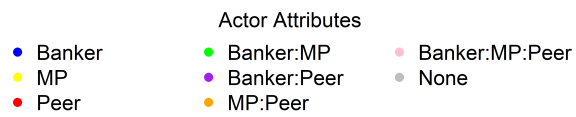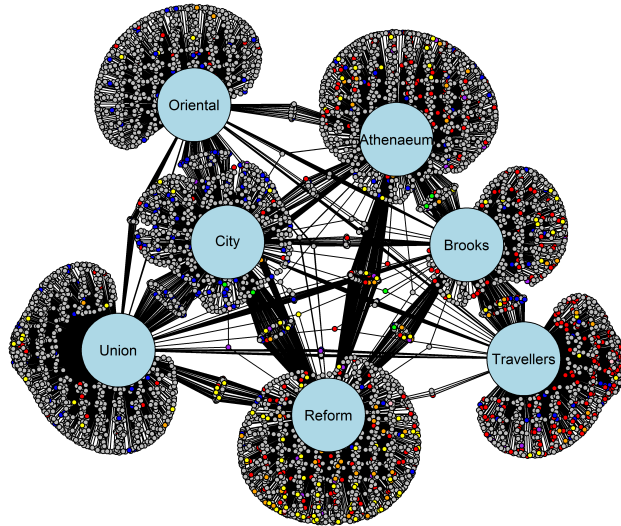
Appendix 2.D   Influence Results, Excluding City of London Club

Table 2.D.1: Centrality, Percent in Top 50, Excluding City of London Club

Year	Bankers	Peers
Degree Centrality		
1861	28%	26%
1871	24%	28%
1881	26%	40%
1891	18%	22%
1901	16%	18%
1911	14%	22%
Betweenness Centrality		
1861	22%	26%
1871	14%	30%
1881	8%	32%
1891	10%	26%
1901	8%	22%
1911	12%	8%
Closeness Centrality		
1861	2%	10%
1871	2%	16%
1881	6%	22%
1891	6%	14%
1901	2%	2%
1911	2%	2%

Note: This table is for the entire club network, excluding the City of London club.

Appendix 2.E   Network Simulation

The networks are simulated according to a simple Exponential Random Graph Model (ERGM) (see Robins et al. (2007)). In this model, the num-

ber of nodes n are kept constant, as are the number in the actor partition, i.e. 1 through n_1, and the organisation partition, i.e. $n_1 + 1$ through n. The ERGM incorporates basic elements of the network structure in the modelling process.

The model is defined as:

$$P(Y = y|\theta) = \frac{exp(\theta^T \cdot g(y))}{k(\theta)} \qquad (2.4)$$

Where Y represents the observed network, and y is a specific realisation of a simulated network, θ is the vector of model parameters, $g(y)$ is a vector of network statistics, and $k(\theta)$ is a normalising constant ensuring that the probabilities across all possible networks sum to one.

An ERGM allows us to estimate these parameters θ. We use Monte Carlo Markov Chain estimation to find the set of parameters that maximise the likelihood that the network we observe is the observed network. We stochastically add or remove edges if this would increase the likelihood of the network configuration given the current parameters. After a number of steps we compare the resulting network to the observed network, and use this to adjust the parameters before continuing the simulation. These steps are repeated until the parameter values converge. We can then simulate a network based off of these parameter values. Essentially, this allows us to fit parameters to

best predict patterns of connections, as captured by the included network statistics, that match the observed network.

In this case the model includes terms for the number of edges and for the number of nodes with a degree of one or more. It fits the parameters to these characteristics, allowing us to simulate networks which share those characteristics, but are otherwise randomised. This creates a relatively unconstrained network simulation that nonetheless captures the core structural features of our observed network.

Appendix 2.F   Simulation Diagnostics

Simulation diagnostics are included to allow for comparison of the observed and simulated networks. For brevity I only include simulation diagnostics for 1911, but those for other years are very similar.

Table 2.F.1: Network simulation diagnostics (1911)

Type	N	Mean	Standard Error	Min.	Max.
Degree V_1					
Observed	1	2.20	0.00	2.20	2.20
Simulation	100	2.24	0.01	2.22	2.28
Degree V_2					
Observed	1	2047.14	0.00	2047.14	2047.14
Simulation	100	2048.00	11.6	2013	2077
Closeness Centrality V_1					
Observed	1	0.28	0.00	0.28	0.28
Simulation	100	0.28	0.00	0.27	0.28
Closeness Centrality V_2					
Observed	1	0.37	0.00	0.37	0.37
Simulation	100	0.37	0.00	0.37	0.37
Betweenness Centrality V_1					
Observed	1	5330.52	0.00	5330.52	5330.52
Simulation	100	5260.90	14.05	5222.47	5289.89
Betweenness Centrality V_2					
Observed	1	1.10e+07	0.00	1.10e+07	1.10e+07
Simulation	100	1.06e+07	37357.15	1.05e+07	1.07e+07
Diameter					
Observed	1	4.00	0.00	4.00	4.00
Simulation	100	4.00	0.00	4.00	4.00

Note: The table includes statistics about the structural characteristics of the observed network and the 100 networks simulated for 1911. Degree V_1 gives the mean degree for actor nodes, Degree V_2 the mean degree for organisation nodes, Closeness Centrality V_1 and V_2 give the mean closeness centrality for the actor and organisation nodes respectively, Betweenness Centrality V_1 and V_2 give the mean betweenness centrality for the actor and organisation nodes respectively, and Diameter the longest *geodesic* path in the network. The Standard Error, Min. and Max. refer to those of the collection of random networks G, or the observed network Y, rather than within the networks.

Sources: Various, see Data section.

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Paper 3

Business Among Friends: Personal Connections and

Client-Sharing in Merchant Banking, c. 1900

3.1 Introduction

Standing before his peers in December of 1903, Felix Schuster, the president of the Institute of Bankers made a bold proclamation.

> *'We are, it is admitted, the financial centre of the world; this is more*
>
> *than just a phrase, it is a fact' - Institute of Bankers (1904, p. 58).*

By 1900 the City of London was at the centre of global financial markets. The view of contemporaries was that London acted as a 'Bank for the whole world', from China to Germany, Argentina to the USA.[1] In particular, London provided short-term borrowing and lending facilities to actors around the globe. London became the centre of an international system of payments and trade (Chapman, 2005; Cassis, 2010; Accominotti et al., 2021). It was in this role as a global money market that London achieved its pre-eminence. Montagu Norman, Governor of the Bank of England, maintained that the City had perfected this business, and that it provided the "essential cog" for global financial machinery (King, 1936, p. xi).

At the heart of the money market were the merchant banks, who connected borrowers from around the world. The main instrument used for short-term credit was the sterling bill of exchange. These bills had a variety of functions, but they were used foremost by merchants to secure short-term credit. They would then be conveyed by merchant banks to the money market, traded, and held by

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[1]Nathan Rothschild cited in King (1936, p. 265).

other banks as liquid reserves (Jansson, 2018; Kynaston, 1996). Bills of exchange acted as near-cash assets, they were highly liquid and safe, and traded freely on the money market. These traits are particularly impressive given the vast information asymmetries that existed between borrowers and lenders. Borrowers could be situated anywhere around the world, while investors were typically based in London. Given this distance and the huge variety of borrowers requiring credit, it was near-impossible for investors in London to ascertain the risk associated with a bill. To transform the bill into a liquid, safe asset an intermediary, the acceptor, had to produce information about the underlying transaction.

This paper shows the role of relationships and community in information acquisition. It contributes to a literature on the role of social ties in the development of trade and finance (Greif, 1993; Alfani and Gourdon, 2012). Prior research has shown that social institutions facilitate market functioning by promoting information sharing and coordination. However, much of this work focuses on relationships between parties on opposite sides of a transaction (Petersen and Rajan, 1994; Uzzi, 1999; Karlan, 2007). There is little work on relations between potentially competing parties on the same side of a transaction.

Accominotti et al.'s (2021) work on acceptors shows that their information production activities reduced asymmetries between them and borrowers. They would collect information about borrowers and use this to ascertain the risk associated with a particular borrower. If the borrower was judged to be sound, the acceptor

would offer to guarantee their bills. With this guarantee the acceptor became liable for the bill. Consequently, their reputation was attached to it. If investors viewed the acceptor as relatively riskless, they did not need to worry about the risk associated with the original borrower. By lending their reputation to credible borrowers, acceptors signalled that a bill was safe. Moreover, by engaging in information gathering activities, acceptors rendered the bills 'information insensitive' (Gorton, 2012). That is to say, they ensured that the cost for investors of learning profitable private information about the bill exceeded any potential gains. There was no valuable information to learn about a bill and all parties knew this. This information-insensitivity meant the bills were a highly liquid asset.

The most common acceptors of bills of exchange were the merchant banks, who issued around 70% of acceptances in 1913 (Cassis, 2010, p. 85). The prestige of these firms meant that their acceptance lent particular weight to a bill. 'First-class' bills of exchange, as they were called, were viewed as virtually riskless (Kynaston, 1996, p. 9). The reputation of these merchant banks relied on their ability to accurately assess risk. To this end, merchant banks engaged in information production concerning prospective borrowers.

Recent work has examined the association between acceptors and their clients within a 'relationship banking' framework (Accominotti et al., 2021). In this framework, information is typically both soft and private. Banks pay a fixed cost to gather information about a prospective client. They then gain further

'soft-information' about that firm through repeated transactions. The unique relationship between borrowers and banks gives borrowers more incentives to share information, as they have less bargaining power, and gives banks more incentives to invest in information, as they anticipate future gains from this investment. The competitive advantage of the bank requires that three key conditions are met (Boot, 2000). Firstly, the bank is able to gather information beyond that which is publicly available. Secondly, the bank can produce information through repeated interactions with the same borrowers. Finally, the information that the bank has about the borrower is confidential.

This simplified model explains important elements of merchant banking, however in reality these relations were more complex. While it was the case that information was typically private and soft, and produced through long-standing relations, this was not the only mode of information acquisition. This paper suggests that banks also acquired information from each other.

For merchant banks, a large number of clients, around 52.9%, had more than one acceptor listed in the Bank of England discount ledgers. Yet, client-sharing was not random. It related to personal ties between bankers at different merchant banks. This suggests that the information was not publicly available, but instead was available privately to small communities of banks. This aligns with the historical literature on merchant banking, which suggests "competition within limits" (Cassis, 1985; Chapman, 1986; Cassis, 1988). Information sharing could help banks

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avoid some of the diseconomies of scale in relationship banking, allowing them to diversify risk and coordinate rates. Ultimately, this led to a more robust market structure, with most drawers linked through several acceptors (Accominotti et al., 2023). While this could hypothetically reduce the incentives for banks to produce new information, social enforcement within these communities might help limit this 'free rider' issue.

To analyse the effect of inter-bank social and professional linkages this paper constructs several new datasets on the lives of British merchants, bankers and financiers. It uses biographical dictionaries, namely Henry Bassett's *Men of Note in Finance and Commerce* (1901) and *Who Was Who* to construct a dataset of 1,728 individuals. This includes 202 merchant bankers, 105 of whom are listed as partners in Thomas Skinner's *The London Banks* from the same year (1901). From this I collect information on 1,936 memberships at 282 gentlemen's clubs and 6,541 directorships from 3,745 firms. Of these, 211 club memberships and 132 directorships belong to London merchant bankers. *The London Banks* lists the partners and directors of 242 banks, of which 66 are merchant banks. It contains details on 1,183 partnerships or directorships. Together these data are used to create three different networks of personal linkages between merchant banks. These networks are then compared to one constructed using data from Accominotti et al. (2021). Their dataset contains all of the bills of exchange discounted at the Bank

of England in 1906.[2] It provides information on the drawers and acceptors of bills, from which a network of shared drawers is constructed.

I find that inter-bank connections in social and professional networks are positively related to client-sharing relations between banks. The size of the effect is relatively large, an increase of 1 shared directorship at a non-merchant bank relates to an increase of 3.24 shared clients. Similarly, smaller effects are recorded for directorship of other firms and for connections through social clubs.[3] The median and mean number of clients appearing in the Bank of England database for these firms were 7 and 39 respectively. To test whether this outcome was the result of a random process or the structure of the network, I compare these results to two sets of simulations. These create networks with similar structures, where connections are randomly determined. Two different types of simulations are used to account for different structural characteristics of the network. The relationship between the observed networks is far greater than the relation we would expect from chance.

The structure of the paper is as follows. Section 3.2 details the functioning of the bill of exchange. Section 3.3 discusses the literature on merchant banking. Section 3.4 discusses the data and sources used. Section 3.5 examines inter-bank

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[2]More specifically, it provides information on unique drawer-acceptor-discounter sets of bills.

[3]This is the lower bound for the effect, as we only capture clients whose bills are eventually discounted at the Bank of England, and because the club and directorship networks are missing some entries.

linkages in the bill market. Section 3.6 highlights the role of shared social and business interests in client-sharing. Section 3.7 speculates about potential mechanisms for this relationship and what its effect might be on information production. Section 3.8 concludes.

3.2   Bills of Exchange

Before delving into the role of personal relations in credit provision, it is important to first understand the nature of the credit they were providing. This section, on the bill of exchange, demonstrates why acceptors needed good information on borrowers for those borrowers to be able to access financial facilities in London.

By the late nineteenth century, bills of exchange were the standard short-term debt instrument. They had a variety of functions, but their primary use was in trade credit.[4] Long-distance trade naturally resulted in uncertainties and frictions, as goods were shipped across the world. Bills of exchange acted as promissory notes, pledging to pay the holder after goods arrived. This promise was typically guaranteed by a third party, the acceptor, who became liable for payment. The guarantee of the acceptor enabled the bill to be freely traded. The bill was effectively as good as their reputation. By having public information about the reputation of acceptors in London, investors could assess the risk associated with

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[4]For a detailed history of bills of exchange see Accominotti and Ugolini (2019).

a bill, overcoming the information asymmetries between them and the eventual borrower. Only the acceptor needed information about the bill or the borrower themselves. From the 1820s onwards, the role of acceptor was increasingly filled by specialised merchant banks (Chapman, 2005). Their reputation as astute appraisers of borrowers meant that bills accepted by them were particularly highly valued. The bills accepted by the most prestigious merchant banks were the 'ultimate liquid asset' and were generally seen as near riskless (Jansson, 2018; Accominotti et al., 2021). Merchant banks were particularly well positioned to embrace this role because of their strong connections with overseas merchant communities. Almost all merchant banks evolved from small trading firms. For instance, Barings started as wool merchants from Groningen, Brown-Shipley as linen merchants in Baltimore, and Kleinworts as Altona merchants working in a counting house in Havana (Ziegler, 1988; Ellis, 1960; Wake, 1997). They were in a privileged position to acquire information. This paper suggests that not all of that informational advantage was from closer connections to clients or markets, but that some of it arose from ties to other merchant banks.

Figure 3.2.1 details a typical transaction financed through a bill of exchange. Bills were a highly flexible instrument and could be used in a variety of ways. The following description relates to a *bank bill* where the acceptor has also arranged discounting for the drawer. *Bank bills* were those drawn on financial institutions, such as merchant banks. A fuller description of the different uses of the bill of

exchange can be found in Gillett's *The Bill on London* (1952).

Figure 3.2.1: Example of a bill of exchange network
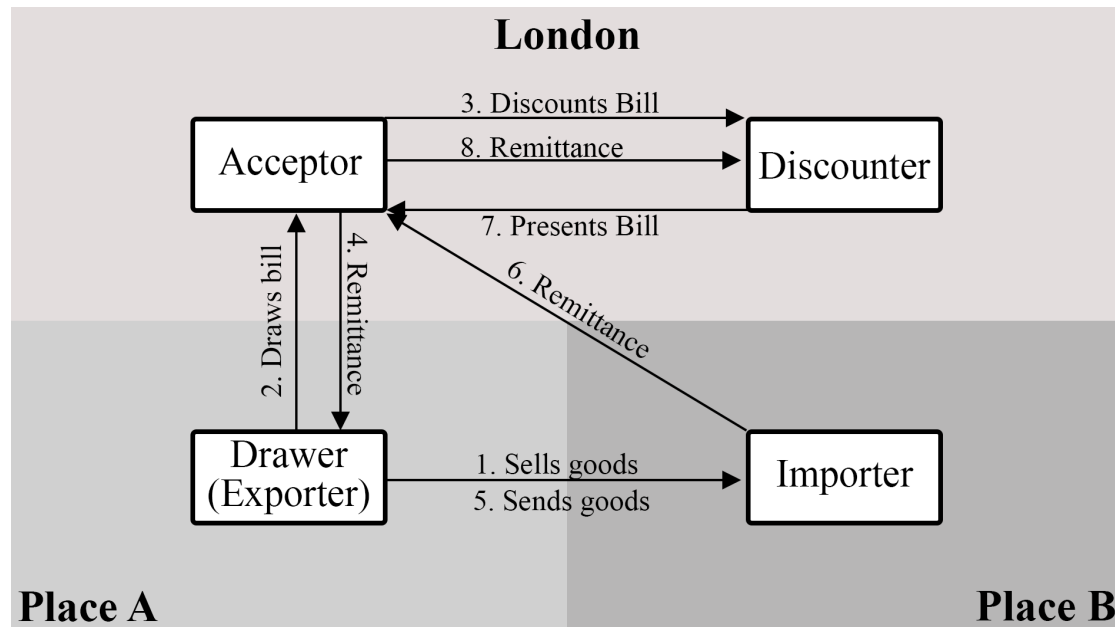
Note: Maturity is reached at step 6. These took many different forms. Here the drawer is the exporter, but it could instead be the importer. The link in step 2 is the connection I later use to construct the shared drawers network.
Source: author's own representation drawn from Gillett Brothers Discount Company (1952).

In step 1 an exporter (the drawer) in one city sells goods to an importer overseas. The exporter is not willing to send the shipment until they receive payment for those goods. Conversely, the importer is not willing to send payment for the goods until they arrive. To remedy this situation, in step 2 the drawer draws a bill on an acceptor (e.g. a merchant bank). This bill is a promise by the importer to pay the holder of the bill after the shipment should have arrived, when the bill will reach maturity. It is guaranteed by the acceptor, who will pay the holder if the importer cannot make good on their promise. The acceptor charges a commis-

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sion for this guarantee and in step 3 arranges for it to be sold at a discount (i.e. discounted) to a discounter. The discounter purchases the bill via the acceptor, channelling cash down to the exporter in step 4. This gives the exporter the liquid funds necessary to ship goods to the importer in step 5. Once the shipment arrives and the bill matures, the importer makes good on their promise and sends funds to the acceptor in step 6. In step 7 the current holder of the bill presents it to the acceptor, who acts as an intermediary, channelling funds from the importer to the discounter in step 8. In this way the discounters are able to overcome the substantial information asymmetries between them and the trading parties. Typically a bill would first be discounted by a specialised bill broker and then rediscounted by deposit or central banks and held as a liquid asset. In Figure 3.2.1 the drawer is the exporter, but it could instead be the importer. The shared drawer network constructed in Section 3.4 is derived from the relation between the drawer and the acceptor, seen in step 2. Where the drawer has multiple acceptors on different bills, these acceptors are considered to be connected by that shared drawer.

3.3 Merchant and Relationship Banking

Merchant banking was an arena subject to competition within limits. Failure was exceedingly rare and there were only two amalgamations of merchant banks in the 1890 to 1914 period (Cassis, 1994, p. 40). The only major crisis within

the sector was the Baring crisis in 1890. Here, co-operation was the watchword of the day. The Bank of England rapidly organised a rescue operation, which included contributions from virtually all of Baring's competitors, including the Rothschilds, Glyns, Mills, Brown-Shipley, Antony Gibbs, Morgans, Hambros and Raphaels (Ziegler, 1988, p. 253-254). Moreover, the Bank of England itself had strong ties to the merchant banking community. Many, if not most, of its directors were drawn from the partners of the merchant banks, and there was a strong sense of shared community (Lisle-Williams, 1984a). The Edwardian era was primarily a period of continuity and consecration, with limited structural changes in the sector. Throughout the period merchant banks were characterised by family-based control and private ownership (Lisle-Williams, 1984a,b; Daunton, 1988).

Nonetheless, there is debate about how dynamic the sector was. While Chapman (1986) has argued that it was an era of increased competition, Cassis (1994, 1985, 1988) and Lisle-Williams (1984a) suggest the opposite. These contrasting views are driven primarily by differences in which banks are considered more important. Focusing on the newer firms, particularly Kleinworts and Schroders, Chapman (1986) contends that their rapid ascent was indicative of a broader dynamism. Conversely, Cassis (1994) and Lisle-Williams (1984a) maintain that these banks were in the minority, and that the "aristocratic core" around Barings and Rothschilds was far more influential. Taken together, despite disagreement about how to characterise the sector, there is consensus that there existed a less com-

petitive core and a more dynamic periphery. This core was integrated with the aristocracy and increasingly resembled a club of sorts, with close social ties between members (Cassis, 1994; Daunton, 1988). This was especially the case after the Baring crisis, the trauma of which demonstrated the perils of competition. Merchant banks respected each other's territory, as Lord Revelstoke wrote in 1902 'the preserves of Brazil and Chile will be respected as belonging to our noble friends in New Court'.[5]

As underwriting became more common, incentives to collaborate increased. Syndication of issues meant that banks were no longer acting entirely independently. Merchant banks engaged in numerous co-operative arrangements: issue syndication, agreements not to poach clients, respecting territorial interests, information sharing, joint control of investment funds, and joint control of other businesses (Lisle-Williams, 1984a, p. 257). The appetite for risk and competition in these firms was limited. They were oriented around the family and as limited liability partnerships were not introduced until 1907, the consequences of failure were profound (Daunton, 1988).

There were more lively actors on the scene, notably the Anglo-German arrivals Kleinworts and Schroders. By 1913 these banks had risen to the top of the league table, so to speak, with more acceptances than either Barings or Rothschilds (Chapman, 1986, p. 184). If the old, Anglicised names were part of an aristocratic

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[5]John Baring cited in Ziegler (1988, p. 303).

community, there is little evidence these banks were. Looking at the merchant banks with over £1m of capital, at least two-thirds had no obvious aristocratic connection (Chapman, 1986; Cassis, 1988). While most of the former group had partners sitting on the board of the Bank of England, the new arrivals were barely represented. Indeed, Baron Schroder openly criticised his partner F. C. Tiarks for taking a directorship there (Chapman, 1986, p. 187). However, what is not clear is whether their success was due to violating prevailing social norms. For instance, not engaging in the same co-operative arrangements as other banks. Among the merchant banks with no aristocratic connections and a capital over £1m, only one was non-German, the Greek house Ralli Bros (Chapman, 1986, p. 181). The rise of the new Anglo-German banks is more closely related to their strong connections with emerging markets than their unwillingness to collaborate. These firms were also willing to take on more risk, raising their acceptance to capital ratios above industry norms (Kynaston, 1996, p. 278; Diaper, 1983, p. 78-79). So while there was a degree of dynamism, it's not clear the extent to which even these banks operated in a completely non-collaborative framework. The newer entrants were important, but they were very much in a minority, and did not upset the established order (Cassis, 1988, p. 119; Kynaston, 1996, p. 270).

The acceptance activities of these banks have typically been considered within a relationship banking framework. Boot (2000) defines this as the provision of financial services by an intermediary who invests in client-specific information,

frequently of a proprietary nature, and who assesses potential risk through multiple interactions with a client. The competitive advantage of each bank is its privileged access to information about clients, arising from a unique relation with the client developed over a period of time. This client focused approach means that lending (or in this case guaranteeing) banks do not have to probe each individual transaction to evaluate the risk associated with it. Firms pay an initial fixed cost to establish relationships and acquire new expertise, and then continuing costs are much lower (Freixas, 2005). London merchant banks were in a prime position to engage in this form of banking. They typically had international kinship networks, strong connections to merchant communities, relations to state actors, and access to London capital markets. A long-standing presence in foreign markets meant each bank had a competitive advantage in its area of specialisation. Clients who were loyal to them should have few incentives to engage with other banks. Relationship banking is premised on the idea that the information needed to assess a borrowing firm's quality is not easily transferred between banks or conveyed by borrowers to new bankers (Accominotti and Ugolini, 2019). This means they are, to a degree, "informationally captured" by the bank with which they have a relation (Sharpe, 1990). This non-quantitative, non-transferable information is termed "soft information". In its purest form, this model of banking suggests that borrowing is most effectively handled by a single intermediary.

However, several features of the London acceptance market might make these

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unique relationships sub-optimal. Many merchant firms would have been relatively large compared to the banks guaranteeing them. Chapman (2005) gives a number of examples of "typical" clients. He describes three different clients in the 1830-1900 period, the capital of which ranged from £200,000 to £470,000. None of these had unique relations with their acceptors, all drew bills from at least 3 merchant banks (Chapman, 2005, pp. 185-192). By his analysis, most major clients were supported by a group of merchant banks. There are various reasons why this could be the case. If merchant banks cared more about minimising risk than maximising growth, then ensuring they 'captured' a firm was less important, they would be happier to provide only partial credit. A quote from Alexander F. Kleinwort is particularly illuminating here. "We would at all times rather increase the number of our correspondents than the transactions with a few of them - large credits are desirable only when the position of the parties concerned are thoroughly known to us".[6] Banks might prefer to limit their exposure by diversifying their clients, restricting the credit given to any single client (Jansson, 2018, p. 239). Sharing information within a small, reciprocal community could help achieve this without losing the benefits of those relationships. Banks were also sometimes faced with limited access to information from a particular community. In areas where they lacked kinship or existing personal networks, they would typically engage with agents or correspondents. However, the number of these was limited, and they

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[6]Alexander F. Kleinwort, cited in Chapman (2005, p. 75).

would sometimes be shared between banks.[7] Agent mediated relations meant that even soft information could be, to an extent, transferable.

The contention of this paper is that clients were not shared randomly, their relationship was not to a single merchant bank, but to several connected merchant banks who pooled private information. Obviously collaboration was the natural *modus operandi* in issuances, the other major area in which merchant banks operated. Recent work on the Baring crisis suggests that syndication agreements were strongly related to personal ties between issuing parties (Vedoveli, 2018). Barings struggled to gain reliable information even in the area of its supposed specialisation, Argentina. Its primary agent in Buenos Aires, Nicholas Bouwer, only formed weak connections with Argentine actors, and remained highly embedded in the expatriate community. Barings received conflicting information and could not be certain about whether they could trust him, as he developed strong ties with other Anglo-Argentine firms. Instead, it came to rely on co-operation with other banks involved in the area. This was facilitated by Hermann Hoskier, who had personal relations with the partners and directors of Barings, Hambros, Brown, Shipley, and Paribas. Though the structure of underwriting was different, involving several parties in the same transaction, there are clear lessons here. Where information acquisition was difficult and risk sizable, merchant banks organised

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[7]We can see evidence for this both in the client account ledgers of Kleinworts and the Credit Memoranda at Barings.

risk sharing agreements through their personal connections. It's difficult to establish when these arrangements emerged. Chapman has argued that it was the age of the telegraph that ended the 'dispersed family' model, shifting the paradigm towards actors who were more flexible, with the ability to move around and form new connections (Chapman, 2005, p. 86). It is possible that unique relations were previously more common. As merchant banks grew in size and began to engage with larger firms outside their original communities, it may have become beneficial to share information.

3.4   Data

3.4.1   *The London Banks*

To identify merchant banks, I use the database constructed in the previous paper. This employs Thomas Skinner's *The London Banks and Kindred Firms*, a business directory published between 1865 and 1916. The directory contains the names of all partners and directors of all London banks, as well as the type of bank and the year it was established. This is the most definitive source on London banks and bankers and contains a wide array of firms. Banks included in 1901 range from Economic Bank, Ltd. with £7,229 of paid-up capital, to the Bank of England, with £14.6m. For this paper the sample I use is merchant banks from 1901, of which there are 66. There are 232 partners listed for these firms. The names of the firms

and their members are hand-matched with the following sources. I also use data on partnerships and directorships of non-merchant banks, from the same source and year, to identify other banks where merchant bankers acted as partners or directors. There are 176 other banks listed, with 944 directors and partners. These are used to create an inter-bank network of shared partnerships and directorships (Figure 3.4.3). The network of shared bank directorships, therefore, does not measure whether merchant banks shared partners with each other, this was never the case. Instead, it measures whether the partners of two separate merchant banks acted as partners or directors at the same non-merchant bank. It is not measuring direct business ties between the two merchant banks, but the extent to which partners from different merchant banks knew each other personally through partnerships or directorships elsewhere in the banking sector.

3.4.2   *Men of Note in Finance and Commerce* and *Who Was Who*

Individual level data on the social and professional lives of merchant bankers is collected from Herbert Henry Bassett's (1901) *Men of Note in Finance and Commerce.* This was intended as an ongoing series, containing biographical details on prominent individuals engaged in finance and commerce. Ultimately, only one edition was published, in 1901. It was modelled on other successful biographical dictionaries, notably *Debrett's Peerage* and the more recent *Who's Who.* Infor-

mation was gathered from a variety of sources: statesmen, professional bodies,
newspapers, and the individuals concerned. Its stated intention was to provide
a representative depiction of the sector. The biographies within give details on:
birth-place, birth-year, education, career, titles, social life, and residences. A small
sample of entries are shown in Figure 3.4.1.

Figure 3.4.1: Sample entries from *Men of Note in Finance and Commerce*

ADAM, Lord. James Adam. Judge of the Court of Session. Born at Edinburgh on October 31, 1824. Educated at Edinburgh Academy and University. Extraordinary director of British Linen Company Bank; Edinburgh Life Assurance Co.; Scottish Equitable Life Assurance Society; and Scottish Widows' Fund Life Assurance Society. Member of Athenæum Club. Residence: 34, Moray-place, Edinburgh.

ADAM, A. Chivas. Born at Aberdeen, 1844. Educated at Banff and Aberdeen. Entered business in 1860, and became a partner in Adam & Co.; is now partner in Adam & Co., Aberdeen, and Adam Brothers, of London, steamship owners. Director of Adam Steamship Co., Sunderland Shipbuilding Co., London Graving Dock Co., and Mutual Steamship Insurance Association. Member of Conservative Club and City of London Club. Business Address: 17, Gracechurch-street. Residence: Hethersett-lodge, Putney.

ADAM, Sir Frank Forbes. C.I.E.

ADAMSON, William. C.M.G. Born 1832. Educated privately. Carried on business for many years as a merchant in the Straits Settlements, and is now head of the firm of Adamson, Gilfillan and Co., East India merchants. Is a member of the London Committee of Yangstye Insurance Association; chairman of the Straits Settlements Association; and director of Peninsular and Oriental Steam Navigation Co. Business Address: 2-4, Billiter-avenue, E.C. Residence: Rothbury, Avenue-road, Highgate, W.

ADDINGTON, Lord. Egerton Hubbard. V.D.; M.A. (Oxon.); J.P. and C.A. (Bucks); M.P. for Buckingham (1874-80), and N. Bucks (1886-9). Born 1842. Partner in firm of John Hubbard and Co., Russia merchants. Director of Royal Exchange Assurance Corporation and Surrey Commercial Dock Co. Member of Carlton Club. Business Address: 4, St. Helen's-place, E.C. Residence: 24, Prince's-gate, S.W.; Addington Manor, Winslow.

Source: Bassett (1901, p. 18).

There are six different "lists" contained within the dictionary, with varying
amounts of detail. This paper uses the "General List", containing details on the
partners and directors of financial and commercial firms.[8] In total this list includes

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[8]Other lists focus on bank managers, officials of the London Stock Exchange, managers and

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1,693 biographies, of which 90 are listed as merchant bankers in Skinner's *London Banks* directory. From these biographies I collect the names of firms where listed individuals were partners or directors and the social clubs they were members of. In total I collect details on 3,699 firms and 262 clubs, for which there are 6,394 and 1,793 memberships recorded, respectively. For the merchant banker sample, there are 92 and 101 directorships and club memberships respectively. The names of firms and clubs are cleaned and then each individual is matched by hand to members of the merchant banks listed in Skinner's directory in 1901.

These biographies are augmented with similar data collected from *Who Was Who*. Here I search for all partners of merchant banks listed in Skinner's directory. This includes additional biographies for 73 merchant bankers, and concerns 147 firm memberships and 143 club memberships. These sources are combined to create two separate inter-bank networks, one based on shared social clubs and one based on shared directorship or partnership of businesses (Figure 3.4.3). In total there are biographies for 105 unique individuals, from 48 merchant banks. The social and business networks consequently only capture these banks (the most prestigious), while the bills and banking directorship networks capture all banks.

Naturally, biographies focus on more prestigious individuals. Consequently, the social and professional connections captured here represent the upper-tail. They

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actuaries of insurance firms, members of the Institute of Civil Engineers, financial publications, and officials. Though these lists are significantly less detailed.

contain information on the individuals who are the most professionally and socially prominent, often the senior partner. On average each firm had 3.52 partners. For those banks which we have biographies we capture 1.59, usually the most senior ones. Of the 15 merchant banks with a pre-war capital of over £1m, only one, Raphael & Sons, is not represented in all four networks. This paper effectively captures a lower-bound of relations between banks, as it only captures those relations between the most prestigious bankers at each firm. These relations indicate the direction of a bank's ties, but might not capture all of them.

3.4.3   Bank of England Discount Ledgers

Finally, I use data on acceptors and drawers from Accominotti et al. (2021). These data give information on a variety of acceptors and drawers. For this paper, I focus on the merchant banks found in this dataset, who are hand-matched with my other sources. These are used to create a network of shared drawers (i.e. clients) between the merchant banks (Figure 3.4.3). The source they use is the Bank of England's *Discount Ledgers* from 1906. As bills were discounted in the London money market, many ended up in the Bank of England's reserves.

This database records each unique set, of drawer-acceptor-discounter, recorded on the bills. So a 'bill' in this context means a unique set of relations found on a bill of exchange. This correlates with but is not a perfect proxy for the number of

bills accepted.[9] In total, they record the details of 23,493 unique bills, and 4,970 firms. Of these, 3,554 are drawers, 1,439 are acceptors, and 145 are discounters. The ledgers record the details of the drawer, acceptor and discounter connected to the bill.

While these ledgers are the most comprehensive source on the bill market, they certainly do not constitute its entirety. The discount ledgers nonetheless seem to be a relatively representative source of information on acceptance. Comparing the number of bills listed for each acceptor in this dataset with aggregate data on total acceptances given by Jansson (2018, p. 268), the rankings produced are almost identical. Similarly, the breakdown of different types of acceptor found in the Bank of England ledgers is very similar to that found at another major discounter, Gillett Bros. & Co (Accominotti et al., 2021, p. 13-16).

3.4.4   Network Construction

These four different sources are used to create four different networks of ties between the 66 merchant banks.

For the three inter-personal networks the ties between the banks are weighted by the number of shared memberships. Let us look at an example (Figure 3.4.2). This graph shows the full business directorships network for two merchant banks,

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[9]For an acceptor, it is the number of unique drawer-discounter pairs, and for a drawer it is the number of unique acceptor-discounter pairs.

Figure 3.4.2: Network tie example
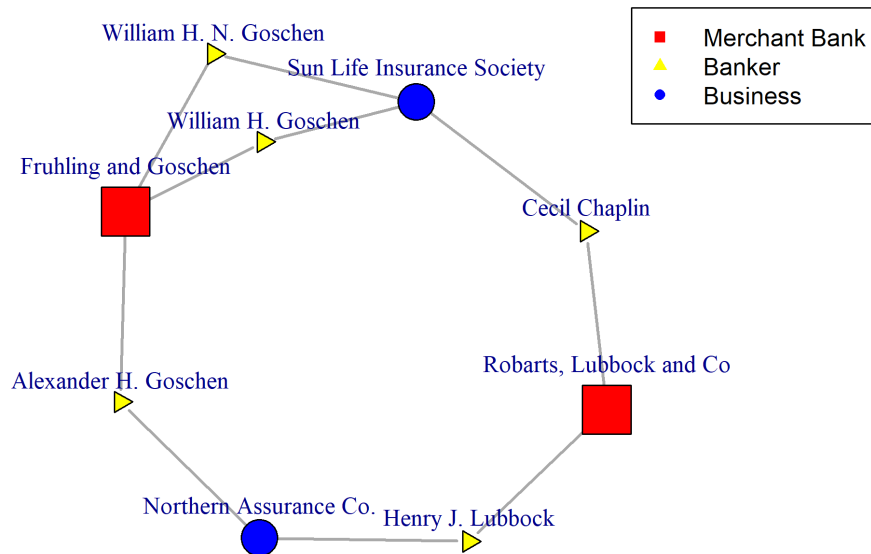
Fruhling and Goschen and Robarts, Lubbock and Co. We see that Fruhling and Goschen has three partners, while Robarts, Lubbock and Co. has two partners. I calculate the tie strength between the banks by counting the number of times a member of one merchant bank shares a membership at an organisation with a member of the other merchant bank. Here, that figure is 3. Cecil Chaplin shares a directorship at the Sun Life Insurance Society with both William H. N. Goschen and William H. Goschen, while Henry J. Lubbock shares a directorship at Northern Assurance Co. with Alexander H. Goschen. A simpler way to think of this is that we count the number of unique paths between each merchant bank. This gives us the tie strength between each pair of merchant banks in that network.

For the shared drawers network, I simply count the number of unique drawers that each accepting bank shares (graphs of all networks can be found in Appendix

3.D).

Figure 3.4.3: Network construction overview
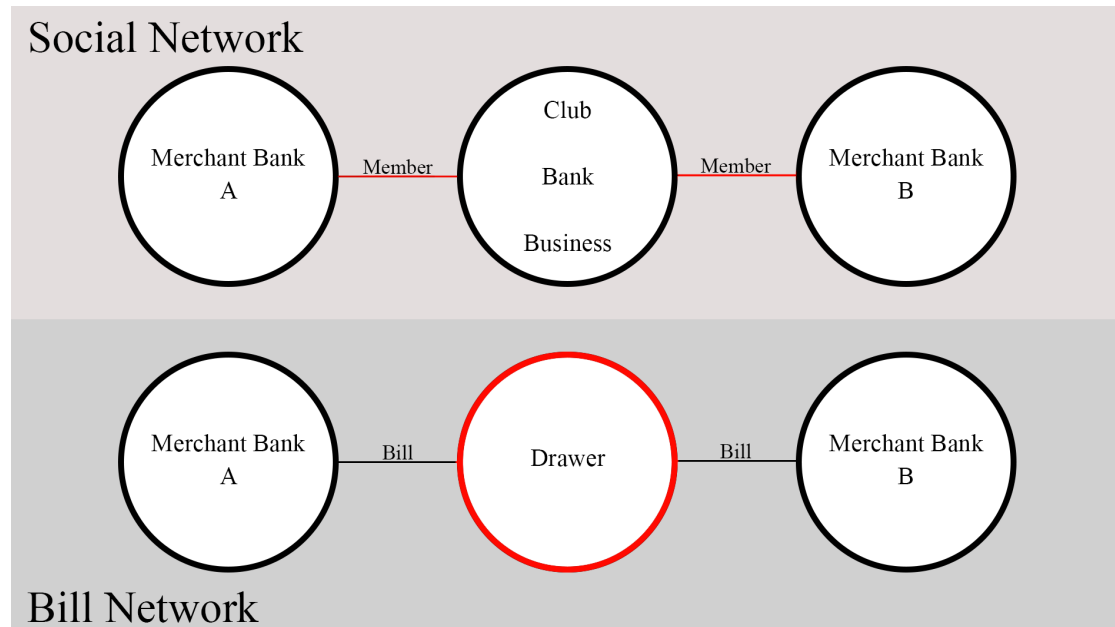
Note: Each of these structures is converted into a single, weighted tie between each merchant bank. Through this process I create four separate networks. The club, business and bank directorship networks are created by counting shared memberships, while the shared drawer network simply counts the number of shared drawers.

3.5   Client-sharing

The main empirical element of this paper examines why merchant banks shared drawers with each other. Before moving on to this, it is important to first establish the extent of client-sharing using the bills of exchange network. There are 3,554 drawers in the Bank of England database (from 1906), but Accominotti et al. (2021, p. 19) focus on the 1,381 who appear on more than one bill. They do so because drawers who are only documented once cannot inform us about network

structure. By construction, these will only be connected to one acceptor (and discounter). Consequently, there cannot be an imbalance in how many acceptors or discounters are associated with that client. Nor is it possible for acceptors to share these clients between them.

If we look at the drawers whose names appear on more than one bill, we find that on average they had 2.83 acceptors. The figure is situated between two extremes. On the one hand, if banking were purely relational and each drawer could only gain acceptance from the one bank able to effectively gather information about them, then this figure would be one. That is, each drawer would only have one acceptor. On the other hand, if banking were purely transactional, and clients selected acceptors and discounters at random, then we'd expect this number to be much higher. If for each discounter we had a randomly selected acceptor, then this figure would be the number of unique bills for each drawer in the dataset, an average of 4.86 bills. In fact, because each unique set might contain many bills with the same acceptor-discounter pair, if it was truly random we'd expect the number to be even higher.

This does not mean that acceptors were not playing an important role in information production. Accominotti et al. (2021) investigate this by comparing simulated bills of exchange networks with the network observed in the Bank of England ledgers. These simulated networks randomly distribute connections between drawers, acceptors, and discounters, while maintaining the same number

of connections in the network. If the network was formed at random, then few drawers would have more discounters than they had acceptors (1-4%), whereas in the observed network 50% have more discounters than acceptors. This shows that acceptors effectively resolved information asymmetries, allowing drawers to borrow from a large number of discounters. Drawers did not deal randomly with acceptors, but with a small number that had information on them.

Thus far, we've viewed this issue entirely from the drawer's perspective. However, the picture is different from the acceptor's angle. A large portion of acceptors share their drawers with other banks. In part this is driven by something known as the 'friendship paradox' (Jackson, 2019, p. 13). The paradox is that on average peoples' friends have more friends than they do. The intuitively deceptive nature of this paradox quickly gives way to a quite shallow explanation. Popular individuals show up on more people's friendship lists, so they are sampled more frequently. Thus, on average, each person's list of friends overly reflects popular people.

Similarly, drawers who are connected to many acceptors show up on the bills of many different acceptors, connecting them to many other acceptors. A relatively large portion of acceptors, 59.6%, share drawers with other acceptors. This is much more common among larger acceptors. Of those accepting more than one bill 78.2% share drawers and for those with more than 5 bills accepted this is 92.1%.[10]

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[10]This is not the total number of bills that acceptor is accepting in 1906, just unique sets which

Table 3.5.1: Merchant banks' shared drawers, by foundation date

Founded	N	Mean (%)	St. Dev.
Post-1850	23	44.7	32.1
Pre-1850	30	58.4	23.2

Note: This table gives the percent of drawers of each merchant bank whose bills were also accepted by other acceptors. It details the average for merchant banks founded before and after 1850. This is given for the 53 merchant banks who appear in Skinner's directory and the Bank of England's discount ledgers.
Source: Accominotti et al. (2021), and Skinner (1901).

For the 53 merchant banks appearing in the Bank of England's discount ledgers, 88.0% shared clients with other acceptors. On average, these banks share 52.9% of their clientele with other acceptors. It seems that shared clients constituted a significant part of the business of these banks.

The literature on merchant banking suggests that there was a non-competitive, entrenched core. This is where we would expect to see most of the client-sharing. If the older merchant banks formed a unified aristocratic community, which did not compete internally, then they would have fewer incentives to maintain single-client relations. The new merchant banks, on the other hand, would not have the connections to gain clients through this community, and with stronger ties to external merchant communities might have less need of information through these channels.

To examine this effect, I split the sample into those banks founded before and

show up in the Bank of England ledgers. As such, it may be measuring prestige rather than size, though there are reasons to think the composition of bills is representative, see the Data section.

after 1850. The cut-off is naturally somewhat arbitrary, but it neatly segments the banks into those typically described as being in the aristocratic core versus those belonging to the newer immigrant wave. Table 3.5.1 shows the extent to which this dichotomy holds. The proportion of shared clients is higher for older banks, at 58.4% compared to 44.7%, but this difference is only significant at the $p < 0.10$ level. The variation within each group is relatively large and no clear patterns emerge. While client-sharing was slightly more common in the older group, the newer banks, especially above a certain size, frequently engaged in it.

Figure 3.5.1: Merchant banks, proportion of drawers shared by bills accepted
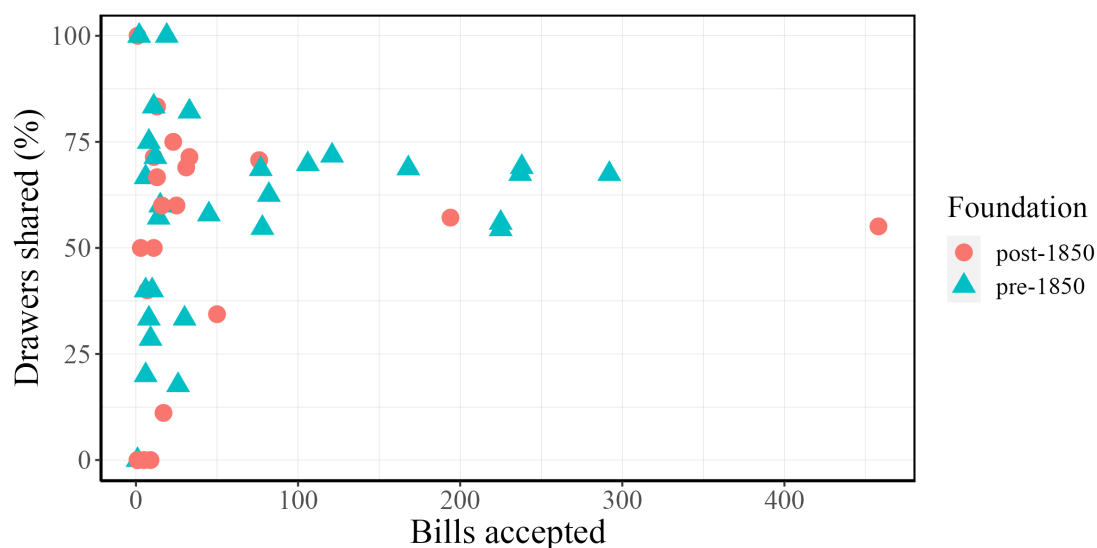
Note: This figure plots each merchant bank and shows the percent of their drawers they shared with other acceptors against the number of unique bills listing them as acceptors in the Bank of England discount ledgers.
Sources: Accominotti et al. (2021), and Skinner (1901).

Another factor which may have affected client-sharing is the size of the bank. Larger banks might be more inclined to share clients for various reasons.

Having unique relations with each client could be subject to diseconomies of scale. The type of personal, soft-information, required is not easily collected or organised *en masse*. It may be hard to expand the personal relations of a bank beyond a certain point. There are limited numbers of viable clients in each region, and as banks get larger they might be tempted to move outside their specialisations. The relationship between the number of unique bills listing a merchant bank as acceptor and the proportion of their drawers whom they shared with other acceptors is plotted in Figure 3.5.1. As discussed in the data section, the frequency with which an acceptor appeared in the Bank of England's discount ledgers is a reasonable proxy of their acceptance volume. However, there is no clear relation here. If a bank only had one bill, then this drawer was either shared (100%) or was not (0%). Otherwise, the data seems relatively normally distributed. If we look only at the largest 10 merchant banks, in terms of acceptances, those with over 100 bills, then all of them shared between 50-75% of their drawers. There is no clear relationship between the size of the bank and bill sharing.

Now that we have established that client-sharing was very common among merchant banks, I attempt to determine whether what type of process: random, competitive or collaborative, these shared clients represented.

3.6 Personal Connections Between Merchant Banks

This section of the paper seeks to explain drawer sharing through micro-level processes, namely interactions between the merchant banks. First it examines merchant bank cliques shown by the bills of exchange data, and then it looks at how personal connections were related to sharing drawers. I argue that ties were not formed at random, but arose from the mutual interests of partners at different merchant banks. These banks formed little client-sharing cliques.

The simplest test for the existence of these cliques or clusters is to look at the clustering coefficient in the shared drawers network. The clustering coefficient measures the extent to which two banks which share drawers with a third bank are likely to share clients with each other. Formally, it is the number of closed triads in the network over the number of open or closed triples, shown in Figure 3.6.1. Here Bank A and Bank B are connected to Bank C, forming a triple of three connected nodes. If Bank A and Bank B are connected (the dotted line) then this forms a closed triad. If they are not connected, then it is just a triple. The clustering coefficient for the shared drawers network is 0.64. This means that 64% of banks who shared a drawer with a third bank, also shared a drawer with each other.

To assess whether this clustering coefficient was the result of chance, I compare it to two different sets of simulations. The network we are comparing to contains

Figure 3.6.1: Clustering coefficient diagram
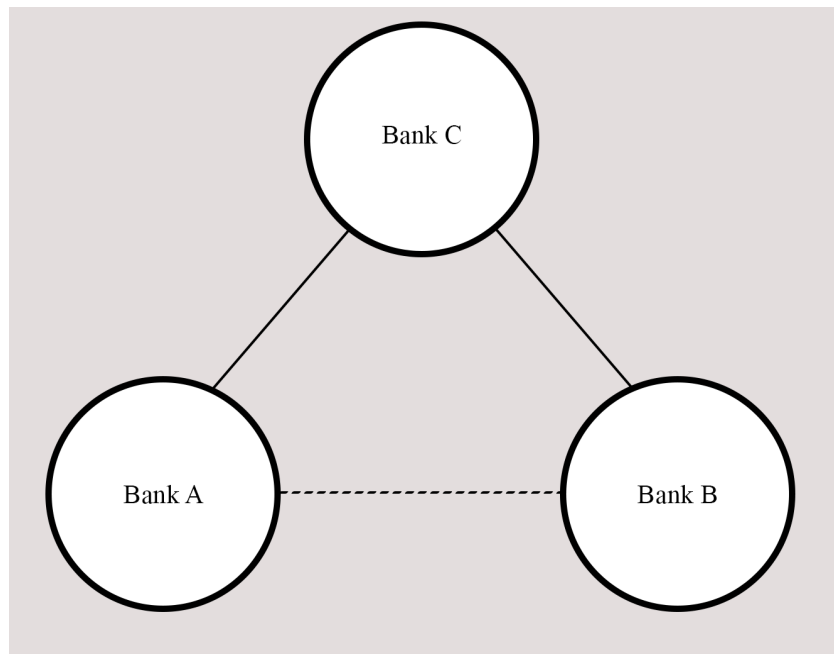
Note: The solid black lines show a connected triple, that is three different actors who are connected to each other. The dotted black line shows triadic closure. Clustering means that Banks A and B, who are both connected to C (the solid lines) are also connected to each other (the dotted line). For full details on the calculation of the clustering coefficient, see Appendix 3.B.

66 merchant banks (or nodes). It contains 250 connections between these banks (or edges), which are created whenever a bank shares a drawer with another bank. These are weighted by the number of shared drawers each bank has, but that is not used here. I generate 1,000 networks, which contain the same number of nodes and edges as the merchant bank network. These simulations allow me to control for the structural characteristics of the network which could lead to higher clustering.

In Simulation 1 we randomly sample pairs of nodes (without replacement) and distribute the 250 edges between them. This provides a lower-bound estimate for

Table 3.6.1: Merchant bank shared drawer clustering, simulations

	N	Mean	Standard Error	Max.	Min.
Observed	1	0.64	0.00	0.64	0.64
Simulation 1	1000	0.10	0.00	0.13	0.06
Simulation 2	1000	0.38	0.00	0.46	0.33

Note: This table compares the clustering coefficient in the observed network, with the average clustering coefficients for two sets of simulated networks, each containing 1,000 simulations. For details on the simulation procedure see Appendix 3.E. The standard errors are given for transparency, but are basically arbitrary. They depend heavily on the number of simulations run. As a robustness check, these are re-estimated for only those banks which feature on at least one bill in the Bank of England *discount ledgers*, the means are: 0.64, 0.20, 0.39 respectively.
Sources: Various, see Data section.

what we would expect clustering to look like if sharing drawers arose completely from chance. This only controls for the number of connections. In Simulation 2 the 250 edges are distributed such that each node has the same number of total connections as in the observed network, but they are rewired to connect with different nodes (see Appendix 3.E for details of the simulation procedure). It could be the case that having several very well-connected nodes brings up the clustering coefficient, because these nodes are quite likely to all be connected together. Simulation 2 controls for this structural characteristic of the network. The results are shown in Table 3.6.1.

These results show that clustering is higher than we would expect in random networks with similar structural characteristics. Merchant banks are much more likely to share drawers with other banks who are also connected to the same clique of client-sharing. Clustering in the completely random Simulation 1 is lower, at only 0.10. The coefficient is higher in Simulation 2, where the number of banks

connected by shared clients is held fixed for each bank, but still significantly lower than the observed value at 0.38 compared to 0.64. Higher clustering in this simulation suggests that a clustering is driven partly by variation in connectivity. Banks who have many connections are more likely to share their connections with each other. This does not mean that client-sharing was the result of collaboration, it may have been the case that those banks all shared an informational specialisation, however its shows that client-sharing was not randomly determined. Drawers connected to clusters of banks, which were more likely to share clients with another, third bank, than if they had been randomly selected.

Next, I present the central empirical component of this paper. I construct three further networks based on the same set of 66 merchant banks. The first of these looks at whether the partners at merchant banks acted as partners or directors together at other non-merchant banks. The next network looks more broadly at professional interests. It checks whether the partners of merchant banks worked as directors or partners at any non-banking firm listed in *Men of Note* or *Who was Who*. The biographical entries there list all the firms an individual was engaged with. There is a relatively broad array of firm types listed, ranging from mining companies to investment funds. The final network uses the same sources to examine whether partners of merchant banks shared memberships at elite members' clubs. By examining the overlap in these networks, I aim to determine the extent to which personal relations between partners of different banks were related to

Table 3.6.2: Network summary statistics

Network	Banks	Ties	Density	Mean Ties	Clustering Coef.
Drawers	66	250	0.12	7.58	0.64
Banks	66	53	0.03	1.61	0.91
Businesses	66	252	0.12	7.64	0.67
Social Clubs	66	180	0.08	5.45	0.54

Note: The number of ties is the non-weighted number of connections given by the network construction process, see Section 2.4.4 Network Construction. Density is the number of observed ties over the maximum possible number of ties, i.e. if all banks were connected to all other banks in each network. Mean ties is the average number of other banks each bank is connected to. The clustering coefficient is explained in Appendix 3.B.
Sources: Various, see Data section.

client-sharing.

Summary statistics for these networks are presented in Table 3.6.2. They are all weighted networks (as explained in Section 3.4.4).

I start by examining whether banks that shared more drawers were more socially notable. The biographical dictionaries capture the most socially prestigious partners of each firm. If the banks were well connected socially, this should be apparent in the inter-personal networks. I calculate centrality measures in each of the different networks to check for different forms of social influence. I then examine whether this is correlated with a higher number of inter-bank connections (degree centrality) in the drawers network. This measures whether certain types of power in the interpersonal networks are associated with increased client-sharing.

I use three different types of centrality measures. The first is degree centrality, which measures how many connections each node has. The next is betweenness centrality, which measures the extent to which nodes lie on the shortest path

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Table 3.6.3: Network centrality correlations

Type	Banks	Businesses	Clubs
Degree Centrality			
Degree	0.52	0.32	0.31
Betweenness	0.55	0.37	0.23
Eigenvector	0.32	0.20	0.19

Note: This table gives the correlation between the centrality measures for each bank in the different networks. The "Degree Centrality" section of the table compares the correlation between each centrality type in the personal network and degree centrality in the Bills network. For details on centrality measures, see Appendix 3.C.
Sources: Various, see Data section.

between nodes. This means they are likely to be conduits of information, or act as bridges or gatekeepers between different communities (Granovetter, 1973). Finally, I use eigenvector centrality. This is a more global extension of degree centrality, which only measures directly connected nodes. Instead, it measures how well connected each node is to other well connected nodes. In this way, it measures the extent to which a node is embedded among other popular nodes. For further details on centrality measures see Appendix 3.C. I check the correlation of each of these centrality measures in the personal networks with degree centrality in the bills network. The results are shown in Table 3.6.3.

These show a strong relationship between prominence in personal networks and client-sharing at a bank. In particular, banks where the partners frequently served as directors elsewhere had many more client-sharing relationships with other merchant banks. The correlation between the number of direct connections (degree centrality) in the bills and bank directorship networks is 0.52. Client-sharing was

also higher in banks which are directly connected to other merchant banks through social clubs, with a correlation of 0.31. These more socially prominent, entrenched banks had more client-sharing relations with other banks. This may be because they formed part of a settled, collaborative community, or even because it directly enhanced opportunities for information sharing. The correlation between betweenness centrality in personal networks and the number of shared clients (degree centrality) is also high. This indicates that merchant banks which were important in providing personal connections between distinct merchant banking communities also had more shared clients. The overall connectedness (degree centrality) of each bank in the personal networks seems to have been more important than being well positioned in the network and having connections to other important banks. This is evident in the lower correlation between eigenvector centrality and client-sharing.

Next, I test the extent to which specific relations in the personal network are connected to specific relations in the shared drawer network. There are strong reasons to suspect that sharing financial interests might create incentives to collaborate. Individuals with personal connections are more likely to spend time together, and they might be more prone to engaging in other business deals. There could be a sense of trust between them that makes reciprocity more likely (Granovetter, 2017, p. 56). Further, if merchant banks were frequently reticent to fully take on clients, then collaborating to share clients is more efficient than each bank having

to search out those clients. This simple explanation could be sufficient. Socially proximate bankers talk to each other. They do not have to provide detailed information to reduce search costs. A similar, albeit weaker, effect could be expected from sharing clubs. These individuals would probably spend less time together and have fewer interests in common than co-directors, however it suggests they moved in the same social circles.

To test for this relationship, I take the weighted adjacency matrix for each personal network and check its correlation with the weighted adjacency matrix for the shared drawers network. The adjacency matrix simply measures whether a Bank A has a connection with Bank B (for network notation see Appendix 3.A). Typically, this would be either a 0 (no connection) or a 1 (connection). However, here it is weighted by the number of times those banks are connected. This can be illustrated with a brief example. Say we only have three banks A, B and C and two networks, the shared drawer network and the club network. Let's say A and B share 2 drawers, B and C share 0 drawers, and C and A share 4 drawers. Then A and B share 4 club memberships, B and C 0 club memberships, and C and A 8 club memberships. I vectorise this adjacency matrix, and then calculate the Pearson correlation coefficient between these two networks, so between the two lists $(2, 0, 4)$ and $(4, 0, 8)$, giving a coefficient of 1.00.

This method shows a positive correlation between the shared drawers network and the banking, business and club networks. The correlations between them are

0.21, 0.14, and 0.10 respectively. These effects suggest that personal connections have a sizable connection to client-sharing. In raw terms, an increase of 1 shared bank, business or club membership is related to an increase of 3.23, 0.64 and 0.38 shared clients, respectively. This can be compared to the median or mean number of shared clients in the observed network, which are 7 and 39 respectively. This is not a causal claim. It could be that banks which share more clients then participate more in the same social communities. However, it indicates that these were likely to be positive, collaborative relationships, and that client selection was conducted along personal lines.

Next, I investigate the size and significance of this relationship by comparing these network correlations to those between randomly generated networks with similar characteristics. It could simply be that individuals who are highly connected in one network are highly connected in others as a result of network structures or the sampling process. A stylised example of this would be if an individual was so prominent in both networks, that they were connected to almost everyone. This would create a very high correlation, even if who they were connected to was chosen at random.

Using simulations I can address this issue, creating counterfactual networks with the same structure, but without interactions between the different network types. I generate 4,000 networks in two different sets of simulations (see Appendix 3.E for details). In each round of simulation I generate 1,000 networks of each of

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the four types (bills, banks, firms, and clubs). These are given the same number of nodes and edges, as the observed networks of that type. In Simulation 1 the edges and weights are redistributed to random pairs of nodes. In Simulation 2, the number of connections each node has is held constant, as are the weights associated with each connection.[11] Instead, we just choose a random node to rewire their connection to. This controls for the potential that the effect is driven by similarly well-connected banks across the networks. The results are shown in Table 3.6.4.

The relation between sharing drawers and sharing social connections is significantly higher in the observed networks than simulated ones with the same structure. On the surface it seems that the strongest effect is sharing directorships of other banks. This seems reasonable. Shared interests in the banking sector might promote more direct financial interests, or at the very least, more extensive discussion of financial topics. To some extent, this effect is driven by the client-sharing between the aristocratic core who offer held directorships at the Bank of England. However, we can see that client-sharing is related to personal relations across a number of dimensions. The correlation with shared directorships at other non-banking firms is also high, at around 0.14, and even in the less professional context of clubs at 0.10. These different relations combine to show that however we

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[11]The weights for the overall edges are not kept exactly constant, instead the half-weight for the half-edge is kept constant. This is explained in Appendix 3.E.

Table 3.6.4: Network tie correlations

Type	N	Mean	Standard Error	Max.	Min.
Bank Memberships					
Observed	1	0.21	0.00	0.21	0.21
Simulation 1	1000	0.00	0.00	0.12	-0.02
Simulation 2	1000	0.08	0.00	0.29	0.00
Business Memberships					
Observed	1	0.14	0.00	0.14	0.14
Simulation 1	1000	0.00	0.00	0.09	-0.04
Simulation 2	1000	0.05	0.00	0.17	-0.01
Club Memberships					
Observed	1	0.10	0.00	0.10	0.10
Simulation 1	1000	0.00	0.00	0.12	-0.03
Simulation 2	1000	0.03	0.00	0.15	-0.02

Note: This table compares correlations between adjacency matrices in the observed and simulated networks. For each network type, Drawers, Bank Directorships, Business Memberships and Club Memberships, I simulate 2,000 networks. 1,000 networks for each are simulated using the Simulation 1 procedure and 1,000 using the Simulation 2 procedure, for details see Appendix 3.E. To calculate the tie correlation, I take the adjacency matrix from each personal network and the adjacency matrix from the Drawers network, and calculate the correlation coefficient between them. This shows the extent to which a tie in the Drawer network between Bank A and Bank B is matched by a tie in a personal network. For example, if we had a network of only 3 banks, and Banks A and B shared 2 drawers and 4 club memberships, Banks B and C shared 0 drawers and 0 club memberships, and banks C and A shared 4 drawers and 8 club memberships, the tie correlation between the Drawer and Club network would be 1.00. The "Observed" rows give the coefficients between the observed networks; the simulation rows give the average coefficient between the different networks over the 1,000 rounds of simulation. The standard errors are arbitrary. They depend on the number of simulations run. The full distribution of results for the simulations can be seen in Appendix 3.G.

Sources: Various, see Data section.

measure it, personal connections between partners mattered. Those banks whose partners served on the same boards, and went to the same clubs, were significantly more likely to share clients with each other than with other merchant banks.

These personal relationships formed a complex web. Sharing one form of personal relation made it much more likely that you would share another. We can check this formally, by examining the correlation between different forms of personal relations. The correlation between sharing bank memberships and sharing memberships of other firms is high, at 0.41. This is even higher between firm membership and club membership, at 0.49. This was an interconnected community. There is no single causal relation here, instead, these various types of connections related to the formation of other types of connections. These were not confined to the private lives of bankers, but extended into the business sphere, shaping the way they conducted business.

3.7   Discussion

So, what exactly do these results represent? They provide evidence that clients were frequently connected to multiple acceptors; to communities of banks. That these relations fell along community lines suggests that the information was not publicly accessible to all acceptors. Drawers engaged with a number of different merchant banks, with personal ties to each other. Sharing information in these

tight knit communities allowed these banks to diversify, and to coordinate.

The variety of relations between merchant banks and drawers is crucial to our understanding of the global structure of the money market. It suggests that the relation of borrowers to the money market depended on the specialisation of the guaranteeing bank. Where banks lacked informational specialisations, they may have relied on links with other merchant banks instead. This seems to complement recent evidence about the operation of Kleinworts (Accominotti et al., forthcoming). The size of their clients varied drastically, but not randomly. In areas where they were less geographically specialised, like the US and East Asia, Kleinworts seem to have engaged with larger, institutional clients; for instance, banks and trading houses. Whereas in Germany, the area of their specialisation, clients were mostly small merchant firms, located in remote towns.

Diseconomies of scale and the relatively small size of each merchant bank meant they were not able to engage equally with all merchant communities around the globe. Client-sharing likely involved more of the larger, institutional drawers, where the cost of sharing information was reduced. Conversely, merchant banks had greater incentives to retain for themselves smaller clients operating in areas where they had a strong informational advantage. This has important implications for the ease with which smaller firms overseas could access capital; it depended on whether that particular community was represented among London bankers. It is likely that firms without this benefit had to be large and reputable enough to be

worth that initial investment.

Nonetheless, for co-operation to emerge, there must be plausible mechanisms through which it operated. There is a weaker form of the argument, that banks needed to share clients and personal relations affected the choice, and a stronger form, which is that relations incentivised client-sharing. To a degree both are probably true. Personal relations reduce the risks associated with information sharing, by providing social mechanisms to enforce cooperation. There is a long sociological literature about the relationship between trust and shared-group membership. A large component of this is the expectation of reciprocity (Foddy et al., 2009). This could greatly reduce the barriers that might normally stand in the way of client-sharing, such as fears of free riding.

There is certainly scope for more work on the mechanisms, and I give a few different possibilities below. The most conservative explanation is that the extent of direct information-sharing was limited. Merchant bankers who were more closely connected were more likely to be aware of each other's clients. At the very least, this could reduce search costs and, depending on the depth of the information, reduce the amount of investigation required. The stronger argument would be that they directly traded information. While this is not much discussed in the literature, work on this issue is scarce. We know little about the structure of relations of agents overseas, or about the information acquisition process. The extent to which banks used the same agents or these agents engaged with each

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other are likely crucial determinants of client-sharing. Where details of these agents are known, it seems that they sometimes existed in expat communities of London merchants. This was certainly the case with Barings' agent in Argentina, Nicholas Bouwer (Vedoveli, 2018).

I do find some clear archival evidence for collaboration in acceptances. In Barings' archives, the Credit Memoranda contain several instances of coordination over acceptance credits. If we take the case of Arnold Karberg and Co., an East Asian Trading house, we see that they are engaged with a variety of merchant banks. Barings' agent Gossler informs them that 'about 36 different houses grant them credit', 'including as it does almost all credit giving houses in Europe' (Barings, 1908, p. 14). In this instance, coordination between these houses seems to be expected. Arnold Karberg tell Barings that 'in case the general demand [is] for raising commission they will inform Gossler, but they must be approached by the majority of their connections'. We see that Barings does attempt to coordinate a response, though they are not successful, informing Gossler that 'we have consulted our friends who have granted credits and they are not disposed to join in trying for [a] higher rate'. While this phenomenon has not been considered by the literature, these records show coordination and collaboration in acceptance as a normal practice.

3.8 Conclusion

This paper introduces new data on the lives of merchant bankers to show that client-sharing between their banks was related to personal networks. Re-examining the data on acceptances, particularly those of merchant banks, we can see information sharing was an important element of this market. Merchant banks seem to have engaged in longstanding relations with clients, and to have reduced information asymmetries. However, most drawers had relations with multiple merchant banks. These merchant banks were likely to have personal connections with each other. This could allow them to diversify their portfolio and coordinate responses to clients.

Collaboration between merchant banks meant that having a connection to a single bank could reduce the costs of engaging with others. Conversely, this might give merchant banks fewer reasons to seek out novel borrowers. While this probably did not affect borrowers in areas where merchant banks had particularly strong specialisations, newer borrowers elsewhere may have struggled to access the London money market. This could lead to greater market concentration, particularly in areas with few personal connections to merchant bankers in London.

Overall, the proportion of shared drawers was high for merchant banks, at 52.9%. Client-sharing was not limited to specific types of merchant bank. There was no non-competitive aristocratic core and dynamic periphery, the practice was

widespread across the sector. Among the merchant banks, sharing personal ties is closely related to sharing drawers. This is tested using two different sets of simulations. These show that the relationship between personal ties and client-sharing were not simply the result of overlap in different forms of prestige. If this were the case, then simulations where the prestige or popularity of each bank is held constant should give similar results, but they do not. The relation between personal ties and client-sharing is particularly strong when looking at co-directorship of non-merchant banks. This could be because directorships represented a tighter personal bond than club memberships and were related to shared interests within the banking sector. The effect is strong, with a small number of personal connections relating to a substantial increase in the number of shared clients.

Overall, these findings suggest that shared clients were the result of collaboration and information sharing in the acceptance market. The exact mechanisms for client-sharing remain unclear and there is ample scope for further research on this question.

Appendix

Appendix 3.A   Network Notation

Networks can be represented mathematically by a set of nodes connected by edges. A one-mode network, such as that between the banks, can be represented by a 2-tuple (V,E), where V is the set of nodes and $E \subseteq V \times V$ is the set of edges. The network can be encoded as an $n \times n$ matrix $\mathbf{Y}$, where n is the number of nodes (banks) in the network. Y_{ij} equals 0 if there is no edge between i and j, or equals 1 if there is a single edge between i and j. If there are multiple edges between i and j, then Y_{ij} is the number of those edges. For instance, if there are 3 edges between i and j, then $Y_{ij} = 3$. These multiple edges are therefore considered as a single weighted edge wherever $Y_{ij} > 0$. The number of these weighted edges in a network is denoted m.

Appendix 3.B   Clustering Measures

Formally, the clustering coefficient (or transitivity) C can measured as:

$$C = \frac{(\text{number of triangles}) \times 3}{\text{number of connected triples}} \qquad (3.1)$$

,

where a triangle is any three nodes ijk with edges (i, j), (j, k) and (k, i) and a connected triple is any three nodes ijk, with edges (i, j), (j, k) (and edge (k, i) can be present or not).

Appendix 3.C   Centrality Measures

Here I give definitions various centrality measures for one-mode networks. These are taken from Newman (2010).

- Degree centrality is defined as:

$$D_i = \sum_{j=1}^{n} Y_{ij} \qquad (3.2)$$

- Closeness centrality is defined as:

$$C_i = \frac{1}{n} \sum_{j} d_{ij}, \qquad (3.3)$$

where d_{ij} is the distance of the shortest path between i, j. The path length between two *connected* nodes is the inverse of the weight of the edge between them, i.e. $length_{i,j} = \frac{1}{Y_{ij}}$, where i, j share a direct edge with each other. If a node has no edges, it is assigned a score of 0.

- Betweenness centrality is defined as:

$$B_i = \sum_{st} n^i_{st}, \tag{3.4}$$

where s, t are any pair of nodes in the network, and n^i_{st} equals 1 if the shortest path between those nodes runs through i, 0 otherwise. The path length between two *connected* nodes is the inverse of the weight of the edge between them, i.e. $length_{i,j} = \frac{1}{Y_{ij}}$, where i, j share a direct edge with each other.

- Eigenvector centrality is defined as:

$$E_i = \sum_j Y_{ij} E_j, \tag{3.5}$$

where Y_{ij} is an element of the adjacency matrix, i.e. a connection between nodes, and E_j is the eigenvector centrality of each node j. Thus, it is the sum of the eigenvector centralities of connected nodes.

Appendix 3.D   Network Graphs

Figure 3.D.1: Personal Connections between Merchant Banks (I)

Shared Drawers

Shared Directors

Figure 3.D.2: Personal Connections between Merchant Banks (II)
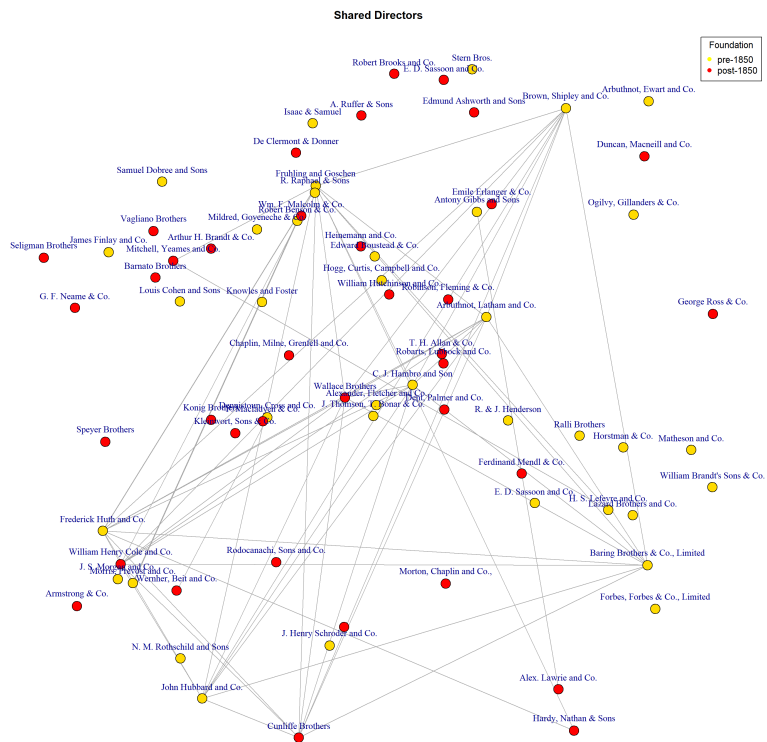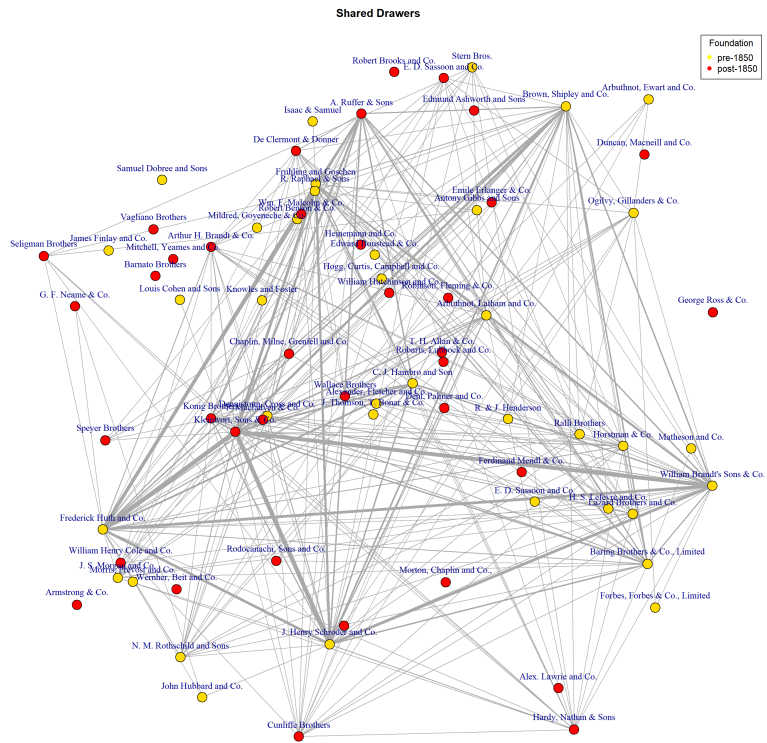
Appendix 3.E   Network Simulations

The networks are simulated according to $G(n, m)$ type models (for more details see Newman (2010)). In this model the number of nodes n is kept constant. Here n represents the number of merchant banks, 66. The number of edges in the simulated networks are kept constant, though these vary for each of the four types of network (i.e. Bills Shared, Bank Memberships, Business Memberships, and Club Memberships). For each set of simulations I generate 1,000 networks of each type. The same set of simulated networks are used for both the clustering and matrix correlation results.

In Simulation 1 the m edges are distributed randomly between pairs of nodes (i, j). To avoid multiple edges between the same pairs of vertices, pairs are sampled randomly from a list of all possible pairs, without replacement. This is done m times. Weights for these edges are taken from the adjacency matrix $\mathbf{Y}$ and randomly assigned to an edge on a one-to-one basis. Effectively we select 1,000 graphs at random from the collection of graphs G, with a uniform probability distribution $P(G) = \frac{1}{\omega}$ for all graphs with n nodes and m edges, were ω is the number of such graphs.[12]

In Simulation 2 the degree (number of connections of each node) is kept constant. This is done by pairing each half-edge coming from a node i with a half-

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[12]Not including complex graphs with multiple edges between the same nodes or self-edges.

edge coming from a node j. The procedure simply goes through the list of edges, and breaks each into two separate half-edges connected to two nodes i, j. The simulation then randomly samples pairs of half-edges without replacement, and connects these together. This is repeated until there are no half-edges left to be sampled. Each half-edge is given half the weight which that edge had in the observed network. That is, the half edge taken from Y_{ij} for Y_i is given the weight $\frac{Y_{ij}}{2}$. This means the half-weight on half-edges is kept constant, which helps preserve the strength with which each node is connected to other nodes. Basically, for each edge half of the weight is randomly determined and half is fixed. Overall, each node has a constant number of connections, and a similar weight. However, which other nodes they connect to is random. Here, we are just sampling from the collection of random graphs G, with n nodes, m edges, the same unweighted degree sequence as the observed graph, and a semi-randomised weighted degree sequence.[13]

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[13]The reason that edge weights are not kept perfectly constant is this would constrain each half-edge to only connecting with other half-edges with exactly the same weight, which would severely constrain the randomness of the simulation.

Appendix 3.F Simulation Diagnostics

Table 3.F.1: Simulated network diagnostics

Type	N	Degree	Closeness	Betweenness	Eigenvector
Shared Bills					
Observed	1	7.58	0.00	17.22	0.11
Simulation 1	1000	7.58	0.02	119.34	0.12
		(0.00)	(0.00)	(6.19)	(0.04)
Simulation 2	1000	7.58	0.02	119.25	0.12
		(0.00)	(0.00)	(6.87)	(0.04)
Bank Memberships					
Observed	1	1.61	0.00	0.39	0.17
Simulation 1	1000	1.61	0.00	52.59	0.05
		(0.00)	(0.00)	(24.09)	(0.04)
Simulation 2	1000	1.61	0.00	52.54	0.05
		(0.00)	(0.00)	(24.13)	(0.04)
Business Memberships					
Observed	1	7.64	0.00	14.91	0.16
Simulation 1	1000	7.64	0.01	69.91	0.31
		(0.00)	(0.00)	(1.90)	(0.06)
Simulation 2	1000	7.64	0.01	69.86	0.31
		(0.00)	(0.00)	(2.54)	(0.06)
Club Memberships					
Observed	1	5.45	0.00	13.19	0.13
Simulation 1	1000	5.45	0.01	84.37	0.09
		(0.00)	(0.00)	(3.50)	(0.02)
Simulation 2	1000	5.45	0.01	84.30	0.09
		(0.00)	(0.00)	(4.15)	(0.02)

Note: This table compares structural characteristics of the simulated networks with the observed networks. I use the weighted versions of these measures, with edge weight used as distances for the closeness and betweenness centrality calculations. The figures in brackets are standard errors of G or Y, rather than within a particular network. The same simulated networks are used for both the clustering and inter-network edge correlations.
Sources: Various, see Data section.

Appendix 3.G   Probability Density Graphs

This section provides the results from Table 3.6.4 as kernel density plots. For brevity, only results from Simulation 2 are included here. As these results are less strongly significant than the results from Simulation 1.
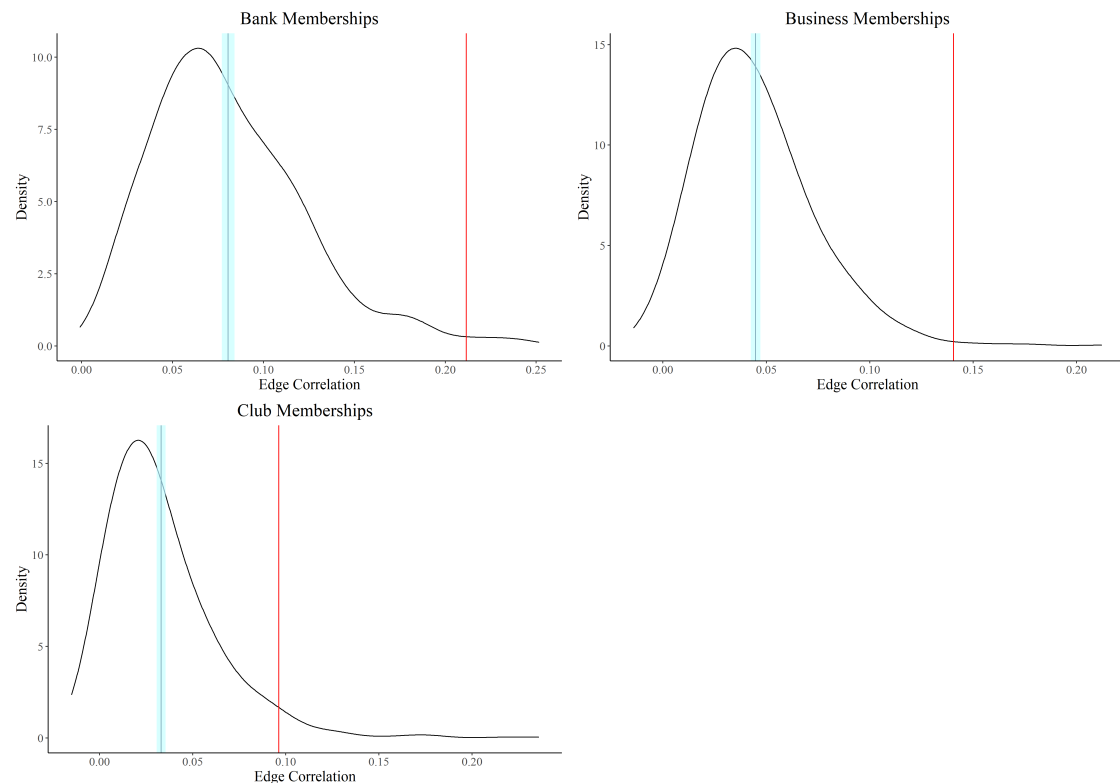

Figure 3.G.1: Density plot, observed vs simulated inter-network correlations

Note: The density plot shows the distribution of the correlations between 1000 simulated networks of the given type (i.e. Bank Memberships, Business Memberships, and Club Memberships) and 1000 simulated Bill Sharing networks. This figures shows the results from Simulation 2, see Appendix 3.E. The black vertical line is the mean value of the simulations, while the red vertical line is the observed value. The shaded region represents 99 % confidence intervals. Bandwidth = 0.01
Sources: Various, see Data section.

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Conclusion

This thesis shows a remarkable persistence among Britain's elites in the late nineteenth century. Both aristocrats and elite banking families were highly prestigious, and remained so across the period. Far from being held back by anachronistic tendencies, the aristocracy leveraged their social position to maintain their economic status. Similarly, elite bankers leveraged their social position, forming collaborative economic ties with each other. Existing elites adjusted to the shifting landscape through a gradual, controlled process of social adaptation. This was not without precedent. Echoes of this process were seen as early as the seventeenth century. Decades later, they had retained most of their economic and social status. These different forms of status interacted with each other, redefining the bounds of community, and providing distinct advantages to members of those communities.

Economic measures alone fail to capture the complexities of social mobility. Persistence in economic terms may be the result of changes in social terms. Standard measures of multi-generational social mobility do not effectively explain why individuals with different levels of social capital appear more persistent, even in measures of 'latent status'. This thesis shows that even these latent measures do not capture family status in full. If they did, there would be no difference in the trajectory of aristocrats and wealth elites with the same measured latent status. The results of this thesis suggest that in a loose sense, these groups may 'persist'

indefinitely. However, economic persistence partly relies on changes to the group and cannot be understood in isolation.

Consequently, it is important to examine status across both economic and social dimensions. Elite persistence cannot be captured without considering social composition. Consider the prime minister. We could say that they have remained at the apex of the political system for several hundred years. However, without accounting for how the identity and interests of this individual have evolved, we cannot say much about changes to political power. The same principle applies at the family level. Claiming that a particular family has remained powerful provides an incomplete narrative unless we examine how the family evolves. Only by understanding these changes can we grasp the implications of their enduring economic power on the world around them. To provide a holistic picture of elite persistence, we must look beyond economic measures and start measuring the complex interplay of social, political, and cultural factors.

This thesis examines social capital in various forms, both as a relationship between individuals and as a position within a class hierarchy. Taken together, the three papers show the role of social class and capital in community formation, coordination and persistence. Paper 1 demonstrates that despite rapid economic and social transformation, the titled aristocracy maintains its wealth. This is true considering either existing families or newcomers. Persistence is partly a result of a social process, whereby new, wealthier elites merge with existing elites.

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This alone might explain why titled families with the same starting wealth persist more. New genealogical measures show subtle variations in outsiders, who had varying degrees of social connection to the titled aristocracy. These ties weakened over time, as new joiners shared less and less socially. Paper 2, which explores broader social ties, shows that as a whole the community evolves only slowly across this period. Though a few banking families received peerages, these families had been integrating for some time, and were already socially proximate. There were no rapid or sudden shifts in the patterns of association. Paper 3 shows that relationships between merchant banks were not entirely competitive. It emphasises how social capital can reinforce economic communities, fostering communication, coordination, and collaboration.

The research has produced several substantial new datasets, on individual wealth holding (2.2m observations), elite club memberships (43k observations), bank partnerships and directorships (6k observations), and commercial and financial biographies (1.7k observations). These will be invaluable for further research.

I hope that the findings, data, and methods presented will inspire future research. The most obvious next step is producing comparative research which can explore the effect of different types of shocks on elite persistence. This can be done temporally and geographically. I aim to expand this work to cover 1794-2000 and, with Noah Sutter, to cover France between 1780-1870. These periods and places experienced profound shocks of different kinds, both socially during the World

Wars and politically during the French Revolution. By studying aristocratic persistence in different contexts we can examine whether the continuities and changes in the British elite were unique, or driven by broader laws and processes. These examples represent just a few possibilities in a rapidly emerging field. The production of numerous new 'Big Data' sources on wealth and elites promises to make these debates both lively and fruitful.

Research on elite persistence in social terms is scarce. This thesis presents various new ideas for measuring it. These show that social mechanisms play a key role. The persistence of British elites is remarkable, yet there is much to learn about why. With comprehensive genealogies and individual wealth data, we can examine the precise mechanics of inheritance and identify the effect of primogeniture on wealth accumulation and elite endurance. With land valuations or wills, we can examine how estate composition affected persistence. Building on these foundations, we can begin to identify the contribution of social capital and class to social mobility. Many sources of quasi-random social connection have yet to be explored, from club elections and recommendations, to assignment to different military companies during the wars. These new approaches, surprising results and rich data lay the groundwork for a promising new chapter in the field.