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The evolution of the structure and performance of the London Stock Exchange in the first global financial market, 1812–1914

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By 1914, the London Stock Exchange listed and traded one-third of the public capital available to investors anywhere in the world. No other exchange could match it in terms of scale and scope of securities on offer, or in terms of the number of stockbrokers available to potential customers. The reason, we argue, is that the microstructure of the London Stock Exchange was also unique. The owners of the exchange (Proprietors) left governance of the exchange to the users of the exchange (Members). Because the owners of the exchange could only increase revenue by increasing the number of users, newer members constantly sought new sources of revenue through financial innovations. The evolution of the London Stock Exchange's microstructure was path-dependent – the initial conditions for membership set the separate incentives for the owners and operators of the exchange, and these determined how they responded to successive shocks over time. Path dependency, unfortunately, eventually led to decreasing effectiveness and innovation by the members over time.

1. Introduction

During the classical gold standard period, 1880–1913, industrialising nations, led by Great Britain and followed in turn by France, Germany, and the United States, exported capital on a scale that still has not been approached in terms of the importance of the capital exported relative to either national capital stock or national product. These immense flows of capital were mainly funnelled through organised stock exchanges; and, because of their intermediation, portfolio investments were made readily available to millions of investors around the world, regardless of whether or not those investors were citizens of the country where the security was issued or even of the country where it was traded. An ardent evangelist of the benefits of overseas investing for the British public, Henry Lowenfeld, writing in 1910, counted 89 principal stock exchanges around the world, with 56 per cent in Europe,

mainly Western Europe, and the rest largely in areas of European settlement.[1] Together, those markets allowed some 20 million investors to trade holdings in over $160 bn (nominal value) of securities. The French authority on stock exchanges, Alfred Neymarck, estimated that British investors held 24 per cent, Americans 21 per cent, French 18 per cent, and Germans 16 per cent of the world stock of securities (Neymarck 1911).

The London Stock Exchange exercised a virtual monopoly over the trading of securities in London, and its services were available to investors worldwide who might choose to direct their business through London rather than a local exchange, even when investing in securities issued in their home country (Platt 1984). At the outbreak of World War I, the London Stock Exchange listed almost one-third of all the public and private securities in the world, while the New York Stock Exchange and the Paris Bourse each listed about one fifth of that $160 bn total. The three stock exchanges commonly traded both government issues and the stocks and bonds of private railroads, utilities, and commercial and industrial enterprises. Moreover, the three were linked by telegraph to a set of local securities markets in Europe and North America.

Despite the apparent economic benefits that may be derived from the existence of well-functioning stock markets,[2] the revolutionary changes in information technology and the spread of globalisation in recent decades have raised challenges to existing stock exchanges and theoretical questions in the minds of economists. Should stock exchanges continue to be mainly self-regulated organisations or should they be placed under more government regulation? Should stock exchanges continue to be mutual societies operating as not-for-profit organisations or should they become joint stock corporations operating for the profit of shareholders? Recent

[1] Lowenfeld (1910). Lowenfeld also wrote *The Investment of Trust Funds in the Safest and Most Productive Manner*, in which he demonstrated the risk-return advantages of an internationally diversified portfolio for British investors in the first global capital market.

[2] A spate of recent literature has identified stock markets as an important feature of economies that experience modern economic growth, both historically (Rousseau 2003; Rousseau and Sylla, 2001; Neal, 1990) and comparatively in recent decades (Levine 1991, Rajan and Zingales 2003). Initial purchasers of new debt or equity issues are more willing to purchase if they have better assurance that they can resell their holdings as a whole, or in part, at any time they choose in the future. Effective secondary markets in financial instruments therefore create better primary markets for financial instruments. Another reason, perhaps less obvious, is that active secondary markets in widely held securities enable the holders to post their assets as collateral to raise private debt for any purpose whatsoever. This means that the range of investment activities supported by, say, a secondary market for just one type of government debt can extend throughout an entire economy. Finally, it may be that the use of capital markets for financing the changes necessary for an economy to respond effectively to external shocks (such as from war, famine, disease, or technological change) helps to preserve both product and labour markets from excessive regulations and restrictions.

literature (Hart & Moore 1996, Pirrong 1999, 2000, Green *et al.* 2000 Di Noia 2001) has begun to examine the theoretical implications of these alternative modes for the internal organisation and external regulation of stock markets. Not surprisingly, they find that there are trade-offs in answering any of these questions. Restricted membership in an organised exchange reduces counterparty risk but may raise the probability of rent-seeking. Open membership, by contrast, may increase the depth of liquidity in the dominant market but may also raise costs of congestion. Ownership of an exchange by the stock-brokers leads to redistributive issues among the members; outside ownership leads to monopoly practices. Either alternative can increase transactions costs and thereby limit the social benefits that can be derived from an efficient secondary market in securities.

The organisational structure of the London Stock Exchange was unique among the world's leading stock exchanges that arose in the nineteenth century. Indeed, all of the major exchanges that were created to help finance the expenses of the Napoleonic Wars and the War of 1812 set up their operations according to local traditions, laws, and political systems. What is more surprising is that the initial ownership and operational rules and regulations, once established, were maintained essentially the same throughout the rest of the nineteenth century, indeed arguably until the collapse of the Bretton Woods system in 1971–73. Each system was designed for the benefit of the initial members, who became self-replicating over time so they never felt the need to change a given system in any radical way until the shock of fluctuating exchange rates after 1971 and the continued undermining of capital controls afterwards. Understanding the relative success of the London Stock Exchange during the first global financial market should provide some useful insights for today's policymakers and practitioners. How effectively did the exchange meet the challenges of rapidly evolving financial markets while remaining essentially self-regulated? What were the trade-offs between mutualisation and separation of ownership of the exchange? Finally, given the current movement toward de-mutualisation of the leading stock exchanges, how and why did the London Stock Exchange evolve from a corporate form in the nineteenth century to mutualisation in the twentieth?

We begin by describing briefly the initial membership rules for London to highlight the importance of the initial division of owners (Proprietors) and operators (Subscribers) for the success of the London Exchange. We focus on the 'natural experiment' period from the end of the Napoleonic Wars until the beginning of the classical gold standard, usually taken as 1880–1913. Widespread adoption of the gold standard among the leading industrial economies of the time also coincided with a major examination of the operation of the London Stock Exchange (the Royal Commission of 1878) and a formal organisation of the long-moribund Amsterdam *Effectenbeurs* (1876). All the exchanges prospered in the ensuing spread of

financial capitalism, driven by national aspirations and the costs of creating an industrial infrastructure based on railroads, coal and steel. It is the preceding period of experimentation with the export of capital to European overseas colonies or empires and the initial finance of railroads that is most instructive for our purpose: to evaluate the relative effectiveness of alternative organisational forms for formal stock exchanges.

2. The initial microstructure in London

The conclusion of this article, studying the evolution of the microstructure of the London Stock Exchange over the 'long' nineteenth century, is that separation of ownership from operation of that stock exchange was the fundamental factor accounting for its success as the world's leading stock exchange in the first era of global financial markets. The *Proprietors* (individual shareholders in the corporation responsible for construction and maintenance of the physical facilities that housed the stock exchange) were limited in how much stock they could hold so group agreement had to be reached on any change in marketing strategy. Their continued fear that a competing stock exchange could arise within London if they restricted membership or raised annual subscription fees significantly restricted their profit-seeking strategies to ways of increasing the total number of subscribers rather than increasing the subscription fees. The *Members* (stock-brokers and dealers who paid nominal fees for annual access to the exchange if they met the approval of the Committee for General Purposes each year) sought constantly to cultivate new sources of income (see Figure 1).

Members could use the facilities of the exchange as brokers (earning commissions), as jobbers (dealers taking the spread between bid and ask prices), or as promoters (charging underwriting fees). Given the large and growing number of members competing within the exchange for each source of income, each class of members was compelled to innovate continually. Brokers sought to widen their customer base, either by broadening their client pool or by increasing the variety of financial products they offered each client. Membership in the exchange, however, required that no off-site banking services be offered by a broker to any client. Jobbers likewise tried to increase the volume of their transactions rather than their spread while they were concerned jointly to minimise market volatility, because volatility would increase inventory costs for them. Promoters, drawn mainly from brokers who were the less well-capitalised members among the subscribers, increased the number of listings, often engaging in trade in unlisted companies while the governing committee of the exchange tried to ensure the quality of those companies that obtained formal listing.

In January 1801 a joint Committee of Proprietors & Members of the Committee for General Purposes of the existing stock exchange met to plan

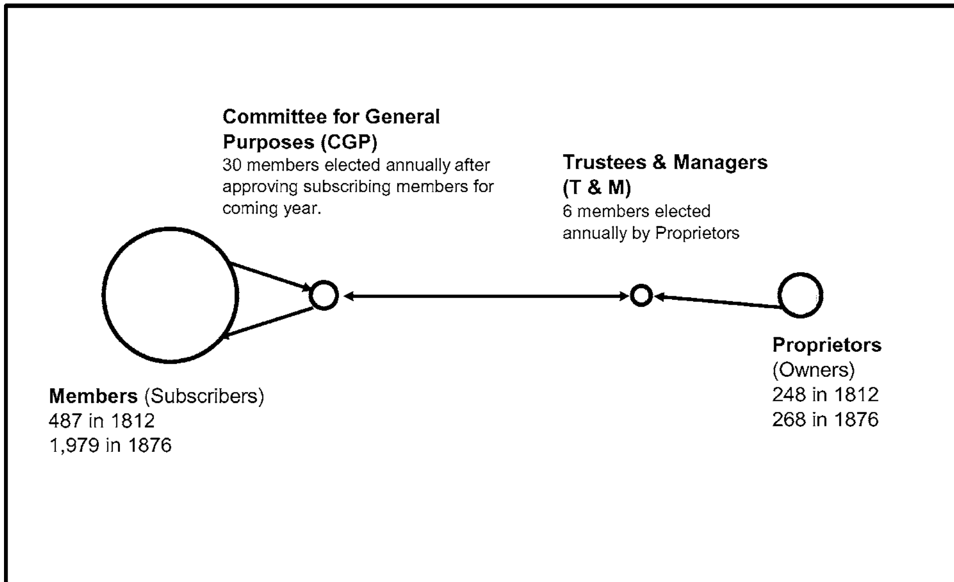

Figure 1. *Microstructure of the London Stock Exchange, 1812–1876.*

Notes: Members paid a one-time entrance fee and then annual subscription fees thereafter, but renewal was subject to approval by the previous year's Committee for General Purposes. The CGP wrote the rules, subject to approval by members, and then enforced them with power to expel non-complying members. The Trustees and Managers were responsible for maintaining the building and setting the annual fees. Proprietors had £50 shares in the company with a limit of 5 shares, or 1.25 per cent of the £20,000 capital stock.
Source: T & M Reports, Ms. 19297/1–9.

how to convert the Stock Exchange into a Subscription Room that could earn enough income to pay for the construction of a new facility. They felt constrained by a recent court decision that appeared to limit the amount they could charge for access to the nominal amount previously charged anyone who appeared at the Sweeting's Alley coffee house. Their solution was to require Members to pay in advance a full year's subscription for right of access, but also to force each Member to sign an agreement to abide by the rules and regulations of the new stock exchange. The outcome was to set the annual subscription of Members at 10 guineas, and their Clerks at 5 guineas. These remained the subscription fees at least through to 1860, when funds needed to be raised to expand the size of the physical facility. Given the low cost of access, the Committee for General Purposes could control the quality of the Members by requiring each new member to be nominated by three veteran members and then elected by ballot. Any three veteran members could vote against a new member and deny him entrance, however. Finally, the joint committee, representing the interests of both the future owners and

future operators, agreed to draw up a formal set of rules. On this basis, the Proprietors quickly raised £20,000 in 400 shares of £50 each to build the New Stock Exchange.

At the meeting of subscribers on 4 March 1801, David Ricardo carried a motion 'that no proprietor of the Stock Exchange shall have a right to vote for the election of new Members or any regulation respecting the Stock Subscription room unless he be elected of the Committee by the Subscribers at large'. Ricardo's motion set the precedent that the powers of the Proprietors, delegated to the Trustees and Managers of the new stock exchange, were to be separated from the powers of the Subscribers, which were delegated to the Committee for General Purposes. From this initial separation of the rights and responsibilities of ownership from the rights and responsibilities of operation, the path-dependency of the governance structure was determined for the rest of the nineteenth century.

But first the new governance structure had to establish its legitimacy. It took another 30 years before the governance structure was solidified in the face of repeated shocks to the market for securities. Discontent resurfaced periodically among the stock traders, some of whom found supporters in Parliament. In 1810, for example, an attempt was made to form a rival stock exchange and was only defeated in the House of Lords. In response, the Committee for General Purposes and the Trustees & Managers agreed to codify the operating procedures of the new stock exchange, which they did by February 1812. But it was not until 1832 that the rules and regulations finally settled into a form that persisted until 1912.[3]

3. Responses to shocks by owners and operators

3.1. The optionist vs constructionist battle, 1822

The most dramatic test of the governance structure of the formal organisation of the London Stock Exchange came in 1822; its resolution set the pattern for enlargement and innovation in the membership for decades to come. It concerned the issue of dealing with the spate of defaulters among the younger, undercapitalised members of the stock exchange during the volatile period of 1819–1822. Often, it appears, the defaulters had laid off their risks with option contracts made with older, better capitalised members. The Committee for General Purposes, dominated at the time by older, more-established members of the House, resolved to outlaw any dealings in options

[3] The new rules printed covered ten topics, presumably in order of importance as seen at the time. The headings, with the number of resolutions recommended (and then adopted) under each heading were: Admissions 14; Bargains 10; Clerks 8; Committee 18 (1 added later); Failures 12; Partnerships 1; Passing of Tickets 3; Puts and Calls 1; Quotation of Prices 5; Settling Days 3.

among members of the exchange. There ensued a vigorous battle within the membership of subscribers for control of the Committee at the next election.

Essentially, the battle pitched the older, better-established jobbers against the younger members, usually brokers. Abraham Montefiore, brother-in-law of Nathan Rothschild (Ferguson 2000), was a leader of the 'anti-optionist' or 'constructionist' faction, while Jacob Ricardo, nephew of the deceased David Ricardo, was the outspoken leader of the 'optionist' faction. Ricardo's arguments, reproduced in full in the minutes of the Committee for General Purposes, were obviously directed at the Proprietors and their interests in maintaining a large membership of subscribers to the exchange. He argued that options were especially necessary for the younger members of the exchange and the less wealthy members during periods of price turbulence, such as had been experienced with the resumption of the gold standard, declared by Parliament in 1819, but not taking full effect until 1821. In the event, his argument was compelling and the Managers saw to it that the Committee for General Purposes elected in 1822 was dominated by Ricardo and his allies.[4]

3.2. The rise and demise of the Foreign Stock Exchange, 1822–1832

The compelling interest of the Proprietors to maintain a substantial membership was even more clearly demonstrated shortly afterwards, with the rise of interest in foreign securities, especially the bonds that were issued from 1822 onwards by the seceding colonies of the Spanish Empire in America (Neal 1998). For the decade comprising the boom and bust in Latin American bonds, the Committee focused on an entirely different issue – how to cope with the demands of an entirely new group of traders who wished to trade in foreign securities. The new securities included both the bonds issued by the newly independent states of Spanish America and the shares in the newly-privatised mines expropriated by the rebellious colonists. Again, the Proprietors with their eye on the possible revenues from an expanding membership, who would have to engage in an extended range of activities to earn a living, were favourable to the requests of these traders for expanded, and preferably separate, facilities for carrying on this new trade. At least four of the new members of the Committee supporting the 'optionists' were Proprietors. The strict constructionists, as a matter of principle, raised the objection that the Deed of Settlement only referred to dealing in 'British stocks' so they feared that dealing in foreign stocks would be illegal for the Stock Exchange. The 'optionists', again with recourse to legal counsel, argued that while the Deed mentioned British funds, it did

[4] While 419 ballots were cast, all but four were declared ineligible by the scrutineers from the Managers. Those four ballots determined that the new Committee would have a majority of 'optionists', headed by Jacob Ricardo.

not forbid dealing in foreign stocks. Rather than resume warfare on this issue, however, the Committee compromised by referring the matter to the Trustees and Managers (Guildhall Ms. 14600/9).

The Trustees and Managers of the Proprietors responded quickly by renting an adjacent building, dedicating it to dealing in foreign stocks, and taking responsibility for admitting the members to the Foreign Exchange. They were careful, however, to admit these new traders on the same terms used by the Committee for General Purposes for admitting members to the British exchange. The subscription fees were the same in both exchanges, to the benefit of the Proprietors. In their report to the Committee on 6 January 1823, the Managers reassured the British exchange that they had carefully vetted the applicants and admitted no fewer than 120 with many others applying. They went on to lay out the ground rules for operating the new adjunct to the Stock Exchange.

> It is their opinion, that the transactions of this new Establishment, ought to be limited solely to Foreign Securities: & that the persons admitted, ought to confine their dealings in them to that house alone, without frequenting any other places now used, or that may hereafter be opened for that purpose; it being indispensably necessary, that the public should be informed as nearly as possible of the actual prices of the various securities which cannot be done with precision, when more than one market exists.
>
> And they are also of opinion that the house shall be opened for business at 10 o'clock in the morning, & continue open until half past 4 o'clock in the afternoon – and this extension of time beyond the hours of the Stock Exchange, they are only inclined to concede, in order to suit the convenience of merchants, whose transactions oblige them to remain on the Royal Exchange until that hour.
>
> Finally, The Managers have the satisfaction to state: that although they only took possession of the New Room on the 25th of December; yet, it was opened on the 1st instant with every suitable accommodation. That already, transactions to a very considerable amount have taken place there and they have reason to hope that, with the liberal & effectual cooperation of the Members of the Stock Exchange, (whose interests are so immediately connected with the undertaking) it will ultimately prove successful, notwithstanding the powerful opposition with which it is menaced.
>
> (*Guildhall Ms. 14600/9, f. 321*)

The Committee for General Purposes then, with only 14 members present, formally rescinded the 'constructionist' resolutions of the previous year and placed themselves on record for the upcoming election in 1823. Turnout for the election was heavy; 340 ballots were submitted with 117 names and only five lists were judged imperfect. With the re-election of the previous Committee for General Purposes, the optionists confirmed their ascendancy. Moreover, the new Committee joined with the Trustees and Managers and seven members of the Foreign Exchange to admit the members of the Foreign Exchange for the coming year (Guildhall Ms. 14600/9, f. 349).

James Wetenhall, responsible for publishing the twice-weekly *Course of the Exchange* as the official price list of the Stock Exchange, was authorised first to include the most active foreign stocks in his regular price list, and then, at the request of the Managers, began publishing a daily price list just for the Foreign Market. He continued to publish it for another 50 years, finally

combining it with the official Course of the Exchange when the anomaly was pointed out by the Royal Commission of 1878.

Trouble quickly loomed, however, when the subscribers to the Foreign Market refused to elect seven members from the fourteen names presented them by the Committee. There followed a battle of wills between a deputation from the Foreign Stock Exchange and the Committee as the Foreign Stock Exchange tried to establish its freedom from governance by the Committee and the Committee tried to maintain control of its market place by ensuring the Foreign Stock Exchange did not usurp its premier role in determining the price of British securities. The overlapping membership of the two exchanges was a cause of concern on both sides.

As long as the boom in foreign securities lasted – that is, until the autumn of 1825 – the representatives of the Foreign Stock Market found their membership increasing and consequently they held fast to their determination for establishing independence from the Committee for General Purposes. By the election of 1823 the Foreign Stock Market had its own governance system, the Foreign Committee. Faced with new securities devised by the London merchant banking houses eager to exploit the fabled (and much exaggerated) riches of Spanish America, the Foreign Committee proved to be the source of several innovations that were later incorporated into the rules and regulations of the London Stock Exchange. For example, The Foreign Committee on 27 April 1824 resolved:

> That this Committee seeing the impropriety of Members dealing & marking bargains in Foreign Loans & other securities previous to such Loans or Securities being contracted in, do recommend that in future the members will not bargain or deal until such loans or securities be finally contracted for & replies sent to Letters of Applicants for subscriptions. Resolved that this Committee will not recognize or take notice of any bargains made previous to such contracts & the answers being returned to Application.
> (*Satterthwaite Ms.*)

This was the first listing requirement formally stated by the governing committee of either exchange, but was later incorporated into the rules and regulations of the London Stock Exchange proper.[5] But this requirement alone was insufficient; in August 1825 the Foreign Committee resolved, 'That this Committee will not recognize any bargains done in the shares of any Company unless it shall be satisfactorily proved to them that such company is really formed & that directors are already engaged in carrying the objects in to effect'. This resolution was in response to a long letter from Wilks & Verbeke, solicitors, in which a scheme to create a mining company called the Guanaxuato Mining Association had been proposed to them in which it transpired that no directors were actually committed to the project. Wilks & Verbeke, moreover, published their letter in *The Times* in July.

[5] For more details on listing requirements and comparisons, see Davis, Neal and White (2003).

Then, again in February 1826, the Foreign Committee issued two notices in quick succession, the first resolving:

> That the Purchasers of all foreign securities or shares in British Joint Stock Companies be recommended to use due diligence in ascertaining the authenticity of the documents that may be handed to them whether under the denomination of Scrip Certificates, bankers Receipts, Debentures or others. And unless notice be given to the Committee of the wont of such authenticity within 12 months after the purchase they will decline interfering on the subject except for the purpose of discovering an intended fraud. (Satterthwaite Ms.)

And the second, after a number of Latin American bonds had defaulted and most mining ventures proved uneconomic:

> that the committee will not sanction or take any cognizance whatever of Bargains that may be made in New Bonds or Stock or any other Securities issued by any Foreign Government that has not duly paid the dividend on former loans raised in this country unless that government shall have effected some satisfactory arrangement with the holders of the Stock Bonds or other securities on which the Dividends have been left in Arrear. (Satterthwaite Ms.)

All these measures were to be taken as well by the London Stock Exchange, especially as the Foreign Stock Exchange was formally absorbed by it after a general meeting of the subscribers to the Foreign Exchange resolved on 24 March 1828, to 'surrender the whole management of the affairs of the Foreign Stock Market to the Committee for General Purposes of the Stock Exchange' (Satterthwaite Ms.). The Foreign Committee, however, continued to meet until 1831 as the affairs of the Foreign Exchange were wound up.

By 1827, with membership in the Foreign Exchange dwindling and the business of both Committees taken up with sorting out the claims upon numerous defaulters in both houses, the Foreign Committee proposed consolidation. The Committee for General Purposes, however, having recently increased the sureties required of their Members to three separate recommenders each posting bonds of £300, thus nearly doubling the guarantee required of new Members, had no wish to allow the members of the Foreign Exchange into the House without similar guarantees. Only if the members of the Foreign Exchange had been members for at least three years and not failed at any time, could they be admitted on the terms that had applied previously to members of the English Exchange, namely two bonds of £250 each. This was a significant increase for the members of the Foreign Exchange and they naturally objected, but to no avail. And members of the Foreign Exchange of less than three years standing had to come up with the new level of guaranties, three bonds of £300 each (Guildhall Ms. 14600/11, ff. 193, 197, 222, 224, and 253).

The power of the Committee for General Purposes, and the pre-eminence of the London Stock Exchange, was affirmed and would not be challenged

for decades to come. Nevertheless, in their meeting of 30 July 1831 they unanimously approved including the appropriate rules on Bargains and Quotation of Prices from the Rules and Regulations of the Foreign Market (Guildhall Ms. 14600/12).

3.3. The Rules and Regulations from 1832 to 1878

The new rules printed up in 1832 had the same structure and headings as the original rules of 1812, with one exception. The brief rule about puts and calls in the accounts of a defaulter was omitted. The rubrics, then, were: Admissions, Bargains, Clerks, Committee, Failures, Partnerships, Passing of Tickets, Quotation of Price, and Settling Days. Such were the minimal set of rules codifying well-established practices that had evolved over the previous century and a half, now articulated and enforced by an annually elected body of 30 respected practitioners from among the 800 regular subscribers to the London Stock Exchange. The ability of the Members to sustain the same structure of rules guiding their self-governance for roughly a full century was clearly due to the path dependency they created at the outset. A self-selected group of users, dominated initially by the richest owners, approved the entry of qualified stock-brokers who agreed to abide by their rules while paying minimal annual dues. They then asked the newly approved Members to vote for a slate of thirty of their number to be on the following year's Committee for General Purposes. The question remains, how were the interests of the Proprietors sustained under this system?

4. The profitability of the exchange

It is evident from the fragmentary notes remaining from the Trustees & Managers minutes (Guildhall, Ms. 19297/1-9) that the London Stock Exchange was a very profitable business for the Proprietors. The number of shares was kept at the initial 400, on which £50 was paid to make up the capital stock of £20,000. A limit of 5 shares for any one individual was placed initially to prevent control by a very few well-to-do jobbers over the management of the enterprise. In the event, 248 individuals took up 390 of the 400 shares. These initial Proprietors were concerned that they might not attract enough traders paying even this minimal fee to make their enterprise successful. Therefore, they set the Subscription fees at the same level previously charged for use of the facility in Sweeting's Alley – 10 guineas for a Member and Authorised Clerks (clerks who could sign for contracts on behalf of their supervising Member) and 5 guineas for an Unauthorised Clerk (clerks who could do paperwork and convey information but could not make transactions).

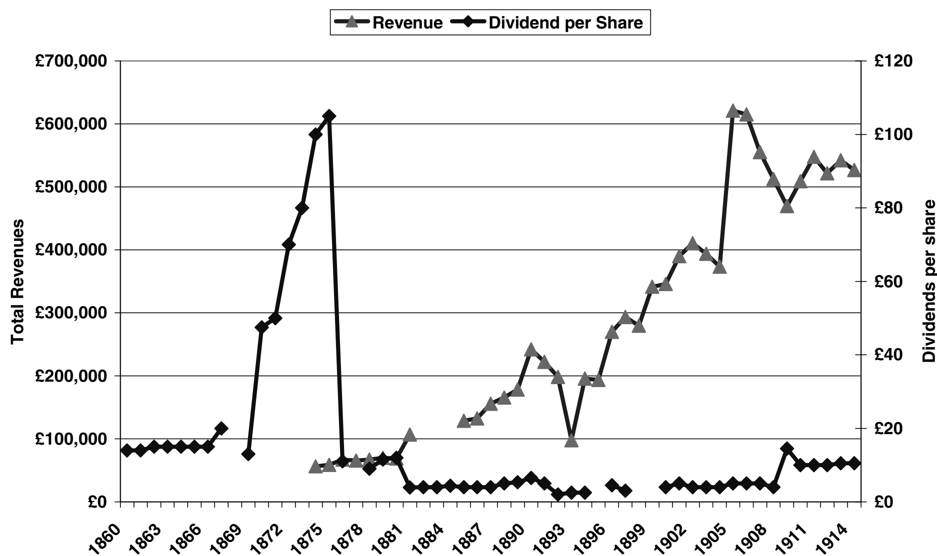

Figure 2. *Revenues of the London Stock Exchange and Dividends, 1860–1914.*

Source: T & M Reports, Ms. 19297/1–9.

The response was gratifying – over 400 individuals immediately signed up and the enterprise was destined to prosper thereafter. Unfortunately, the minutes are silent about the returns paid out to the Proprietors for the next 25 years, but it is evident that the enterprise was successful beyond the most optimistic projections. After the financial crisis of December 1825, the Trustees reported that 864 Members had been admitted to the British exchange and another 199 to the Foreign Exchange during the previous year. The total revenue was £12,600, not bad for a capital stock remaining at the original £20,000. Further evidence of the success of the enterprise is the mention that one of the Proprietors, a Mr. Watson, was offered £195 for his one share in 1839, which he accepted. The price was £5 higher than the price paid for a share in 1838, but a dividend was coming due, presumably at the rate of £5 (T & M Reports, Ms. 19297/2, p. 221). The value of the exchange as a trading venue had quadrupled in less than 40 years.

Figure 2 shows the revenues and dividends per share over time, as reported sporadically in the annual reports of the Trustees & Managers to the Proprietors from 1860 on (Guildhall Ms. 19297/10–23). It is evident that the gold standard period was very good for the exchange, other than sharp drops in the early 1890s, a period of general financial distress in the capitalist economies of the Atlantic, and again after the financial crisis of 1906–07. The sharp spike in dividends during the depressed 1870s indicates that the expansion of the capital stock by 1881 had been largely self-financed.

The number of shares remained fixed at 400 until 1876, when a major expansion of the exchange occurred. From 1860 on we find reports of annual

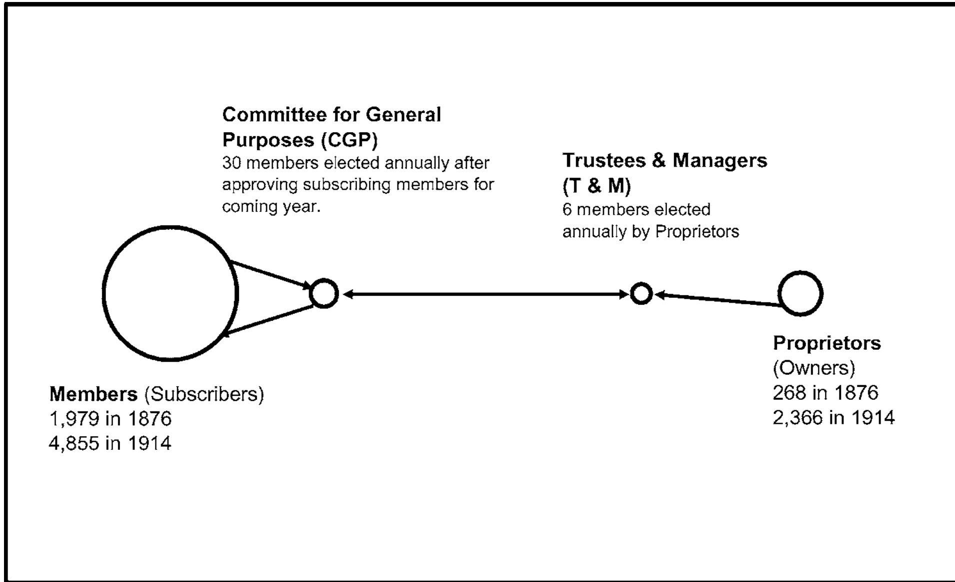

Figure 3. *Microstructure of the London Stock Exchange, 1881–1914.*

Notes: Members paid a one-time entrance fee, which included buying one share in the company, and then annual subscription fees thereafter. Renewal was subject to approval by the previous year's Committee for General Purposes. The CGP wrote the rules, subject to approval by members, and then enforced them with power to expel non-complying members. The Trustees and Managers were responsible for maintaining the building and setting the annual fees. Proprietors had £20 shares in the company with limit of 1.25 per cent of the £240,000 capital stock.
Source: T & M Reports, Ms. 19297/10–23.

dividends amounting to £14 to £15, rising to £20 in 1867. With the number of Proprietors still at 268 in 1876, the capital was re-apportioned into 4000 shares with paid up amounts of £58 10s per share. The intent was to raise the total capital to £24,000, but increase the number of Proprietors by allowing Members of the Exchange to buy individual shares at a reasonable price. Leading up to this reorganisation of the ownership of the exchange, annual dividends ballooned during the 1870s. From a level of £47.5 in 1870, dividends of £50, £70, £80, £100, and £105 were doled out in the subsequent years. From 1881 on the number of shares for the total capital of £240,000 was set at 20,000 with paid-in value of £12 each. Thereafter, regular dividends were paid semi-annually at the beginning of May and November, averaging £3–4 each half-year.

Figure 3 indicates how the microstructure of the London Stock Exchange changed thereafter. What becomes clear is the growing relative power of the Members, who greatly outnumbered Proprietors by 1876 but who could not yet change the rules of the exchange to their advantage. The enlargement of the capital stock in 1881 with the requirement that each new member buy

one share in the reorganised company allowed the interests of the Members to overtake that of the Proprietors, but only very gradually. In the course of the classic gold standard period, 1880–1913, the Proprietors still managed to maintain effective control over the operation of the exchange, increasing membership and paying themselves handsome dividends.

5. Difficulties for the Members

The financial success of the Proprietors was not replicated in the accounts of the Subscribers during this period. By 1873, the tribulations of the members due to the worldwide string of stock market crises that erupted that year led to tightened requirements for Membership and more attention to the increased problem of defaulters. In 1874, the age requirement was raised from 16 to 17 for unauthorised clerks and to 20 years of age for authorised clerks (Ms. 14600/39, 23 December 1874). Earlier, in 1871, it had been raised to 16 from 15 for unauthorised clerks and to 18 for authorised clerks. Moreover, the surety bonds put up by recommenders were increased in 1872 from £300 to £500 each, and in the case of clerks with four years' service the recommenders now had to pledge £350 instead of £250 (Ms. 14600/36, 18 June 1872). In 1874, these amounts were increased again, from £500 to £750, and from £350 to £500, no doubt the result of realising the increased scale of business carried on by those firms now defaulting after the crisis of 1873 (Ms. 14600/38, 19 May 1874). However, these amounts were again reduced to their previous levels by decision of the Committee in 1879 (Ms. 14600/44, 21 January 1879).

By the end of 1874, it was clear that the administration of defaulters' estates had to be reorganised. A solicitor was engaged to deal with the numerous legal issues that were arising, and the compensation for the Official Assignees was increased (Ms. 14600/39, 10 November 1874). Later, as the business of the Assignees increased, they had to post bonds of £1,000 each, and had their emoluments confirmed at the level of £800 plus their share of the 1/2 per cent of the assets they managed each year. By 1881, however, the scale of fees for compensating the efforts of the Official Assignees, now two with equal status, was raised again (Ms. 14600/47, 7 April 1881).

The incidence of failures continued to mount over the 1890s, leading to increased work for the Official Assignees, who periodically were granted increased emoluments, based on percentages of the estates of defaulters that they were managing. To justify their last increase in the 1890s, the sub-committee on Official Assignees prepared the summary of failures and the amounts of the estates handled by the Official Assignees over the previous 20 years (Ms. 14600/65, 15 February 1897). The number of failures reached an all-time high of 49 in 1894, but the size of aggregate failures, indicated by the total commissions collected by the Official Assignees, reached its peak in 1896 with only 23 failures (see Table 1).

Table 1. *Statistics of the Official Assignees' office.*

Years (ending March)	Total comm. £.s.d.	Number of failures
1879	693.16.5	30
1880	692.11.10	23
1881	1,304.10.0	19
1882	2,604. 1.11	27
1883	3,180.19.9	31
1884	2,038.15.8	32
1885	1,990.9.11	33
1886	1,038.2.10	12
1887	1,554.5.3	20
1888	1,680.1.9	25
1889	987.5.2	17
1890	1,247.15.6	19
1891	3,164.6.8	37
1892	1,105.1.11	22
1893	504.15.3	14
1894	4,298.7.10	49 (£151,000 pd. in div. at cost of £2.16.6 p.c.)
1895	763.7.8	10
1896	4,416.12.8	23 (£208,000 pd. in div. at cost of £2.2.6 p.c.)
1897	1,592.16.6	10
1898	1,354.1.5	19
1899	3,193.18.3	18

Source: Guildhall Ms. 14600/65, 15 February 1897.

The profit seeking motives of the expanded number of Proprietors, nevertheless, led to continued increases in the number of Members. Figure 4 demonstrates that even after paying higher subscription fees and ever higher entrance fees after 1881, membership continued to expand and even grew relative to the number of Proprietors, which actually fell slightly up to the mid-1890s. Even after new members were required to buy at least one share in the company after 1900, the number of members grew relative to the number of shareholders. The reason probably was that individuals opted to become clerks first, to take advantage of the lower entrance fees and bonding requirements imposed on new members who had several years of experience as clerks. Only after the widespread failures in 1906 and 1907 did membership begin to fall while the number of Proprietors continued to increase.

6. Comparison with Paris and New York[6]

By contrast with the ongoing struggles between Proprietors and Subscribers in the London exchange, an *agent de change* in the Paris Bourse at the time

[6] For fuller comparisons, see Davis and Neal 1998 and Michie 1988.

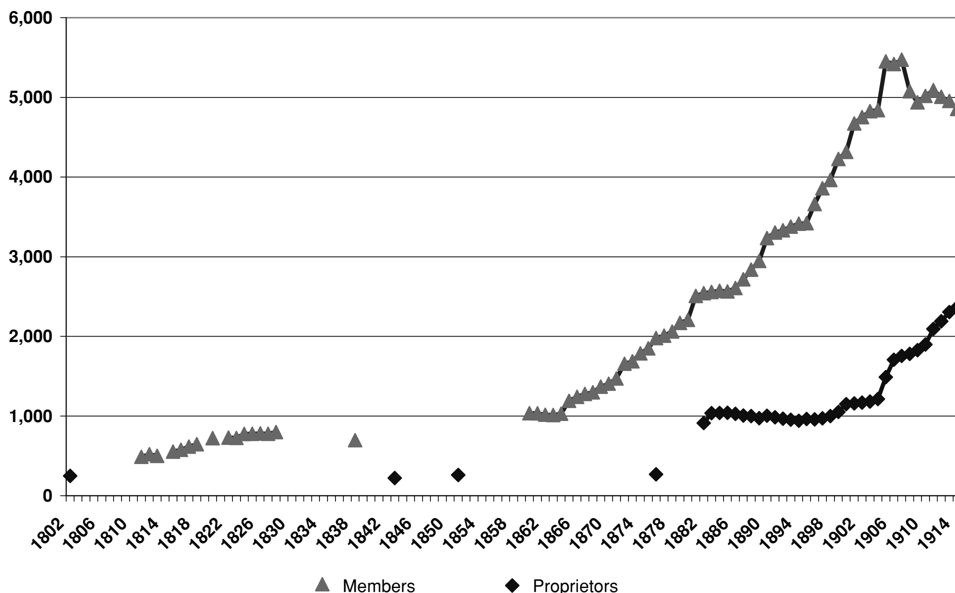

Figure 4. *Members & Proprietors of the London Stock Exchange, 1802–1914.*

had to post a large bond permanently with the government, and then show his accounts annually to the governing *Chambre Syndicale* of the Bourse. Each *agent* was the active partner in a *société commandité* that he created to raise the necessary capital from a limited group of wealthy investors, whose business on the exchange was obviously directed through the *agent*. Moreover, each *agent* had to contribute annually a share of his revenues to the communal fund of the Bourse, which was used to cover the debts of defaulting, absconding, or deceasing *agents* when needed. Indeed, when major defaults occurred during the infamous crash of the *Union Générale* in 1882, the *Chambre Syndicale* was able to raise a large loan from the public based on its credit and ability to extract regular payments from the members (White 2004). Such was not to be the case for the London Stock Exchange, indeed, until after World War II.

The New York Stock Exchange also limited the number of its members, but at a much higher number, first 530, then 1,060 after merging with the Open Board of Brokers and the Government Bond Department in 1869, increasing to 1,100 in 1879 to raise funds for enlarging the Exchange's building (Buck 1992, p. 71). Partnerships could expand, indefinitely, however, and even establish partners in regional exchanges to tap into investors nationwide. The rising price of membership ensured that new members would have adequate capital resources as well. Moreover, each member of the New York Stock Exchange could act either as a broker, deriving his income from a stream of commissions, or as a dealer, making money from the difference in buying and selling prices. Also, a firm could

derive substantial underwriting fees from taking responsibility for an initial public offering of a new security.

But beyond the capital structure of the individual firms making up the membership of the respective exchanges, a second factor apparently limited the number of failures in New York and Paris compared to London. This was the peculiar feature of London's microstructure that settlement of bargains among members should be made every two weeks. One British observer felt that *agents* in the Paris Bourse, with a monthly settlement for the bulk of their securities dealings, had a longer period in which they could buy or sell at advantageous terms than was the case in London, with its bi-monthly settlement (Maddison 1875, p. 16). An American observer, however, made an interesting counter-argument in favour of New York's practice of daily clearings. Van Antwerp (1913) thought that daily clearings minimised a New York dealer's temptation for over-extending his speculative position, compared to the fixed two-week settlement period in London. An additional complication for the London members was that options were made for the settlement dates and, while they were by the rules of the exchange only enforceable for one or two periods ahead, they had to be settled – either paid up or prolonged – on the settlement date. This requirement limited the opportunities for taking advantage of market movements over the period of the option.

The difficulties of the London Stock Exchange members were caused by increasing congestion over time, the result of the self-interested way the Proprietors of the closely held co-partnership maintained their incomes. Part of the reason for the attitude of the Proprietors was the dominance in voting of the single share-holders and the limit of 5 shares for any one individual. Further, the shares were heritable, so that with successive generations until at least the 1870s, an ever smaller proportion of the Proprietors had professional experience as stock-brokers. In 1843, there were only 223 share-holders, of which 135 were members of the Stock Exchange, but there were 11 females with 13 shares (who could not vote, however!) and 45 deceased members in whose names 71 shares were still held (and which were not being voted, obviously) (Guildhall Ms. 19297/3, p. 39). This trend must have continued in the years following to make the Proprietors less responsive to the needs of the actual traders, even when conveyed persuasively to them by the Managers, who had daily oversight of the operation of the building.

7. Effect on customers of the Exchange

For the investing public, however, the resulting competition among both the brokers and the jobbers active on the floor of the London Stock Exchange provided effective brokerage services. From the eighteenth century guides to the Stock Exchange written by Thomas Mortimer (Mortimer 1765), we know that brokerage commissions even before the establishment of the formal exchange in 1801 were expected to be no more than 1/2 per cent of the book

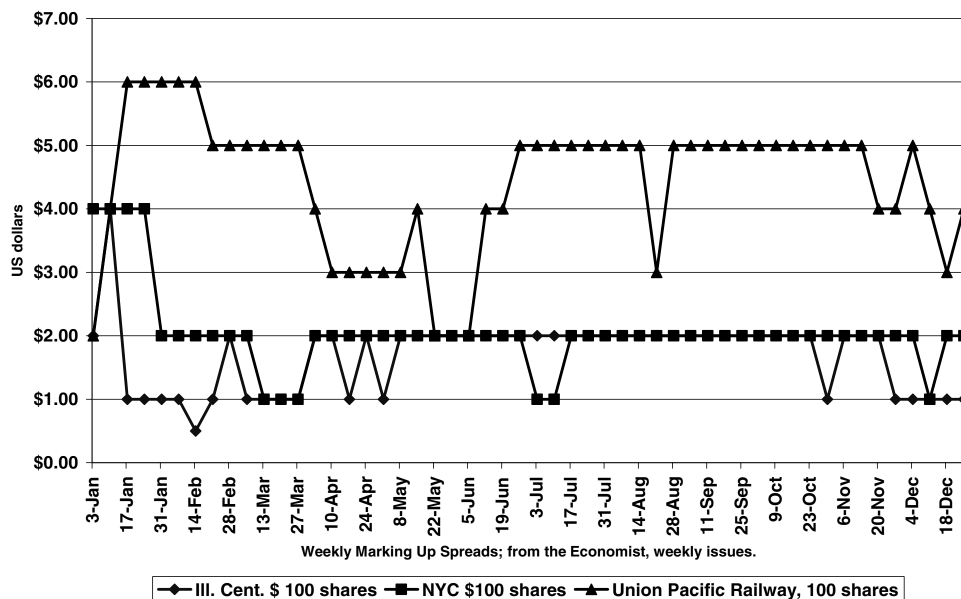

Figure 5. *Spreads on US railroads, 1880.*

Source: *The Economist.*

value of the security and were at 1/8 per cent for the actively traded and widely held 3 per cent Consols. While no rules for commissions were established by the Committee for General Purposes until 1912, in response to the decline in the fortunes of the membership and in its number after 1907, 1/8 per cent was considered normal for Consols and other forms of government debt in 1854 according to *Fenn's Compendium* (Ayres 1854). Commissions then rose on a graduated scale for trade in shares of companies, rising to half per cent when the cost of the shares was above £50 (Ayres 1854, p. 114).

To see if these pronouncements in the investors' guides published in the eighteenth and nineteenth centuries were borne out in practice, we estimated bid-ask spreads for Consols and for shares of the London & Brighton railway, taking the reported transactions prices in Wetenhall's *Course of the Exchange* during the month of January for the years 1841–43. The estimate for Consols was consistently 1/4 per cent in each of the three years (this is consistent with 1/8 per cent mentioned in *Fenn's Compendium*, as both buyer and seller had to pay commissions to their respective brokers). The estimate for the shares in the London & Brighton railway were 3/4 per cent in 1841, 2/3 per cent in 1842 and 1/3 per cent in 1843. These results show gradual seasoning of the new railway security, whose spreads converged quickly toward the minimum level prevalent for government debt.

Figure 5 takes a look at the reported bid-ask spreads for three major American railroads whose $100 shares were listed on the London Stock

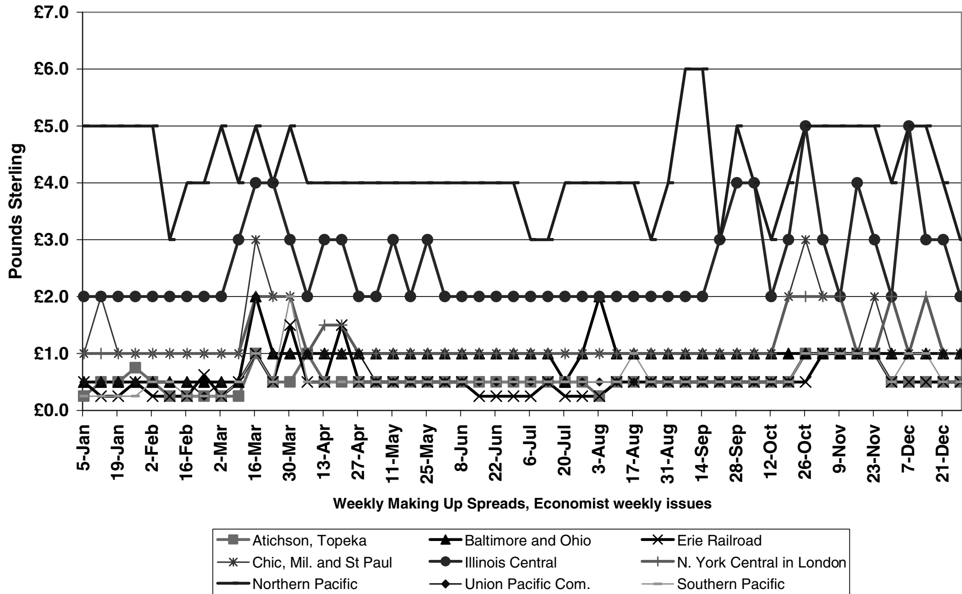

Figure 6. *Spreads on US railroads during the 1907 Crisis.*

Source: *The Economist*, weekly issues, 1907.

Exchange in 1880. *The Economist* magazine reported the close of Friday 'marking up' prices that the operators of the exchange posted for the most actively traded securities. Already by this time the railroad securities, both equity shares and bonds, were beginning to outstrip the importance of British national debt as the main securities available for conservative investors. The recently completed Union Pacific railroad, the first trans-continental, only briefly managed to have spreads close to those quoted for the more seasoned, and more profitable, Illinois Central and New York Central railroads. Even so, the spreads for the dominant US railroads in 1880 were clearly higher than those estimated for the London & Brighton decades earlier.

Figure 6 then looks at the spreads on nine leading US railroad equity shares, all with a par value of $100, over the course of the panic year of 1907. By now, the Union Pacific had shown it was profitable (thanks to 'Morganization' a decade earlier) and its spread along with the other main trunk lines ranged between $^1/_2$ and $^1/_4$ per cent. Only the Northern Pacific and the Illinois Central, both dependent on profits from moving grain harvests, had higher spreads among the leading US railroads. It is interesting to note the increased volatility of the spreads in March and October, the two months of difficulties on the New York Stock Exchange. The evidence indicates that investors in these prime foreign securities were continuing to be well-served in terms of transactions costs imposed by jobbers on the London Stock Exchange, even in the face of a stock market panic in New York during the year.

8. Conclusion

So stood the affairs of the world's largest, most active, and most innovative stock exchange over the course of the long nineteenth century at the eve of the Great War. The shock of world war in July 1914, however, disrupted connections with foreign exchanges entirely until the government specified the terms on which trading with the New York Stock Exchange could be resumed. Foreign dealings were allowed only on the government's terms, which were designed to eliminate the possibility of war finance for the enemy. Membership plummeted as younger members, especially clerks, volunteered or were called to service. The lucrative business in retailing the large issues of new government debt, however, sustained the revenues of the remaining members, much to their satisfaction. The longstanding efforts of the brokers and dealers to stabilise their sources of income and minimise their risks from promoting new issues of securities in the London marketplace were now fully realised. The unintended consequences of their success in gradually reducing the congestion of the London Stock Exchange, however, were to create new problems. The increasingly cohesive club of specialists in a much smaller set of securities were able to maintain satisfactory commissions for the brokers and monopoly rents for the smaller number of jobber firms. Full mutualisation was attained after World War II when the distinction between subscribers and proprietors was eliminated formally, while the separation of functions between brokers and jobbers was maintained, to their mutual satisfaction (Morgan and Thomas 1961).

Through the 1950s and 1960s, the increased size of government debt, propelled by successive nationalisations of major industries and the creation of the postwar welfare state, allowed rent-seeking by both brokers and jobbers to continue unabated (Michie 1999, chs 9–10). Increases in corporate debt issues provided comfortable sources of revenue for the smaller brokerage firms, but eventually attracted the attention of the joint-stock banks in London as well as the international banks engaged in the euro-dollar market that arose in the 1970s. The elimination of exchange controls by the Thatcher government under IMF pressure in 1979 led to increased competition by banks and especially American investment houses. The 'Big Bang' of deregulation that finally responded to the forces of foreign competition may have been delayed in part by the ossified governance structure of the fully mutualised International Stock Exchange, or by its attention to defending itself from the government's attack on its privileges brought before the Restrictive Practices Courts (Michie 1999, ch. 12).

In any event, the restructuring of the London Stock Exchange called the 'Big Bang' in 1986 eliminated restrictions on commissions, allowed dual capacity of members as both brokers and jobbers, and increased the size of capital for member firms while bringing in electronic trading. Since then, however, the move towards demutualisation of the exchange has not

yet managed to restore fully the benefits of separation of ownership and operation that existed at the beginning of the nineteenth century. Instead, the residual voting power of the smaller firms has blocked various initiatives to expand the clientele and the listings of the London Stock Exchange by mergers with other exchanges. While the path dependency created by the initial governance structure of the exchange during the Napoleonic Wars led to the innovative successes of the exchange over the course of the nineteenth century, by contrast the path dependency created by the governance structure that emerged after World War II stymied innovation for two generations. It remains to be seen how the hybrid governance structure existing at the beginning of the twenty-first century will respond to the challenges of the new global capital markets. To date, while the value of the exchange has continued to rise despite the limitations on expansion created by the recalcitrance of the members to respond to friendly mergers or take-over bids, the price of its shares pales by comparison with the excitement generated for American stock exchanges when they have gone public in recent years. Path dependency for this venerable financial institution is still very much in evidence.

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