The Effect of Deflation on the First Global Capital Market: The Financial Crises of the 1890s and the Responses of the Stock Exchanges in London, New York, Paris, and Berlin

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I. Introduction

Since the August 1971 collapse of the Bretton Woods system financial historians have concluded that there is something almost uncanny about the evolution of the global financial system. They are increasingly struck by the similarities between its origins, the system's continuing stresses, and its occasional setbacks and the origins, stresses, and setbacks that characterized the first global financial system over the years between 1880 and 1914. Both eras arose after a prolonged period of inflation that had disrupted the previous structures of international finance – the outpouring of California gold soon to be followed by the $431,000,000 in "greenbacks" that were issued to help finance the American Civil War in the earlier period, and the creation of fiat money to help finance the import of high-priced oil in the later.[1] Both eras were touched-off by a sustained reversal of the previous inflationary experience – deflation in the period 1879 to 1897 (Figure 1) and disinflation between 1980 to 1999. Both were, therefore, ultimately the result of a widespread change in monetary regimes – a nearly universal gold standard among the world's richest countries in the first period, and a set of monetary rules that restricted the growth of the money supply in the second.

Figures 1 and 2 about here

[1]. Davis Rich Dewey, *Financial History of the United States* (New York: Longmans, Green, and Co., 1903), p. 288.

Figure 1. Wholesale Price Indices (1880=100)

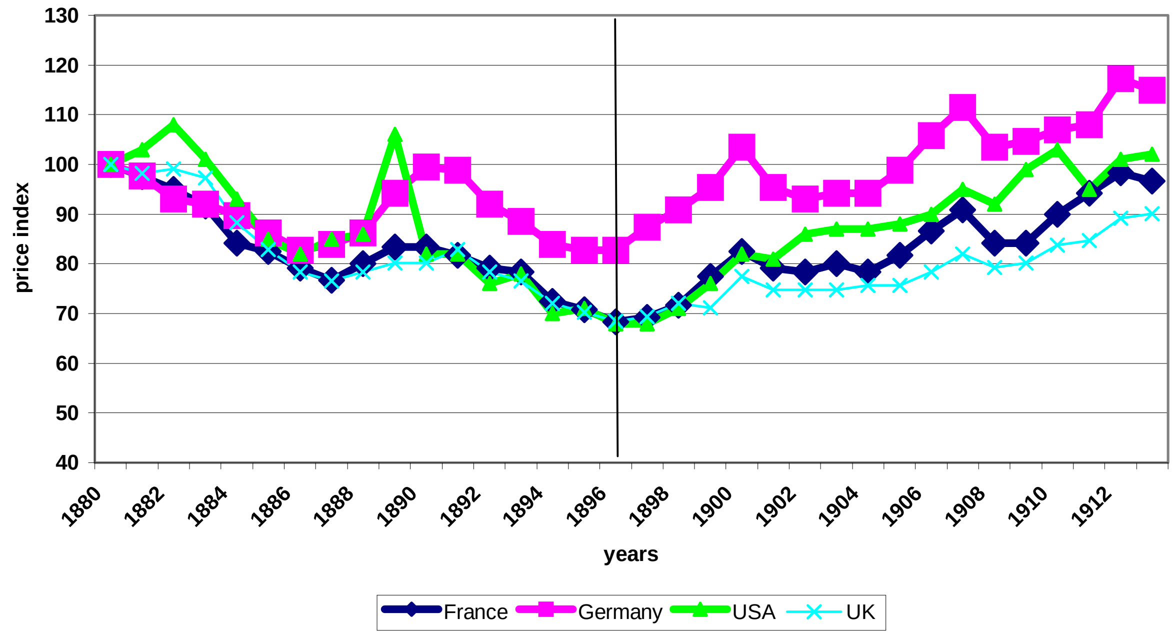
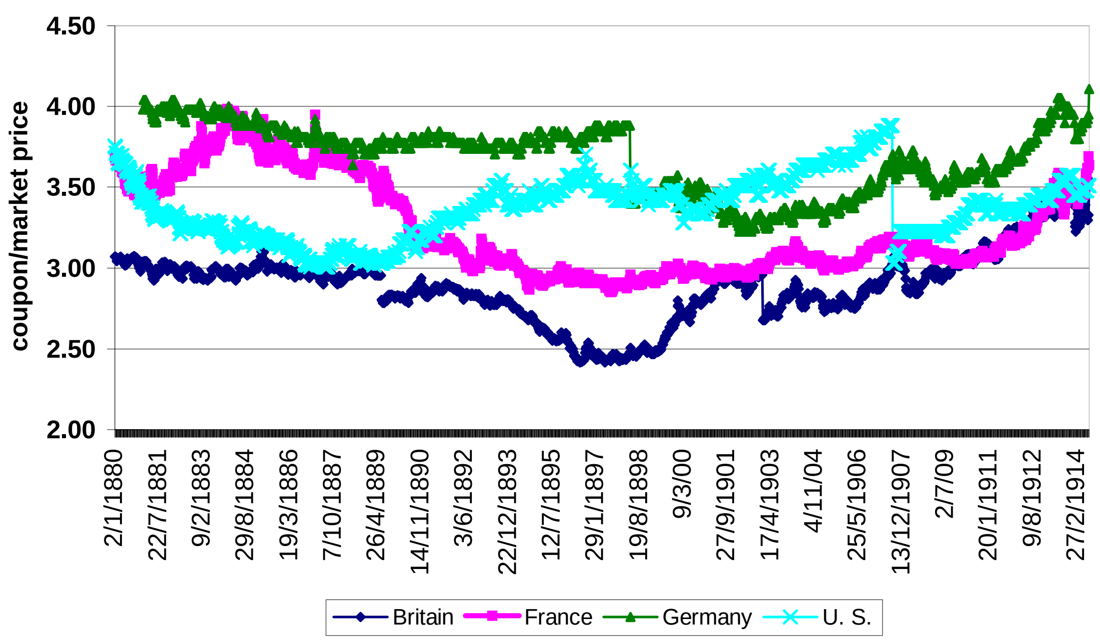


Figure 2. Government Bond Yields, 1880-1914



In the two periods, the changes in financial returns – the result of falling bond yields and rising financial asset prices – were both unexpected and significant; and, in each case, they eventually led to a series of financial crises – crises that threatened to become systemic. The decade of the 1990s was beset by exchange rate crises in Asia and the meltdowns of emerging markets in the former centrally planned economies in Eastern Europe. Similarly, a century earlier, the decade of the 1890s witnessed a number of financial crises that ranged from Argentina to Australia and from London to New York. Even the striking convergence of government bond yields leading up to the introduction of the European common currency in 1998 had a precedent in the nineteenth century. In the 1870s, when the major European countries either adopted the gold standard or limited their silver coinage, the yields on their long-term bonds converged more closely than ever before. (Figure 2)

The effect of the fall in bond yields in the first decades of the gold standard period was, however, not limited to government finance. Railroads the world over, as well as canals, ports, and steamship lines, had all issued bonds. Such issues were the preferred mode of financing the unprecedented sums that were required to produce the steel rails, rolling stock, ships, and cranes that were used to build the transportation infrastructure that created the then unprecedented near merging of the world's commodity markets. As deflationary forces affected the value of the huge inventory of bonds – bonds that were traded on the stock markets of the world – those forces triggered major and irreversible transfers of wealth. Those transfers disrupted existing methods of doing business. Kenneth Snowden, for example, has documented how this process affected railroad finance in the United States and, then, how the new demands for railroad finance shaped the structure and performance of the New York Stock Exchange over the next two decades.[2]

Similar economic processes were at work in the other major industrial, capitalist economies of the time; but, because of different political and legal arrangements, the effects of deflation were different. We have, therefore, a possible laboratory for a natural experiment in the effect of institutions on economic growth and development. In this case, we can compare and contrast the responses of differently organized capital markets to an ongoing process of deflation.

Comparing the core industrial countries of the time – Great Britain, France, Germany, and the United States – one finds that each differed from the others in at least one important political or legal respect. Great Britain and France were centralized political systems, with the financial power and the major capital market located in each country's capital city, London and Paris respectively. But they differed dramatically in their legal systems: Britain functioned on the basis of precedent-driven, judge-decided, common law, and France operated with statutory civil codes that were interpreted by civil servants. Thus, in Great Britain, there were a number of securities exchanges (although the numbers fluctuated, between 19 and 22 provincial exchanges operated in each year between 1840 and 1914); and, although the exchanges outside London tended to specialize in local issues, until 1912, shunting was common. Moreover, because of the rules of the London Stock Exchange (LSE), firms were limited in size; and, as a result, there were no branches of London brokers or jobbers operating in Manchester, in Bristol, or in any of the other

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2. Kenneth Snowden, "Historical Returns and Security Market Developments, 1872-1925", *Explorations in Economic History*, Volume 27, October 1990, pp. 381-420. [Hereafter cited as Snowden, "Historical Returns and Security Market Developments"].

"twenty" provincial markets.[3] In France, because of government rules, there was little overlap in the securities traded on the Paris and the regional exchanges; moreover, security broking firms that operated on the Paris bourse were not allowed to engage in any other business.

Germany and the United States were fragmented, federal political systems with financial power dispersed and with regional capital markets that competed with each other. Moreover, Germany had its own version, or versions, of statutory civil law; and the United States had its own set of judges who interpreted common law in ways that increasingly diverged from the British cases that were originally taken as the binding legal precedents. In the U.S., over the years 1800 to 1970, there were some 200 "local" exchanges that operated at one time or another. That list includes such places as Spokane, Washington, hardly a major financial center. However, there were no constraints on the size on firms operating on the New York Stock Exchange (NYSE); and, although there were local stock broking firms operating in the "regional" markets, they faced direct competition from branches of firms with seats on the NYSE. The result of that competition can be seen in the distribution of business among the NYSE, other New York exchanges, and the major exchanges located outside of New York. In 1910, the NYSE handled 68.5 percent of the total number of all stocks traded, other New York exchanges, 21.2 percent, and the "regional" exchanges in Boston, Philadelphia, and Chicago, 10.4 percent. In

3. On the LSE, the number of partners in a firm was limited; every partner in a London firm had to be a member of the London Stock exchange; and no member of the LSE was allowed to have any business other than broking and jobbing.

For a list of the provincial exchanges whose records have survived, see W.A. Thomas, *The Provincial Stock Exchanges* (London: Frank Cass, 1973), Appendix, p. 327. [Hereafter cited as Thomas, *The Provincial Stock Exchanges*].

terms of the value of bonds traded, the NSYE handled 90.6 percent, other New York exchanges 1.5 percent, and the three "regional" exchanges, 7.9 percent.[4]

A comparison of the responses of the stock markets in these four countries during the global deflation that terminated in the 1890s provides the basis for a natural experiment designed to evaluate the effects of, first, different institutional arrangements and, second, the macro results of the different institutional responses to a common shock. To set the background conditions for this experiment, Section II reprises Snowden's argument for the U.S. case. It emphasizes the forces that were specific to the United States and those that were not. Section III applies the arguments that are developed in Section II to the cases of Great Britain, Germany, and France. Finally, in Section IV, the evidence developed in section III is shown to support the conclusion that the financial innovations in each of the four cases was a significant factor in determining the future economic performance of the respective countries. In particular, the evidence indicates that the competitive forces were strongest in the U.S. case – a consequence of the combination of a federal political structure and of the diversity of the judges that "wrote" the common law. As a result, among the four countries considered, the set of U.S. financial innovations appears to have been the most productive in underwriting the future performance of its economy.

I. The Effect of Deflation on the US Financial Markets:

According to Kenneth Snowden's analysis, in the United States it was the continued effect of the deflation upon the values of that nation's huge stock of railroad bonds that underwrote the

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4. Ranald C. Michie, *The London and New York Stock Exchanges, 1850-1914* (London: Allen & Unwin, 1987), p. 170. [Hereafter cited as Michie, *London and New York*].

innovative responses of the New York Stock Exchange in the 1890s.[5] Snowden points out that the market response to persistent deflation in the U.S. – deflation that raised the real price of railroad bonds – increased the wealth of existing bondholders, but then decreased the interest rate on bonds purchased by new investors. Because the U.S. railroad companies were private enterprises that lacked financial backing from the Federal or state governments, they had originally offered very favorable terms to bondholders – terms that included not only high nominal interest rates but also a guarantee that the bonds would not be called or redeemed if their market price rose above par. As the price of more and more bonds did rise above par, railroads found themselves in the unpleasant position of having to continue to lay out high fixed nominal interest payments while, at the same time, they faced falling prices for their freight and passenger services. Moreover, they could not take advantage of the falling market yields to replace high interest debt with new low interest bonds, because they would have to buy the existing bonds at market prices; and they could not turn to the money markets to cover those costs, because the collateral value of new bonds was declining due to the general deflation. As an aside, it might be noted that the non-callable provisions in corporate bonds helps to explain why the dramatic concurrent reduction in government debt did not elicit a "crowding-in" effect on private investment.[6]

The management of the railroads responded in a variety of ways to this financial dilemma. Their strategies included attempts to maintain high prices through monopolistic cartel

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5. Snowden, "Historical Returns and Security Market Development"; Kenneth Snowden, "American Stock Market Development and Performance, 1871-1929", *Explorations in Economic History*, Volume 24, October 1987, pp. 327-353. [Hereafter cited as Snowden, "Stock Market Development and Performance"].

6. For a discussion of this point see John James, "Public Debt Management and Nineteenth Century American Economic Growth", *Explorations in Economic History*, Volume 21, April 1984, pp. 192-217.

arrangements and financing further construction by selling stocks and bonds of newly incorporated railroad companies, rather than carrying out those operations through the established firms. Ultimately, however, their best recourse was to declare bankruptcy and to throw themselves on the mercy of a judge's decision about the appropriate method for settling creditors' claims. At the time, there was no Federal bankruptcy law; and, therefore, railroads declaring bankruptcy not only had the advantage of suspending interest payments while continuing normal operations during the time that they were in the hands a receiver; but they also had some discretion in picking the judge, or at minimum, the state that had jurisdiction over the legal proceedings and that would decide the terms of reorganization.[7] In the early 1890s, the series of competitive bankruptcies, had, by the end of 1895, put 25 percent of the total U.S. railroad mileage into the hands of receivers by the end of 1895.

The suspension of interest payments to bondholders brought investment houses into the center of the reorganization schemes that were proposed in the series of attempts that were made to restore the long-run viability of American railroads. Three interrelated courses of action were developed and deployed: first, to replace the outstanding bonds with new bonds bearing a lower coupon rate; second, to write down the principal of outstanding bonds at the same coupon rate (essentially a partial default); and third, to substitute contingent income claims, usually in the form of preferred stock, for the existing bonds.[8] The Union Pacific Railroad, a firm that was not only the largest of the bankrupt roads, but a railroad that was also the leading innovator in

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7. E. Campbell, *The Reorganization of the American Railroad System, 1893-1900* (New York: Columbia University Press, 1938).

8. Snowden, "Historical Returns and Security Market Development", p. 403.

designing new financial assets, issued stock warrants – warrants that could be converted to bonds, if the market price recovered. Across the board, the net result was to restore the profitability of American railroads; and profitability led to a new surge of investment in the period 1897-1907 – investment that was focused on double-tracking, rail yards, and stations rather than on new routes.[9]

It has been argued that investors – investors confronted with the uncertainty of the future yields on their holdings of railroad bonds – turned to other possibilities for maintaining their rentier incomes. Snowden, for example, concludes:

> "Had deflation and a reduction in yields not appeared in the late 19th century, as market participants expected, there would have been far less incentive for the stockholders of railroads to default.... In the absence of the delays created by the reorganizations, the rapid growth of rail capitalization that manifested itself between 1900 and 1913 would have continued to focus the attention of the investment houses and the bulk of investors primarily on the rails. The industrials, on the other hand would not have benefited from the change in investor attitudes that resulted from widespread rail bankruptcy. As a result, the market for industrial shares would have developed more slowly and been shaped to a larger extent by the individual promoters who began the process in the early 1890s."[10]

This scenario, however, while perhaps containing an element of truth, badly distorts the importance of the railroad's financial shenanigans in the evolution of the market for commercial

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[9]. Larry Neal, ""Investment Behavior by American Railroads: 1897-1914," *Review of Economics and Statistics*, 51 (1969), 126-135.

[10]. Snowden, "Historical Returns and Security Market Development". p. 405.

and industrial securities. Although it would be another two decades before industrial and commercial securities became the center of activity on the NYSE, it is certainly true that the market for that sector's securities, especially preferred stock, became both formalized and important in the 1890s.[11] Moreover, Snowden is correct when he shows that the returns on these new securities were highly variable, and provided investors with a high risk, but a high return alternative to their traditional railroad holdings. But the question remains, was the emergence of industrial and commercial finance primarily driven by, first, the wave of railroad bankruptcies and, then, by the decline in interest on railroad bonds that was the byproduct of the reorganization of the railroad system?

There are a number of reasons to believe that the Snowden scenario badly distorts reality. First, the value of railroad investment in road and equipment increased from about $3 million in 1850 to about $8.134 billion in 1890, an average of about $196 million a year. Between 1890 and 1900 the increase was from $8.134 billion to $10.263 billion, or an average of $213 million a year. That figure, while substantially less than the $430 million average that was reached between 1900 and 1910, was still nearly ten percent higher than the average for the previous forty years. In a similar fashion, despite the bankruptcies, the total value of the railroad industry's outstanding paper securities (common and preferred stock and unmatured funded debt) increased by an annual average of $251 million over the decade of the 1890s. That figure, while substantially less than the $693 million average for the first decade of the 20th century still

[11]. T. Navin and M. Sears, "The Rise of the Market for Industrial Securities, 1887-1902", *Business History Review*, Volume 29, 1955, pp. 105-138.

averages about $3,60 for every man, woman, and child in the U. S. and hardly suggests that investors were fleeing from their investments in railroad stocks and bonds.[12]

Moreover, the run-up in railroad bond finance in the two decades beginning in 1870 had been largely underwritten by the second generation Anglo/American investment banks – J.P. Morgan, Brown Brothers, Morton Bliss, Baring Magoun, Kidder Peabody, August Belmont, J&W Seligman, and Philip Speyer & Co. If those firms had found themselves under severe economic pressure because of problems with the railroads, it seems reasonable to assume that they would have reached out to the emerging commercial and industrial sector. Instead, with the exception of J.P Morgan, the firms that underwrote the emergence of the largely preferred stock-driven commercial and industrial expansion were the third generation, purely American, firms (Goldman, Sachs & Co. and Lehman Brothers, to cite two leading examples) – firms that had never been more than marginal bit players in the railroad bond market.[13] During the first few years of the twentieth century, the expansion of the market for commercial and industrial securities was followed by one of the largest merger waves ever experienced in American history; and the flood of industrial and commercial securities were largely underwritten by the new third generation investment banks – banks that, by the 1920s, had come to dominate the investment banking industry.[14]

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[12]. *Historical Statistics,* 1960, Series Q 95 and Q 97, p. 433.

[13]. Lance E. Davis & Robert E. Gallman, *Evolving Financial Markets and International Capital Flows: Britain, the Americas, and Australia, 1865-1914* (Cambridge, U.K.: Cambridge University Press, 2001), pp. 300-312. [Hereafter cited as Davis & Gallman, *Evolving Financial Markets and International Capital Flows*].

[14]. Ralph L. Nelson, *The Merger Movement in Manufacturing and Mining, 1895-1907* (New York: Columbia University Press, 1955).

However, as Snowden suggests, the effects of the railroad reorganizations were reflected in some of the changes that occurred in the New York Stock Exchange during the 1890s. While the stock market panics of 1890 and 1893 produced government investigations in New York, only the state legislature was involved; and the legislators in Albany were easily, and frequently, bribed into rescinding threatened regulations. The regulations of the NYSE were, however, revised, but the revisions were made by the operators of the Exchange. The revisions came partly in response to the threat of competition from other exchanges, the Consolidated in New York and the regional exchanges elsewhere in the country. Over time, however, in a large part they were revised because the competitive threat of other exchanges was reduced. As competition weakened, the threat of members deserting to other exchanges was reduced; and, as a result, the NYSE was able to impose more constraints on its members.

In the last decade of the 19th century, the Exchange was able to institute two rule changes that strengthened its imprimatur of quality, but changes that the competitive threats from other exchanges had previously prevented the Governing Committee from implementing. In 1892, after three failed attempts, the Governors finally established a clearing mechanism – a mechanism that was expanded until, by the end of the century, it included almost all listed securities.[15] Again, in 1895 the Governing Committee voted to require that listed companies file annual reports, although it is clear that their word was still not law -- they received no reports in either 1895 or 1896. By 1900, however, annual reports including both audited balance sheets and

15. Robert Sobel, *The Big Board: A History of the New York Stock Exchange* (New York & London: The Free Press, 1965). pp. 131 [Hereafter cited as Sobel, *The Big Board*]; John Grosvenor Wilson, "The Stock Exchange Clearing House" in Edmund Clarence Stedman (ed.), *The New York Stock Exchange: Its History, Its Contribution to National Prosperity, and Its Relation to American Finance at the Outset of the Twentieth Century* (New York: Greenwood Press, 1969), pp. 432-433.

profit and loss statements became a prerequisite both for initial listing and for retaining that listing.[16]

The NYSE's listing requirement had the desired effect of establishing the Exchange as the "blue chip" market, creating an imprimatur of quality that has lasted to this day. The imprimatur greatly advanced the education of the unsophisticated American investors of the late 19th century; and, in so doing, it went a long way to solving the nation's capital accumulation and mobilization problems; however, it also produced enormous profits for the members holding seats on the exchange. The new requirements also greatly aided the Exchange in its battle with its chief New York rival, the Consolidated Exchange. At the turn of the century, in terms of volume, about two-thirds as many shares were traded on the Consolidated as on the NYSE. Although competition continued through World War I, the NYSE's policies – policies designed to discourage members of exchanges located outside on New York from dealing with the Consolidated and to deny the Consolidated easy access to the NYSE's prices – appear to have blunted, if not halted, the competitive threat.[17] The improvement in the NYSE's imprimatur of quality also made it possible to alter – although much less violently – its relationship with the New York Curb market. Previously, the "Curb" had existed somewhat uneasily alongside the NYSE. Between eighty and ninety percent of its business was carried out on behalf of members of the formal exchange. Gradually, as the Curb became a recognized part of the evolving securities market, its relations with the NYSE became better defined. In 1909, the

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[16]. Sobel, *The Big Board*, pp. 123 & 127.

[17]. Although on average the shares traded on the Consolidated were lower valued, between 1886 and 1913, the volume traded on the Consolidated averaged 64 percent of the volume of shares traded on the NYSE; and between 1888 and 1896 the figure was 95 percent, and it exceeded 100 percent in four of those years. Davis and Gallman, *Evolving Financial Markets and International Capital Flows*, pp. 321-322.

representatives of the New York Stock Exchange argued, "the curb market represents, first, securities that cannot be listed; second, securities in the process of evolution from reorganization certificates to a more solid status; and third, securities of corporations which have been unwilling to submit their figures and statistics to proper committees of the Stock Exchange".[18] By 1900, a listing on the New York Stock Exchange provided a substantial guarantee of stability; and the Curb provided a market for riskier and more uncertain securities within the U.S. financial infrastructure. The two had become complementary, rather than competitive, organizations.

To sum up, the long-term effects of deflation on the secondary market for securities in the U. S. did lead to a series of innovative initiatives by businessmen engaged in stockbroking, especially those fortunate enough to be members of the club called the New York Stock Exchange. Driven primarily by the goal of restoring their incomes – incomes that had declined because of the loss of business as their wealthiest customers abandoned the stock market, the brokers took steps both to retain their traditional customers and to attract a wider customer base. To compensate for the disappointing returns now available in the dominant securities – railroad stocks and bonds – they widened the range of products available. Not only industrial stocks, but also new forms of railroad securities – securities such as warrants, preferred stocks, and bond issues backed by specific forms of new capital – were promoted by the New York Stock Exchange. To reassure their clients they imposed listing requirements that, over time, steadily became more detailed and demanding. In order to reduce the costs of operating the exchange they finally created a clearing house. To limit the threat of competition from competing exchanges, both within and without New York, they tightened their control over access to the

[18]. New York State, *Report of Governor Hughes' Committee on Speculation and Commodities*, June 7, 1909, p. 44.

ticker tape providing up-to-date price information. The beneficial effects – beneficial at least to the members of the exchange – are seen in the turnaround in seat prices. From the lowest prices of $14,000 and $14,500 obtained on September 24, 1896, seat prices began a steady upward movement at the beginning of September 1898 and rose steadily until leveling off in 1906, before falling again after the crash of 1907.

A similar sequence of events was traced out in the three overseas stock markets; but in France, Germany, and the United Kingdom, because of the differences in political and economic institutions, the outcomes were different.

III. The Effect of Deflation on the Other Core Financial Markets:

In each country, the trigger for the first explosion of incorporations was the set of technological developments that made railroads viable; and, in each case, the formal stock exchanges played a major role in creating and sustaining a market for the paper securities issued by those railways. These pieces of paper were, initially, shares in the original capital stock and then, increasingly, bonds – bonds issued as the money spent on new construction and improvements quickly outran initial estimates. Both the shares and the bonds were marketed in ways that mimicked, as closely as possible, the features of the existing market for public securities available to investors in each country.[19] Only half a century later did industrial securities become an important part of the business transacted on the formal stock exchanges; and, even then, the number of shares listed and the volumes traded were much larger in London and New York than in Berlin and Paris. In 1888, after a series of regulatory reforms, the Paris

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[19]. Jonathan Barron Baskin and Paul J. Miranti, Jr., *A History of Corporate Finance* (New York: Cambridge University Press, 1997).

exchange moved increasingly toward foreign securities; and, after 1896, with the passage of a law governing stock market activity, Berlin focused more on domestic public securities.

The exchanges in New York and London – exchanges that had spontaneously arisen as self-regulating organizations and that had proven able to sustain their independence from regulatory constraints imposed by the state – responded in self-interested ways to the opportunities for marketing the securities issued by private corporations. The exchanges in Paris and Berlin, by contrast, had been created by government fiat; and, in their attempts to confront the challenges of corporate finance, they were forced to bow to the desires of their respective governments. But, depending upon the structure of governance that they have adopted, even self-regulating organizations may react in different ways when faced with similar challenges. Such was the case for London and New York in the 19th century. Again, even when confronted by identical problems, in their attempts to regulate securities exchanges, governments selected policies that reflected, not economic efficiency, but policies chosen for reasons of state, or simply to placate their constituencies. Even then, however, in terms of the design of the rules they adopt, policies can differ. Such was the case for Paris and Berlin.

The effects of continued deflation upon bond prices and market returns affected the London Stock Exchange largely through the repercussions that the economic difficulties in the United States, South America, and Australia posed for British investors – investors who had increasingly diversified their holdings of securities in the global capital market that British merchant bankers had created in the middle of the nineteenth century. The decade of the 1890s began with a near escape from disaster brought about by the failure of the House of Baring. That failure, in turn, can be traced to Argentina's default on bonds underwritten by what had been

Britain's leading merchant bank. The story is well-known: the Bank of England organized a bail-out financed by an *ad hoc* consortium of leading London bankers. Perhaps less well known is the reaction of the Members of the London Stock Exchange to the episode. At their meeting on December 22, 1890, the Committee for General Purposes of the London Stock Exchange formally addressed the Governor of the Bank of England, William Lidderdale, Esq., praising him for his actions in the Baring Crisis. The Chair of the Committee, Mr. Rokeby-Price stated:

> "Being from their position necessarily well acquainted with the unexampled character of this crisis, the Committee are fully able to estimate the magnitude of the disaster which at one time threatened to disorganize, if not to overwhelm, the vast financial and commercial interests of this and other countries, and they are convinced that it was almost entirely owing to the masterly ability with which the measures of yourself and the Court of Directors were carried out in the negotiations in this country and abroad, and more especially to the firm and decisive manner in which your great influence, as governor, was so wisely and courageously exercised, that a panic of unparalleled dimensions was averted."[20]

Governor Lidderdale was very pleased to receive these plaudits from the Members of the London Stock Exchange, and responded by stating that he appreciated their opinion all the more,

> "... as coming from a body peculiarly well able to judge of the magnitude of the crisis, and of the consequences that would have followed the suspension of Messrs. Baring Brothers & Co., with liabilities to the extent of £2l,000,000. What these consequences might have been I hardly dare to think. What security would have been saleable: What bills could have been discounted, if so great a disaster had really come to pass. ... When you thank the Bank of England it is very

[20]. Guildhall Library, City of London, MS 14600/63, "Minutes and Related Papers of the Committee for General Purposes: 15 March, 1895 to 17 January, 1896, f.232.

> important to bear in mind the willing and cheerful assistance that we have received from others. In the first place, from Lord Rothschild, whose influence with the Bank of France was of such assistance to us in obtaining those means, without which we could not have rendered the aid we were enabled to give. Secondly, the help of Her Majesty's Government in the assurance of support if required, a support which it has happily not been necessary to claim. Equally valuable was the prompt assistance of those who subscribed to the Guarantee Fund, without which it would have been impossible even for the Bank of England to have undertaken so enormous a responsibility."[21]

Lidderdale's response to the gentlemen of the stock exchange demonstrates the government's commitment to maintaining a regulatory and monetary environment within which the securities business could continue to flourish. There followed a continued expansion of both the business of the London Stock Exchange (see Table 1). As in the United States, between 1893 and 1913, it was commercial and industrial shares that were the largest gainers. The impetus to their innovation came first in the form of so-called debenture shares that permitted breweries to pledge the incomes they received from tied public house toward payment of the dividends on new capital – new capital that had been issued precisely to purchase the exclusive vending rights to beverages sold in previously independent, free, pubs. Katherine Watson has documented the stock market boom in brewery shares that ensued.[22] By the late 1890s, the current rage among investors were mining shares in the new claims created in South Africa. The "kaffir" shares led to such an increase in trading business that special settlement days and procedures had to be

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21. Guildhall Library, City of London, MS. 14600/63, "Minutes and Related Papers of the Committee of General Purposes: 15 March, 1895 to 17 January. 1896, f. 233.

22. Katherine Watson, "Banks and Industrial Finance: The Experience of Brewers, 1880-1913", *Economic History Review*, Volume 49, February, 1996, pp. 58-81.

created to cope with the ticket claims – claims that often had changed hands many times before the completion of the sale. Meanwhile, after hours trading in American shares expanded to meet the competition that arose as New York brokerage houses established branches in London to serve their British clients.[23]

The ultimate shape of these innovations in the financial products were traded on the London Stock Exchange came from the relative increase in the number of members devoted to the brokerage, as opposed to those members who specialized in the jobbing, or market-making, business on the exchange. The turning point in the balance of power between Proprietors, concerned mainly with increasing the volume of business and the number of subscribing members on the exchange, and the Members, concerned mainly in maintaining their incomes from brokerage fees, came as early as 1875 and 1882. Changes in the Deed of Settlement – changes that were required to underwrite the finance needed to pay for the construction of larger facilities – increased the original 400 shares to 20,000 shares, and those changes stipulated that all new shareholders had to be Members.[24] As the membership continued to increase over the following years, the interests of the Proprietors and Members tended to converge. However, convergence was, by no means, instantaneous; and it was not until 1945 that the two Committees, Trustees and Managers and the Committee of General Purposes, were finally merged.

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[23]. Ranald Michie, *The London Stock Exchange: A History* (Oxford: Oxford University Press, 1999), Chapter 3. [Hereafter cited as Michie, *The London Stock Exchange*].

[24]. Morgan and Thomas, *The Stock Exchange*, p. 144.

By 1912, the Members, now largely brokers, voted to enforce minimum commissions, and to outlaw the practice of the jobbers shunting trades to outside brokers.[25] Even then, however, the vote was very close (1670 to 1551); and the new system worked much less well than its supporters had argued. The regional exchanges proved much more resilient than anyone had expected; and, as a result, a system that, for almost half a century, had underwritten a very efficient national market, was no longer effective; and the national market was splintered into a number of only loosely connected regional markets. If World War I had not broken out, it is very likely that the minimum commission rule would have been repealed in 1914. As it was, between the problems engineered by the rule change and the War, the LSE never fully recovered the international position that it had previously held.

Earlier, in 1904, the Members had voted to require that a new member purchase a nomination from a retiring member; and, therefore, provided something close to a property right in a seat. Although initially the costs were not high – between 1905 and 1914 prices ranged between £15 ($73) and £150 ($731) – this change, for the first time, began to place some limits on the number of members – a number that peaked at 5,481 in 1905.[26] Compare that restriction with the rules that limited membership on the NYSE. On the New York Exchange, a property right in seats had been established after the merger with the "Open Board" in 1869. The number of members admitted was set at 1,060; and only once, in the years before the First World War,

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[25]. Morgan and Thomas, *The Stock Exchange*, p. 154.

[26]. Michie, *The London Stock Exchange*, pp. 85-86.

was this figure increased – by forty in 1879.[27] Again, in contrast with London, between 1879 and 1914 the prices of those seats ranged from $13,000 to $95,000. The trustees and members of the LSE passed other rules that also mimicked, but most often did not duplicate, key features of the regulations that governed the New York Stock Exchange. These new rules included listing requirements that were intended to assure customers of the quality of the securities available for purchase. The key differences that remained were the much larger membership, the greater number of securities listed, and the greater importance of foreign securities on the London, as opposed to the New York Stock Exchange.

In France, the government's regulatory role varied with changes in the political regime; but even these rules affected the role of the *Coulisse* more than that of the *Parquet*. The relative stability of the *Parquet*, in turn, can be attributed to the organizational strength of its *Compagnie*, composed as it was of a small number of individuals with life tenure. Its internal cohesion was further strengthened when, in 1816, the government asked the remaining individual agents (their number had dwindled to 50 by the end of Napoleon's reign) to pay an additional 25,000 francs for their offices. In return, the government allowed each *agent de change* to name his successor. Thus, although the government continued to formally control the nomination and the disposition of the title, the current titleholder now had a property right that could be sold. The *agents de change* were no longer civil servants named for life, but public-private officers possessing specific powers. The act of 1816 also strengthened the self-governance of the *Compagnie* by restoring the *Chambre syndical* – an organization that enjoyed the triple powers of recruitment, discipline, and regulation. The corporate solidarity that naturally arose within the *Compagnie*

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27. Michie, *London and New York*, p. 194.

des Agents de Change enabled them to effectively influence the government's policies, and, thus, to maintain the *Agent's* privileged position within France. For the remainder of the long 19th century, the power that the Minister of Finance had exercised over the operation of the bourse was effectively conceded to the *Compagnie*.

In Paris, the *Coulisse* originally served a complementary function to the official *Parquet*. It provided counter parties to agents of the *Parquet* who were seeking matching buy or sell orders, but who were unable to serve as dealers themselves. During the Second Empire, the *coulissiers* expanded their business rapidly; and they organized two separate markets: one for dealing in government rentes and the other for trading in securities that were not yet listed on the official exchange. The *coulissiers* were mainly bankers who were dealing on behalf of the large joint-stock banks and the customers of those banks. They, the *coulissiers*, occupied the outer hallways and colonnades of the Bourse before and after official trading hours; and then, in the evening, they regrouped in the lobby of the *Credit Lyonnais*. However, when, as in 1823 and in 1850, their competition with the *Parquet's* brokerage business raised the anger of the *Compagnie*, the police were called in to remove them.[28] By the 1890s, their business was more than fifty percent greater than that done in the official market. That fact was only discovered when, in 1888, the French government, in response to the crash of the *Union Generale*, imposed a transactions tax on sales in both the *Parquet* and the *Coulisse*. The legislation that followed a decade later, however, put the traders on the *Coulisse* back in their place as *remisiers*, or

[28]. Gustav Boissière, *La Compagnies des Agents de Change et le Marché Officiel à la Bourse de Paris*, (Paris: Arthur Rousseau, 1908), p. 142. [Hereafter cited as Boissière, *La Compagnies des Agents de Change*].

shunters, for the *agents de change*. Thus, like the Curb market in New York, the *coulisse* ended as a complement, rather than as a competitor to the official exchange.[29]

Émile Vidal, author of the National Monetary Commission's 1910 study of the Paris bourse, was also editor of the weekly price listing for the *Coulisse*.[30] It is, therefore, perhaps, not surprising that he argued strongly in favor of replacing the official *Parquet* with an organization very similar to the *Coulisse* as it had existed before the regulations of 1898. He felt that the *Coulisse* had been much more efficient and innovative than the *Parquet*. Unfortunately, his advice was rejected; and, not only did the *Parquet* remain the official market, but the redesigned *Coulisse* was reorganized as rigidly as the *Parquet* – reorganized with a limited membership and similar internal rules of conduct. Further, it was limited in scope to the forward business of stock trading and to the same, mostly government, government-backed, or government sanctioned securities that were listed on the *Parquet*. Both markets, then, became effectively arms of the government – arms that helped enforce the government's political policies. For example, after 1870, in an attempt to thwart the rising power of Germany, France developed strategic ties with Russia. As a part of those ties, the government made Russian finance a priority; and, since the government had the right to select the securities traded on the Bourse, that policy accounts for the large proportion of French total investment that was directed toward Tsarist bonds.

In Germany, the explosion of incorporations that occurred both before and after the founding of the Reich and the receipt of five billion francs in reparations from the defeated

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[29]. Boissière, *La Compagnies des Agents de Change*, pp. 142-149.

[30]. E. Vidal, *The History and Methods of the Paris Bourse* (Washington, D.C.: Government Printing Office, 1910).

French nation led to speculative manias that ended in the *Gründungkrise* of 1873. That explosion was certainly aided and abetted by a law passed on June 11, 1870 – a law that greatly eased the creation of corporations. The passage of that piece of legislation was the high point of a series of attempts to liberalize the marketing of corporate shares, and it sealed the structural interdependence of that German nation's banks and industry –- an interdependence that still exists to this day. The rise of new joint-stock banks after the passage of the law is particularly noteworthy. In the first two years of the new German Reich, 107 joint-stock banks were founded – banks with a total capital of 740 million marks.[31] By the end of 1873, seventy-three of the newly chartered banks were in liquidation.[32].

Faced with a crisis, and in an attempt to protect the earnings of the remaining corporations, the government's initial reaction was to raise customs barriers. In the longer term, however, as it tried to improve the economic robustness of the nation's business organizations, the government moved to restructure the internal organization of the nation's corporations. In 1884, a new law redefined the framework of governance of German corporations. Each corporation was required to adopt an institutional decision-making structure that consisted of three distinct committees, with each committee serving a different function. The managing board of directors (*Vorstand*) and a general assembly of stockholders (*Generalversammlung*) were features that were common to corporations in all four countries. The German law, however,

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31. Rainer Gömmel, "Entstehung und Entwicklung der Effetenbörse im 19 Jahrhundert bis 1914", in Hans Pohl (ed.), *Deutsche Börseschichte* (Frankfurt am Main: Fritz Knapp Verlag, 1002), p. 154. [Hereafter cited as Gömmel, "Entstehung und Entwicklung"].

32. Gömmel, "Entstehung und Entwicklung", p. 156.

added a third oversight board, the *Aufsichtsrat* – a board with a large majority of its members drawn from outside the firm. Those members represented, not owners and managers, but labor, the government, the general public, and the banks. The *Aufsichtsrat* was peculiar to Germany.

As in France, the stock market crises of the early 1890s led to further major reforms in Germany. Like the French statutes, the German reforms outlawed the informal exchanges – the so-called *Winkelbörsen* – that had sprung up around the formal exchange; and they specified that only transfers validated on the formal exchange would have standing in legal disputes. The new law went further, however, by outlawing uncovered, or short selling, of securities. As a result, trading in corporate securities tended to move, not merely out of Berlin, but out of all of Germany, to the more friendly purviews of the Amsterdam and London stock exchanges. In retrospect, it seems that the formation of the *Kommission für den Börsenenquete* – a commission that included only token representation from members of the stock exchange and a commission that was heavily weighted with representatives of agricultural interests eager to do anything to raise prices of farm products – was responsible for this outcome. But, given that the concerns of a wide range of potential interest groups had been represented in the composition of the *Aufsichtsraten* – one of the three committees charged with overseeing the governance of a corporation – the broad composition of the commission reflected political reality, if not economic rationality.

As a result of the legal changes, trading on the German stock exchanges quickly became concentrated on public securities issued by German state and city authorities. At the same time, the great banks continued their efforts to develop new private sector business in adjacent, politically friendly, countries. Both Austria and Italy were initial beneficiaries of the legal changes and the response of German investment banks to those changes. According to Cohen and Good and Ma, the initial outcomes have been deemed beneficial for both countries, although more recent analyses of the financial sectors in each country suggest that there may have been few long-run benefits.[33] To continue their active trading on the securities held by their customers, the German banks appear to have had increasing recourse to the forward markets available in Amsterdam and the trading facilities of the London Stock Exchange.[34]

By the end of the nineteenth century, all four major stock markets (Berlin, London, New York, and Paris) responded in different ways to the wide-spread deflationary pressures – pressures that affected both the traders and their customers in very similar ways. Hardly surprisingly, since the policies adopted were quite dissimilar, the economic productivity of the responses differed markedly between countries. France appears to have generated the least productive response – a response that was characterized by increased central government regulation and oversight. Both the German and British exchanges seem to have flourished in the aftermath of the microstructure reforms that took effect in the first decade of the twentieth century; but, on closer examination, it appears that the observed resurgence in London and Berlin was more deeply rooted in the indirect complementarity that developed between the broker-dominated market in London and the jobber-, or bank-, dominated market in Berlin, rather than in the changes in the rules that governed the markets. Despite the trauma of the 1907 panic on

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[33]. The initial studies are reported in Jon S. Cohen, "Financing Industrialization in Italy, 1894-1914: The Partial transformation of a Late Commer", in *Financing Industrialization*, Volume 2 (Brookfield, Vt.: Edward Elgar, 1992), pp. 57-76 and in David F. Good and Tongshu Ma, "The Economic Growth of Central and Eastern Europe in Comparative Perspective, 1870-1989", *European Review of Economic History*, Volume 3, August 1999, pp. 103-137.

The longer-term results are reported in Caroline Fohlin, "Fiduciary and Firm Liquidity Constraints: The Italian Experience with German-Style Universal Banking", *Explorations in Economic History*, Volume 35, January 1998, pp. 83-107 (for Italy) and Richard Tilly, "Universal Banking in Historical Perspective", *Journal of Institutional and Theoretical Economics*, Volume 54, March 1998, pp. 7-32 (for Austria).

[34]. Michie, "Different in Name Only?," pp. 46-68.

the New York Stock Exchange and the governmental investigations and reforms that followed in its aftermath, it would appear that the competitive responses of the New York Stock Exchange to the challenges of deflation carried the most promise for the design of efficient capital markets in the decades that were to follow. The exchange's original "draconian" listing requirements – a listed firm not only had to show a history of profitability, but it had to be a representative of an industry with a history of profitability – was reinforced at the end of the century with the requirement that a listed firm must annually produce audited financial statements. Taken together, the rule changes speeded up the process of investor education so much so that, by 1914, American investors were at least as willing to hold the paper securities of private companies as were investors in the U.K. Moreover, the innovation of continuous calls, coupled with the belated introduction of the clearing house, greatly simplified and, therefore, reduced the transaction costs involved in buying and selling securities. Again, daily settlement, as opposed to the LSE's practice of periodic settlements, made transactions on the NYSE much more transparent than their London counterpart, and that difference also helped relieve the uncertainty fears of investors. Finally, the development of the complementary relationship with the Curb market made it possible to maintain the "blue chip" character of securities traded on the NYSE, while, at the same time, providing a market for those securities that could not qualify for the NYSE's imprimatur. Unfortunately, this rating of the relative efficiency of the micro-structure of the rules circa 1914 still cannot be tested directly.

IV. Evaluation:

The effects of massive government war finance required for World War I, to say nothing of the indirect impact of widespread military mobilization, overshadowed future developments in all four exchanges, particularly those in Paris and Berlin. Nevertheless, it is useful to make an overall assessment of the financial structures of the four powers as they developed along separate paths until 1914.

Table 2, taken from Raymond Goldsmith's national balance sheets of France, Germany, Great Britain, and the United States, shows the differences between the proportion of claims on financial institutions and of financial claims on non-financial institutions to total national assets in the four countries.[35] Already, by 1850, the British and American economies were marked with much higher proportion of financial assets; and in terms of the composition of those assets, corporate debt and equity represented a much larger fraction of total national assets than in the two continental countries. The rise of a global capital market in the latter half of the nineteenth century, especially after 1880 when the gold standard was adopted by almost all industrialized or industrializing nations, underwrote an increase the share of financial assets for all four countries. However, in the case of the continental European countries, it was the increase in claims issued by financial institutions that increased most dramatically – in France and Germany the fraction more than doubled – and, among the financial institutions, in the case of France, it was the increase of the claims of joint-stock banks that provided the bulk of the impetus. In that country the increase in bank claims rose 4.5 times between 1880 and 1913. In the case of Germany, although the claims of joint-stock banks accounted for 3.9 of the 7.0 percent increase, it was the claims of insurance and pensions that grew most rapidly – an increase of 5.7 times between 1875 and 1913. The role of the formal capital markets in the industrial growth of Great Britain and the United States continued to expand rapidly, even as both countries experienced major innovations

[35]. Raymond Goldsmith, *Comparative National Balance Sheets, A Study of Twenty Countries, 1688 to 1978* (Chicago: University of Chicago Press, 1985), pp. 216-217, 225, 232-233, 300-301.

in their financial infrastructure. In the case of the U.K., while the importance of all financial assets in national assets increased 1.3 times between 1875 and 1913, that increase was underwritten by the increasing importance of loans by financial institutions (they rose 1.9 times), corporate stocks and bonds (1.7 times), and claims against financial institutions (an increase of 1.4 times). At the same time, the importance of government debt and trade credit in the national total was declining – by 47 and 6 percent respectively. In the case of the U.S. the ratio of all financial to total assets increased by 15 percent over the years 1880 to 1912. That increase was, however, far from uniform across the types of financial assets. The importance of mortgages grew by 54 percent, insurance by 40 percent, loans by financial intermediaries by 36 percent, corporate stocks and bonds by 29 percent, and consumer credit, non-existent in 1880, accounted for one percent of the total in 1912. At the same time, the importance of government debt declined by 61 percent, trade credit by 51 percent, and currency and deposits by 28 percent. In both countries, the financial infrastructure was both expanding and evolving as new institutions emerged.

This brief overview of the distinctive characteristics of the four leading security exchanges in the nineteenth century indicates that, even in the case of the most highly developed and most efficiently functioning markets of the first global economy, differences in legal and political environments led the four to develop different institutions to perform essentially the same tasks. If the legal environment was broadly similar, as it was for Great Britain and the United States, the political environment led to a different structure of capital markets. Moreover, by the end of the nineteenth century, even for the two countries that had begun the century with very similar sets of statute and common laws, the legal environments had begun to diverge in important ways. For example, in Britain, anti-trust was not to become an important issue until the middle of the 20th centuries: there were no statutory prohibitions or court decisions regulating the powers of self-governance by trade groups. The absence of such rules clearly favored the freedom of those organizations to make and to enforce contracts among themselves. In the United States, the courts and then the national legislature moved, first, to make such anti-competitive contracts unenforceable and then, illegal, if they were found to infringe on the freedom of new players to enter an industry and vigorously compete with other already established or other newly created firms.

Regional security exchanges flourished in both countries; but in Great Britain, before 1912, they were largely complementary and seldom competed with the central exchange in London for primacy in the market for any except local securities. And, because of easy and inexpensive entry into the LSE, there were no competitive exchanges in London. In the United States, it was not until after the Civil War that the NYSE was able to permanently establish its preeminence over the older exchanges of Philadelphia and Boston and the rising markets in Cincinnati and Chicago. Moreover, it would be another forty years before other New York exchanges ceased to be major competitors – the Curb (later the American) becoming a complementary exchange and the Consolidated finally eliminated from the market. Nor, as the growth of the NASDAQ has recently shown, it is clear that the NYSE has not been permanently insulated from competition.

Further, differences in the original definition of property rights in the marketplaces meant that the New York Stock Exchange had a constant battle to establish and then maintain its primacy as the central marketplace in New York City. Conversely, throughout the century, the London Stock Exchange was able to encompass all the business in London and to place the regional exchanges in a complementary, rather than a competing role. The complementary role of the provincial exchanges, however, was threatened when, by 1912, the Members of the London Stock Exchange had both established minimum commissions and forbidden jobbers to shunt business from other exchanges. Banks and other financial institutions were expressly forbidden from participating in the British exchanges, although the few originally entering as Proprietors were grandfathered in. Moreover, the rules of the LSE severely limited the size of the brokerage house that could be members; as a result, there were no member firms operating nation-wide, let alone world-wide. On the American exchanges, until the regulatory reforms of the 1930s, almost any firm in any business could form a partnership with a brokerage house or simply buy seats for itself. Because there were no limits on size, a brokerage house with a seat on the NYSE could, and did, operate branches in cities across the United States, and in London and on the continent as well.

On the continent, where the legal environment provided statutory monopolies for the stock exchanges of Paris and Berlin, the political environments in the two countries were sufficiently different that the rules governing the organization and operation of the central exchanges evolved in markedly different ways. In Paris, a small group of *agents de change* -- a group that, over the century, became very tightly organized as a self-regulating *Compagnie* -- was, when challenged, able to call upon the police powers of the state to maintain their monopoly. As a result, the rules of the Paris Bourse remained essentially unchanged from the time of Napoleon until the breakup of the *Compagnie's* monopoly – a breakup that did not occur until the late 1980s; and, even then, the breakup would probably not have occurred had it not been for pressure from the European Community. By contrast, in Berlin, where there had always been open access to the exchange, the structure imposed by the power of the state guaranteed that non-financial interest groups – groups with little interest in increasing efficiency – were in a position to alter drastically the rules of the exchange; and, as a result, their action greatly reduced the efficiency of the Berlin market and, thus, its effectiveness in helping to solve the twin problems of capital accumulation and mobilization in Germany.

In short, the entire decade of the 1890s, provides a laboratory in which it is possible to study the istinct natural experiments that were being conducted with respect to institutional arrangements that governed the operation of the global financial market of the time, a study that encompasses both the formal financial markets and the array of financial intermediaries that operated on these markets. The tentative conclusion of this paper is that those experiments that exploited the possibilities of expanding the scope of financial markets as opposed to strengthening the security of the banks succeeded in generating more rapid economic growth for their economies, while, at the same time, making these rapidly growing economies more vulnerable to financial crisis.

Table 1a

Value of Shares Quoted in the London Stock Exchange Official List
1853-1913
(Millions of Pounds)

Class of Security	1853	1873	1893	1913
British Government and U.K. Public Bodies	853.6	858.9	901.6	1290.1
Colonial & Foreign Governments & Public Bodies	69.7	486.5	1031.5	2034.4
Railways	225.0	727.7	2419.0	4147.1
Banks and Financial Institutions	13.1	113.2	199.5	609.1
Public Utilities	24.5	32.9	140.3	435.8
Commercial and Industrial	21.9	32.6	172.6	917.6
Mines, Nitrate, Oil, Tea, and Coffee	7.4	8.8	34.6	116.4
Total	1215.2	2260.6	4899.1	9550.5

Table 1b

Percentage of the Value of Shares Quoted in the London Stock Exchange Official List
1853-1913

Class of Security	1853	1873	1893	1913
British Government and U.K. Public Bodies	70.2	37.8	18.4	13.5
Colonial & Foreign Governments & Public Bodies	5.7	21.4	21.1	21.3
Railways	18.5	32.0	49.4	43.4
Banks and Financial Institutions	1.1	5.0	4.0	6.4
Public Utilities	2.0	1.4	2.9	4.6
Commercial and Industrial	1.8	1.4	3.5	9.6
Mines, Nitrate, Oil, Tea, and Coffee	0.6	0.4	0.7	1.2
Total	99.9	99.4	100.0	100.0

Note: Foreign government bonds payable abroad but quoted in London are not included

Source: Ranald Michie, *The London Stock Exchange: A History* (Oxford: The University Press, 1999), p. 89.

Table 2. Financial Assets in the National Balance Sheets of France, Germany, Great Britain and the United States in the Nineteenth Century. (Percent of National Assets)

FRANCE	1850	1880		1913	1976
Claims on FIs	0.8	4.0		9.7	14.8
Corp'n D+E	1.9	7.2		10.6	6.2
Total Fin. Assets	16.2	28.6		39.3	40.9

GERMANY	1850	1875	1895	1913	1977
Claims on FIs	3.4	6.0	11.0	13.0	18.1
Corp'n D+E	1.4	2.7	3.1	4.5	5.2
Total Fin. Assets	15.2	23.5	36.5	39.5	42.6

GREAT BRITAIN	1850	1875	1895	1913	1977
Claims on FIs	5.9	9.5	10.2	11.4	21.5
Corp'n D+E	5.9	8.1	24.3	18.3	6.7
Total Fin. Assets	35.8	37.5	50.9	47.4	52.5

UNITED STATES	1850	1880	1900	1912	1978
Claims on FIs	4.1	5.3	8.3	9.2	13.3
Corp'n D+E	8.3	13.4	12.6	17.3	9.7
Total Fin. Assets	30.0	37.4	39.9	42.9	47.0

Note: FI = Financial Intermediaries; D + E = debt + equity; Fin. = Financial

Source: Raymond W. Goldsmith, *Comparative National Balance Sheets, A Study of Twenty Countries, 1688-1978,* Chicago: University of Chicago Press, 1985. Pp. 216-7, 225, 232-33, 300-01

Table 3
Number of Issues & Annual Volume: The New York Stock Exchange

	Number of Issues		Reported Volume	
			Stocks (No. of Shares) (000's)	Bonds (Par Value) (000's of $'s)
Year	Stocks	Bonds		
1900	376	827	138,981	579,293
1901	379	855	264,935	994,554
1902	384	891	186,715	893,049
1903	383	903	158,497	686,435
1904	374	907	186,921	1,032,655
1905	381	929	260,569	1,026,254
1906	393	937	282,206	677,184
1907	389	929	194,635	529,843
1908	402	984	194,545	1,081,175
1909	426	1,013	212,421	1,314,425
1910	454	1,053	163,705	634,863
1911	480	1,069	125,835	889,076
1912	521	1,083	131,488	675,429
1913	511	1,082	82,849	501,532
1914	511	1,096	47,431	461,652

Source: Peter Wyckoff, *Wall Street and the Stock Markets: A Chronology (1644-1971)* (Philadelphia, New York & London: Chilton Book Company, 1972), pp. 155-156.
Notes: Figures up to and including March 10, 1910, include unlisted trading.

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