The Financial Crisis of 1873 and 19th Century American Corporate Governance

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Abstract

The crisis of 1873 was one of the most severe financial crises in the history of the U.S. The 1873 crisis was associated with banking crises; stock market crashes in a number of countries (Bordo, 1986) and with abrupt reversals in capital flows from England (and the other core European countries) to the countries of new settlement, including the U.S. In this paper we focus on a different aspect of the crisis of 1873 - the connection between the crisis and failures of corporate governance. We argue that tunneling and looting of firms by their executives and directors exacerbated the financial panic and led to an economic depression. The 1873 financial provides evidence that is consistent with the emerging markets crisis of 1997-1998 and exemplifies the importance of corporate governance and investor protection

JEL Classifications:
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1. Introduction

The crisis of 1873 is one of the classic international crises according to Kindleberger (1990). It is also one of Sprague's (1910) four crises of the U.S. National Banking era that eventually led to the creation of the Federal Reserve in 1914. The traditional view of the U.S. crisis sees it as a classic banking panic triggered by the failure of commercial banks linked to the railroad industry. In turn the crisis heralded a six year recession according to the NBER. The 1873 crisis was associated with banking crises, stock market crashes in a number of countries (Bordo, 1986) and with abrupt reversals in capital flows from England (and the other core European countries) to the countries of new settlement, including the U.S. In this paper we focus on a different aspect of the crisis of 1873 - the connection between the crisis and failures of corporate governance.

The relation between corporate governance, financial stability and economic activity is very important. In the aftermath of the East Asian crisis of 1997-98, a few observers argued that bad corporate governance led to the crisis. We argue that similar relationships were present in the crisis of 1873.

The practice of 'tunneling" by executives and directors of railroad companies was a common problem among American railroads during the second half of the nineteenth century. This practice was by direct transfers of funds from investors to managers pockets, or indirect transfers such as financing dividends payments by issuing bonds. Another commonly used practice of 'tunneling' was to establish a construction company with an interlocking directorate with the railroad.

The hypothesis we test is whether this form of bad corporate governance that was probably unknown to investors was an important cause of the financial panic of 1873 and then contributed to recession between 1873 and 1879. There is evidence that the panic of 1873 began on September 18, 1873 with the failure of Jay Cooke and Co, a banking firm that was associated with the corrupted Northern Central railroad. Thus the question is whether bad corporate governance at large helped to trigger the financial crisis and was also a key ingredient in the economic contraction that followed .

Our story is as follows. The corporate malfeasance scandal had serious consequences for a number of railroads, this in turn affected the stock brokers financing these railroads and in turn the commercial banks financing them. This triggered both a stock market crash and a banking panic which ended with a restriction of payments. The crisis in turn led to or greatly accelerated the recession which lasted for 5 years. It also contributed to a sudden stop of capital inflows which directly impeded investment.

Possible channels by which the crisis led to recession include a decline in money supply directly reducing expenditure (the monetarist channel) and by the operation of the bank lending channel whereby banks, in the face of asymmetric information, cut back drastically on their lending to the railroads infected by the scandal. This in turn had serious knock-on effects on other key manufacturing industries linked to the railroads. Thus the corporate governance scandal was a crucial part of the story of the 1873 crisis. It mattered by helping to precipitate the crisis and by being a factor in the recession that followed. Its importance for the recession included its role in aggravating a sudden stop and in triggering a credit squeeze in the corrupt railroad sector.

In section 2 we retell the traditional stories of the crisis of 1873 focusing first on its international dimension, second the banking panic and effects on financial markets and third on possible connections to the real economy. In section 3 we analyze the connection between the crisis and the railroad sector. The collapse of the railroads in turn spilled over into other related sectors which we trace out here.

In section 4 we unravel the corporate governance connection by a detailed examination of the corporate anatomy of the railroads. We also examine the response of the legal system to the crisis and the connection between innovations in the legal system in reaction to the corporate governance scandal that voided directors corruption and the resurgence of domestic and foreign investment. Section 5 concludes with some lessons from history.

2. Background: The Traditional View of the Crisis of 1873.

The earlier literature on the crisis of 1873 focuses on its international dimension and on the domestic banking panic in the fall of 1873.

2.1. The International Dimension

Kindleberger (1990) views 1873 as an international crisis because it was associated with stock market crashes and banking panics in a number of countries. Also see the chronology in Bordo (1986). Kindleberger states that the crisis first occurred in central Europe in May 1873 with stock market crashes in Austria and Germany. According to him the crisis followed property booms in Berlin and Vienna precipitated by liquidity injected into Germany (also Austria and Switzerland) by the French gold indemnity following its defeat in the Franco-Prussian war of 1870-71. The Germanic crashes, according to Kindleberger were linked to the U.S. by the collapse in demand by European investors for U.S. railroad bonds.

The crisis also coincided with sudden stops in capital flows from England to the countries of new settlement. (See figure 1 for the evolution of net capital flows to 12 emerging countries including the U.S. and figure 2 for gross capital flows). These capital flow reversals were preceded by the core countries of Western Europe (England, France and Germany) raising their discount rates (see figure 3). The tightening of monetary policy likely reflected a reaction to an earlier decline in gold reserves consequent upon large capital flows to the U.S. to finance its massive post- civil war boom and similar booms in Canada, Latin America and Australia. The sudden stops and current account reversals led to debt defaults in Latin America (Catao 2006, Bordo 2006).

A third force at work was a shift of the world price level in terms of gold from inflation to deflation, reflecting an incipient gold shortage (Bordo 1990). The gold discoveries of the 1840s and 50s led to a doubling of the world monetary gold stock and a doubling of the world price level by 1870. The rising price level in turn reduced the real price of gold which discouraged gold production and led to the substitution of gold stocks from monetary to non monetary uses. The world price level (in terms of gold) declined from 1873 to 1896 (see figure 4 which shows the UK CPI price level as a proxy for world gold prices). In the U.S. which had been on the inconvertible paper Greenback standard since 1861, prices fell earlier and more rapidly than in the rest of the gold standard world (see figure 4) reflecting the movement towards resumption to the original gold parity as the real economy grew up to a constant money supply (Friedman and Schwartz 1963). This background of newly emerging deflation may have weakened financial balance sheets creating an environment prone to financial distress and crises (Bordo and Wheelock 1999).

2.2. Panic in the U.S

Oliver Sprague's (1910) History of Panics in the National Banking Era is the template for subsequent narratives of the Crisis of 1873. Friedman and Schwartz (1963) follow Sprague and view the 1873 crisis as primarily a US event. According to Sprague

> *The crisis of 1873 was preceded by four years of general economic activity, which was by no means confined to the U.S. In agriculture, manufactures, and transportation much real progress was made, but as subsequent events proved, the pace was more rapid than was consistent with healthy development. Facilities for the production of many commodities were provided beyond the limits of profitable demand, and many enterprises which were enlarged upon a quite insufficient foundation of working capital went to the wall when subjected to the strain of crisis and depression.*

Thus Sprague argues that the sources of the 1873 crisis were overbuilding and overcapacity.

The panic began on September 8th with the collapse of the New York Security and Warehouse Company. The evolution of the panic is described below. As will be discussed in Sections 3 and 4, most of the financial institutions that collapsed during the first few days of the panic were associated with a railroad that had a construction company or that was associated with fraudulent activity.

2.3. Chronology of the Crisis

September 8, 1873. The New York Security and Warehouse Company (NYSWC)

On September 8th the NYSWC with a capital of $ 1,000,000 suspended payment. The company had been lending to southern and southwestern railroads which had been unable to repay. In addition it was learned that two directors of the NYSWC, Francis Skiddy (also the president of the Land Grant Railway & Trust Co. and stock owner in the Missouri, Kansas and Texas), and Sheppard Gandy (stock owner in the Missouri, Kansas and Texas) both heavy operators in sugar - had been seriously embarrassed by the price of gold which had fallen to 112.

September 13, 1873. Kenyon, Cox & Company (KCC)

A stock exchange house in which Daniel Drew (a director in the Canada Southern Railway) was a partner. The Canada Southern railway had a capital stock of $8,000,000 and a $9,000,000 debt. It was 324 miles long but had made no public reports of its operation. KCC were the financial agents of the Canada Southern and had lent the road large sums. They had endeavored to get some English capitalists to take the road off their hands but the negotiations failed and on September 13th they suspended payment.

September 18, 1873. Jay Cooke (JC)

Jay Cooke, the negotiator of Civil War loans and the sponsor of the National Banking system was the most noted financier in America. He was lending to the Northern Pacific but was unable to place its bonds in the American market. His bank was forced to draw upon its own resources to cover its arrears. On September 18th, Jay Cooke suspended. (Maybe discuss the connection to the political corruption scandal here.) Following the collapse of Jay Cooke, three banks: Richard Schell, Robinson and Suydam from New York, and E.W. Clark from Philadelphia, announced suspension.

September 18, 1873. First National Bank of Washington

The First National Bank of Washington was organized and owned by Jay Cooke. The FNBW suspended on September 18th.

September 19, 1873. Fisk and Hatch (FH)

On 10:30 AM the important house of Fisk and Hatch which had been sustaining the Chesapeake and Ohio, announced its suspension, due to an unexpected calling of its loans to the amount of $ 1,500,000 by its directors. “It is impossible.” said the head of the firm, “to obtain money on any kind of collateral and we could not afford to sacrifice our securities.”

September 20, 1873. Union Trust Company (FH)

The failure of the Union Trust company involved two scandals. The company was financial agent for the Lake Shore and Michigan Southern Railroad, and had paid out $ 1,750,000 in bond interest for the railroad. Its suspension was due to inability to recover this sum and also to the defalcation of its secretary, C.T. Carleton who had disappeared with more than $350,000.

These events led to panic selling on the New York Stock Exchange and the subsequent closing of the market for 10 days (see figure 5 which shows the S&P Industrial Index and S&P Railroad index) . In response to a scramble for liquidity (a banking panic) currency went to a premium relative to deposits in New York and interior banks restricted payments in greenbacks i.e. the convertibility of deposits into currency.[*] Figure 6 shows a drop in the deposit currency ratio between the second and the fourth quarters of 1873.

By October 22 the pressure eased and convertibility was obtainable virtually at par. Gold was exported to the U.S. on September 20 by the Bank of England and other European central banks until the end of October. Since investors in England and Germany held US securities, the stock market crash spread abroad with sharp sell-offs on the London Stock Exchange on November 6 and the Bank of England raised its Bank rate to 9% the next day.

According to Schwartz (1986), the crisis occurred because no institutional framework existed to satisfy the increased demand for high powered money by the public and the banks. (See figure 6 above and figure 7 which shows a drop in money supply during and after the crisis.) Clearing House loan certificates were issued and the Treasury redeemed greenbacks with government debt but too late to prevent the crisis. The crisis was also associated with a sharp spike in short term interest rates. (See figure

8 which shows both call rates and the three month rate on prime commercial paper). Call loans spiked and national bank loans declined. (see figures 9 and 10). The financial tightening led to an increase in debt defaults, especially in railroads. (see figure 11).

While the panic was short lived it left long-term consequences. Aggregate investment declined for 2 years, (see figure 12) as did real GDP (see figure 13). As discussed above, the economic slowdown was also accompanied by a decline in capital inflows into the U.S. According to Friedman and Schwartz:

> *Capital inflows declined drastically after 1873 and were soon replaced by net outflows… The decline in capital inflows reflected also the widening financial difficulties of railroads and the default of some roads on their obligations. These contributed importantly to banking failures that set off the financial panic of 1873. In its turn, one consequence of the panic was to intensify the difficulties of the railroads.*[†]

The decline in capital inflows into the U.S. can be seen in figure 14 (source: Davis and Huttenback). As the figure demonstrates, there was a sharp decline in UK investment in the U.S. between the years 1874 and 1879.

3. The Effects of the Crisis on the Railroads

Sprague (1910) and other authors argued that overinvestment in the railroad sector eventually led to the collapse of many railroads (especially those in the west) that were built ahead of demand. There is disagreement about the intensity of the recession of the 1870s. The NBER business cycle data base suggests that the depression of the 1870s was second only to the Great Depression. However recent reworking of the data (Romer 1989) and Davis (2004) suggests that the recession was less severe. Yet even Davis' new Industrial Production data suggests that several sectors - especially the railroad sector - suffered from a severe contraction. Figure 15 displays the sharp decline in the mileage of newly built railroads from 1873 to 1878. Likewise figure 16 shows the decline in the number of locomotives manufactured by Baldwin Locomotives of Philadelphia.

Moreover it seems likely that the slowdown in the railroad sector had spillovers to other sectors as well. Figure 17 presents the levels of economic activity in three sectors: 1) Chemicals and Fuels; 2) Machinery; 3) Metals (Source Davis). As the figure shows, there was a slowdown in all 3 sectors, with

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[*] The US was off the gold standard from 1865 to 1879 and was on the Greenback paper money standard.
[†] Friedman and Schwartz (1963) pp 77-78.

the machinery sector experiencing the sharpest decline. Finally, figure 18 shows a finer breakdown of the data, with a sharp decline in the manufacturing of locomotives and fire engines, but only a moderate decline in pig iron (source; Davis).

The effect of the panic on the railroad was well described by the trade journals of the time. For example see the following excerpt from the Railroad Gazette, October 4, 1873, page 406.

> *The ill effects of the recent panic have operated very plainly upon the railroad companies. Their freight receipts have fallen off remarkably, and the decrease in passenger traffic is very plain. It has stopped all construction, except such as was absolutely necessary for the running of the roads, and the trainmen, have been reduced in some instances very decidedly. The Chicago & Northwestern road has already discharged nearly a thousand men, engaged mostly in the work of construction. The Illinois Central cut off half an hour from the time of their men, beginning October 1st. The panic has almost entirely stopped the shipment eastward by rail of grain or stock. Parties are beginning to offer to ship grain by lake (on which rates are at least a third lower than before the panic),waiting for their freight until the grain is sold. Shippers cannot get money to pay their own freight, and the railway companies are, as far as possible, carrying the freights until returns from sales at the East can be made. Even the grain that is already sold in the country on options and which ought to be arriving is largely detained at the places of production, simply because it is utterly impossible for the buyers to take it and pay for it. But this state of things can hardly continue long. There is plenty of grain in the west and the money for its purchase must be forthcoming before a great while. The Lake Short & Michigan southern Company still continues the work of constructing its double tracks, and it is of so much importance that it will probably not be stopped in any event. But the projected roads towards the west are all practically stopped, and no more new money will be constructed as long as the market for bonds is so bad.*

Contemporary observers argued that the panic of 1873, the fact that the financial markets have dried up in the mid 1870s, and the economic recession of the 1870s were all related, as is evident in the following excerpt from ‘The Railway World’ December 18th, 1875.

> ***Why capitalists are still timid?*** *The enormous losses in railroad stocks and bonds have not only shaken faith in that class of investment, but have disinclined capitalists to embark in anything where success depends upon the integrity of their fellowmen. The Toledo and Wabash Railway*

may be taken as a fair indication of the dishonesty that has characterized the management of some of our best roads. In the earlier history of the this company it was saddled with some four or five millions of debt for branch lines that seemed to have been undertaken with the sole object of enriching their projectors. These lines dart out from the main road at every conceivable angle, and finally come to a dead halt where there is no connection with either river, road, or any other line of travel. The people on the route are doubtless benefited, and their lands enhanced in value--two considerations that probably induced them to do the work at the least possible cost to themselves. These darting branches are mortgaged for sums equal to the value of the trunk lines, amounting in some cases to several times their cost, and then company is saddled with the payment of interest. This is one of the modes of peculation which suggests itself as the eye passes over a map of the Wabash road.

These are briefly the facts in the case of this single road. They tell the story of the rise and fall of the most valuable railways in our country. The lesson is a sad one, and its effects spreads over us like a huge black cloud, inducing distrust of a form of investment once the most popular of any in the land, and depreciating the market value even of those roads whose affairs are managed with scrupulous economy and integrity. The true remedy is apparent. Look carefully into the private character of the custodians of such valuable interests. The race of good men is not yet distinct. It is not even diminished in numbers.

Sprague (1910) argues that the collapse of many railroads after the financial panic of September 1873 and the slow down in the construction of new railroads in the years 1874-1878 (see figures 15 and 16) was driven by overinvestment and excess capacity. We argue that overinvestment in the railroad sector was driven by poor corporate governance and monitoring by investors. We now turn to describe the corporate governance environment in the 1860s and early 1870s and its relation to railroad construction and overinvestment.

4. The Corporate Governance Environment in the 1860's – early 1870s.

'Tunneling' – the transfer of resources out of a company to its controlling shareholders (who are typically also top executives in the company) – is of major importance in corporate governance (see Grossman and Hart (1988), Hart (1995), Shleifer and Vishny (1997), Johnson, La Porta, Lopez-De-Silanes, and Shleifer (2007), Dyck and Zingales (2004)). Various forms of tunneling include transfer pricing, taking of corporate opportunities, self-serving financial transactions, and outright theft of corporate assets. Recent research in corporate finance suggest that tunneling is prevalent in emerging countries or countries with

weak investor protection (Dyck and Zingales (2004), Djankov, La Porta, Lopez-De-Silanes, and Shleifer (2007)). Moreover, there is some evidence that tunneling and diversion of corporate resources were associated with the U.S. Savings and loans crisis (Akerlof and Romer (1993)), and the Asian and Mexican financial crises (Johnson et al. (2000), La Porta, lopez-de-Silanes, and Zamarripa (2003)). We argue that tunneling was an important cause of the financial panic of 1873 and then contributed to recession between 1873 and 1879.

The early American practice of tunneling by railroad executives was conducted by direct transfers of funds from investors to managers' pockets, or indirect transfers such as financing dividends payments by issuing bonds. Another commonly used practice of 'tunneling' was to establish a construction company with an interlocking directorate with the railroad. The construction company was established to build the construction and the road of a railroad. The construction company was typically owned by the railroad executives and directors who controlled the railroad company. It has been argued that the railroad executives and directors transferred funding from the railroad to the construction companies directly and indirectly by charging the railroad which they controlled, exuberant amounts for the construction of the road by the company they owned. Table 1 lists a few notable examples of railroads that had construction companies in the 1860s and 1870s and that were associated with corporate scandals and frauds.

The practice of tunneling and looting of railroads is illustrated by the case of the Chicago, Burlington and Quincy and the River Roads construction company in 1873. John M. Forbes, representing eastern bondholders, discovered that six of the twelve members of the board of directors, including the president, were also stockholders in a construction company. Furthermore, according to a contract signed between the construction company and the railroad, the construction company was released from any obligation to build after it ran out of cash - despite the fact that the railroad company had already paid the full amount for the road which had not yet been constructed. The following excerpt is from the letters of John M. Forbes:

> ***Question to the president:*** *'What have you been doing with the company's money?'*
>
> ***Answer***. *'I have been paying the notes which I have given as president.'*
>
> ***Question to the president:*** *'What are the notes? Where is the record of them? Is it in the treasurer's account?'*
> ***Answer.*** *'It is not in the company's books, but can be ascertained.'*
>
> ***Question to the president:*** *'What were the notes given for?'*

Answer. *'Chiefly to meet the obligations of two construction companies, of which I was president also, and which built the roads of each company by contract.'*

Question to the president: *'Then you, as a president of the railroad company, are paying yourself as president of construction company, without the supervision of the treasurer or of any one else, and without any auditing of your accounts?'*

Answer. *'Yes'*

Question to the president: *'Has the construction company received the full amount of money, of stocks, of lands, for which they agreed to construct and equip the roads?'*

Answer. *'Yes, they have, leaving unfinished about forty miles of Turkey branch and twelve miles on the lower road.*[‡]

Likewise, a contemporary observer suggested that the construction company scheme was a common practice among 19th century American railroads.

Perhaps I may best succeed in making myself understood on this subject by illustrating the way in which our railroads are usually built. Under the laws of the State of New York - which are a fair sample of the laws of most other states- a number of persons from a company under the general railroad laws, registering at Albany the proposed route of the road, the amount of capital stock and bonds to be issued, and a few other particulars required in the papers of incorporation. The incorporation then proceeds to form themselves into a syndicate of company, for the purpose of contracting to build and equip the road. Here comes the first step in the system of ``crooked" financiering. In their capacity of incorporators, the same men make a contract with themselves, in the capacity of constructors. Of course, they do not fail to make a bargain to suit their own interests. They would be more than human if they did. Usually, the bargain is that the construction company undertakes to build the road for 80 to 100 percent of the face value of the first mortgage bonds, with an equal amount of stock, and sometimes also a certain amount of second mortgage thrown in, virtually without consideration. The first mortgages are supposed to represent the real cash outlay on the construction and equipment;

but, as a matter of fact, the true cash cost of the work done and materials furnished ranges from 60 to 80 percent of the amount of first lien transferred to the constructors. The Construction Company disposes of the bonds, partly by negotiating their sale to the public through bankers, at an advance upon the valuation at which they had received them, and partly by using them in payment for rails and equipment. Beyond the profits made from building the road for the first mortgage bonds, there remains in the hands of the constructors the entire capital stock and any second mortgage bonds they may have received, as a clear bonus, to be held for future appreciation, and to keep control of the company and be ultimately sold on a market deftly manipulated for that purpose...This is the way in which a large majority of our railroads have been and others are still constructed. It will thus be seen that the actual cash cost of a railroad is ordinarily less then 50 percent of the stock and bonds issued against the property, and that its first mortgage exceeds the amount of the legitimate actual cost of the road.

The basis of all the discredit, the embarrassment, the bankruptcies and the robberies of our railroad system is thus laid at the inception of the enterprises. They rest upon an intrinsically rotten and dishonest foundation; and the evil is far from having reached the end of its mischief to the financial, political and social interests of the country. In some few cases, railroads thus exorbitantly capitalized have proved able to earn interest on their debt, provide for additional outlays on construction and betterments, and even to pay dividends on their stock; but, in a large majority of cases, they have had to undergo a process of financial reconstruction, in order to bring the debts of the company within its ability to meet its fixed charges.

According to Stover, fraud was found not only in Western railroads but also in Southern railroads:

Too frequently in the early 1870's northern management of southern railroads was associated with uneconomical construction, unwise financing, or even outright fraud, illustrations of which were C. P. Huntington's Chesapeake and Ohio, Colonel H. S. McComb's New Orleans, St. Louis and Chicago, and John Stanton's Alabama and Chattanooga.[§]

Another notable example is the case of the Missouri, Kansas & Texas Railway, often known as the Katy that was formed in 1870 as the successor of the Union Pacific Southern Branch. Judge Levi Parsons was the president of the Katy from 1868 to 1874 and its main line was completed by early 1873. The road of

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[‡] Ripley, (1915) p. 24.
[§] Stover (1955) p. 133.

the Katy was built by the Land Grant Railway and Trust Company construction company. Table 2 exemplifies the agency problems associated with the construction company scheme. As Table 2 shows 24.52% of the voting rights in the Missouri, Kansas & Texas Railway were held by corporate executives, and 26.57% of the voting rights were owned by the Land Grant Railway and Trust Company construction company. Taken together, the corporate insiders and the construction company owned 51.08% of the voting rights of the Missouri, Kansas & Texas Railway. Furthermore, an additional stake of 3.94% was owned directly by D. Crawford Jr. who was the treasurer of the Land Grant Railway and Trust Company construction company. The president of the Land Grant Railway and Trust Company construction company was Francis Skiddy who served as a director in the Missouri, Kansas & Texas Railway. (See Table 3). The Missouri, Kansas & Texas Railway entered into receivership after the panic of 1873, and when it was discovered that the Land Grant Railway and Trust Company looted the cash of the Missouri, Kansas & Texas Railway. Many other examples by contemporary writers suggest that corporate insiders including managers and directors used their power and inside information to exploit outside investors.

5. Summary and conclusion

TBD.

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Figure 1: Net Capital Flows to Emerging Countries 1865-1880. Sample of 24 countries includes Argentina, Australia, Austria, Brazil, Canada, China, Colombia, Denmark, Egypt, Finland, Greece, India, Italy, Japan, New Zealand, Norway, Peru, Portugal, Russia, South Africa, Spain, Sweden, US and Uruguay. Source: Global Financial Data.

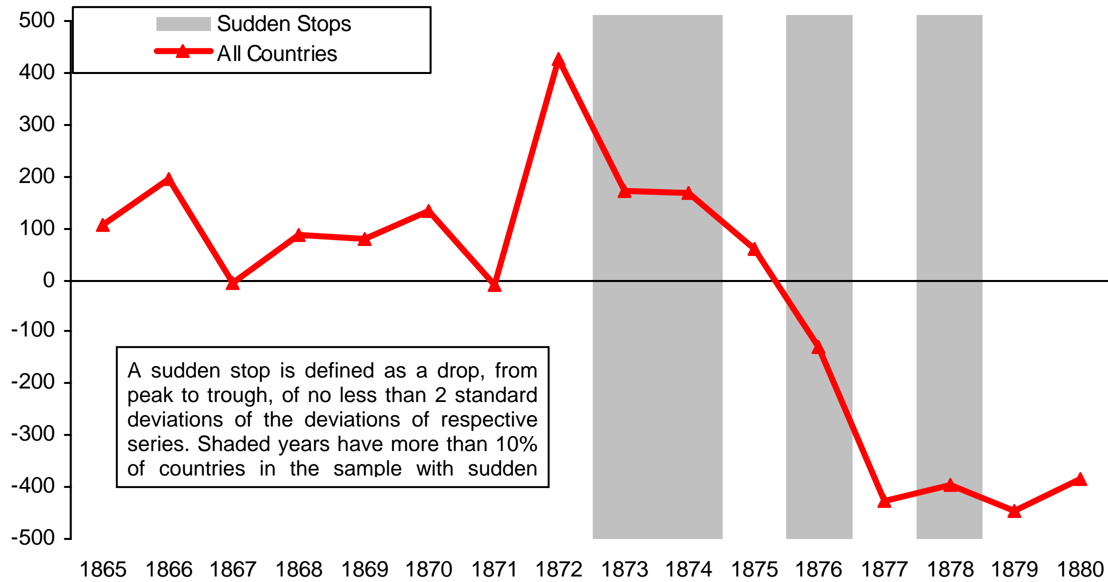

Figure 2: Gross Capital Flows to Emerging Countries 1865-1880 (Gross portfolio calls on London, in thousand pounds). Sample of 22 countries includes Argentina, Australia, Austria, Brasil, Canada, Chile, China, Cuba, Egypt, Greece, India, Italy, Japan, Mexico, New Zealand, Peru, Russia, South Africa, Spain, Turkey, US, Uruguay. Source: Stone (1999).

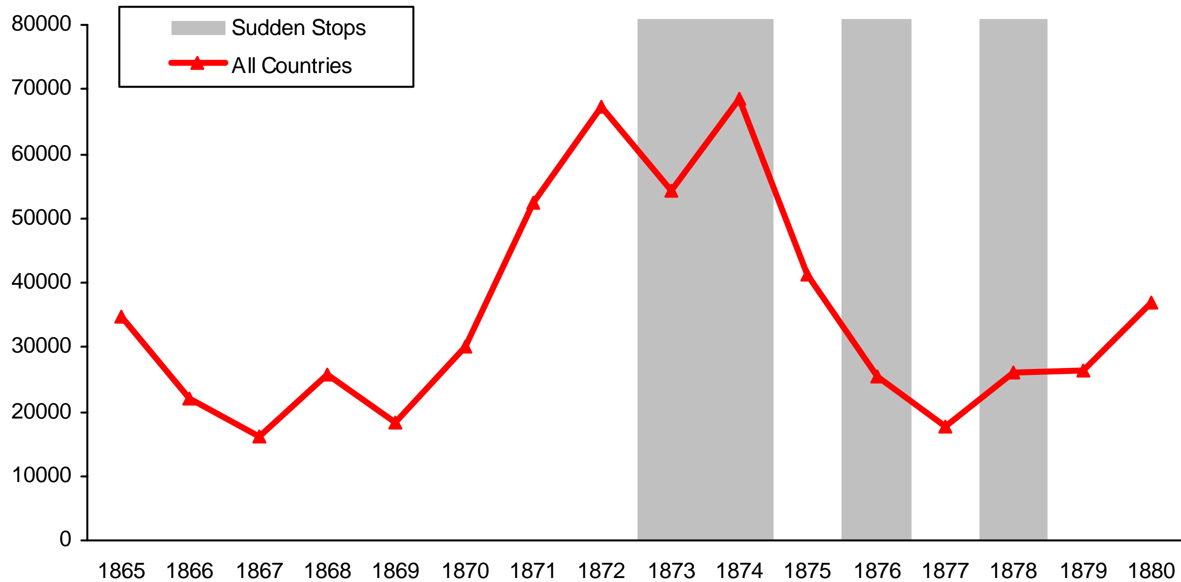

Figure 3: Discount Rates for Core Countries and Sudden Stops for Emerging Countries 1865-1880. Source: Homer and Sylla (2005).

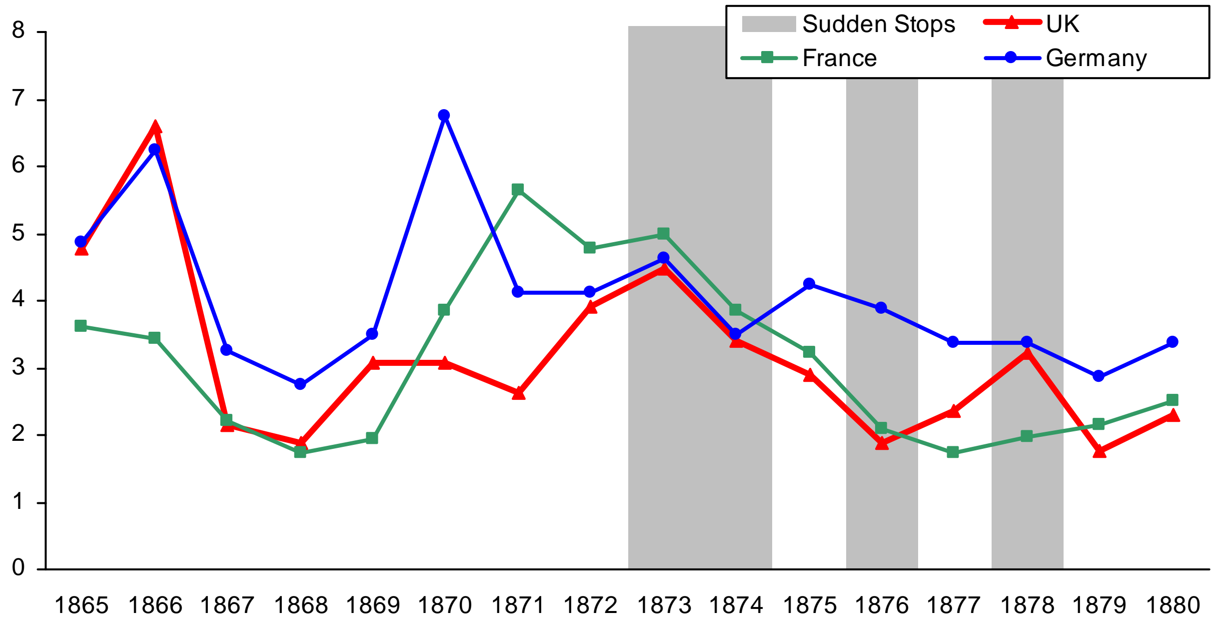

Figure 4: UK and US CPI 1865-1880.

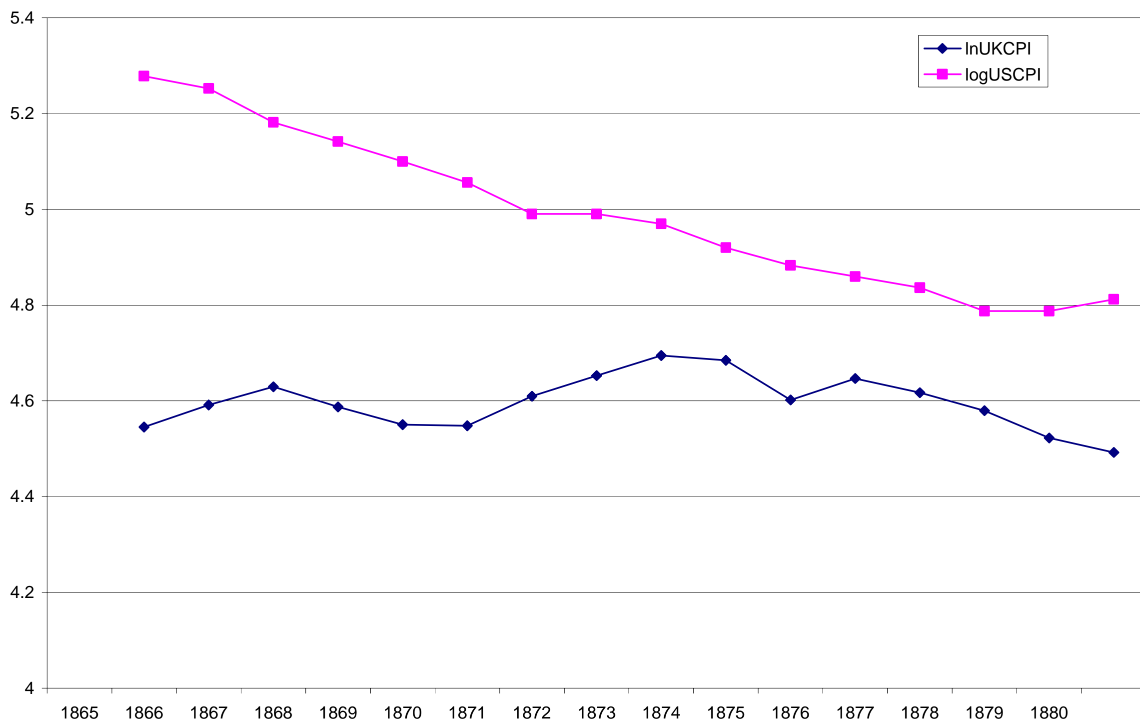

Figure 5: S&P Indices 1865-1880.

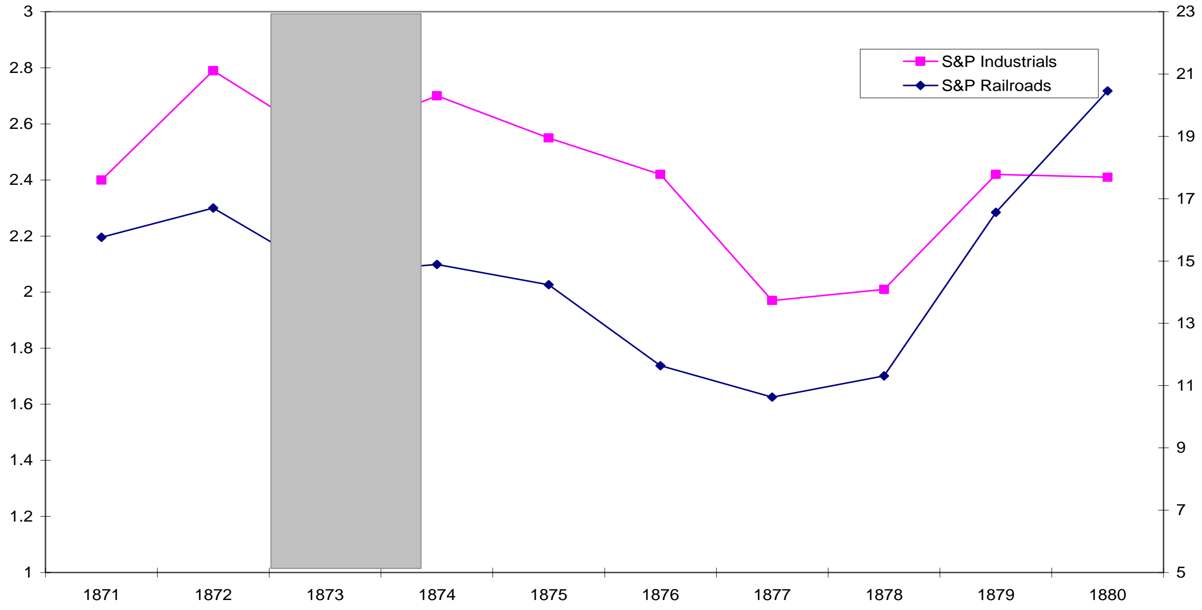

Figure 6: Deposit to Currency Ratio 1867-1880.

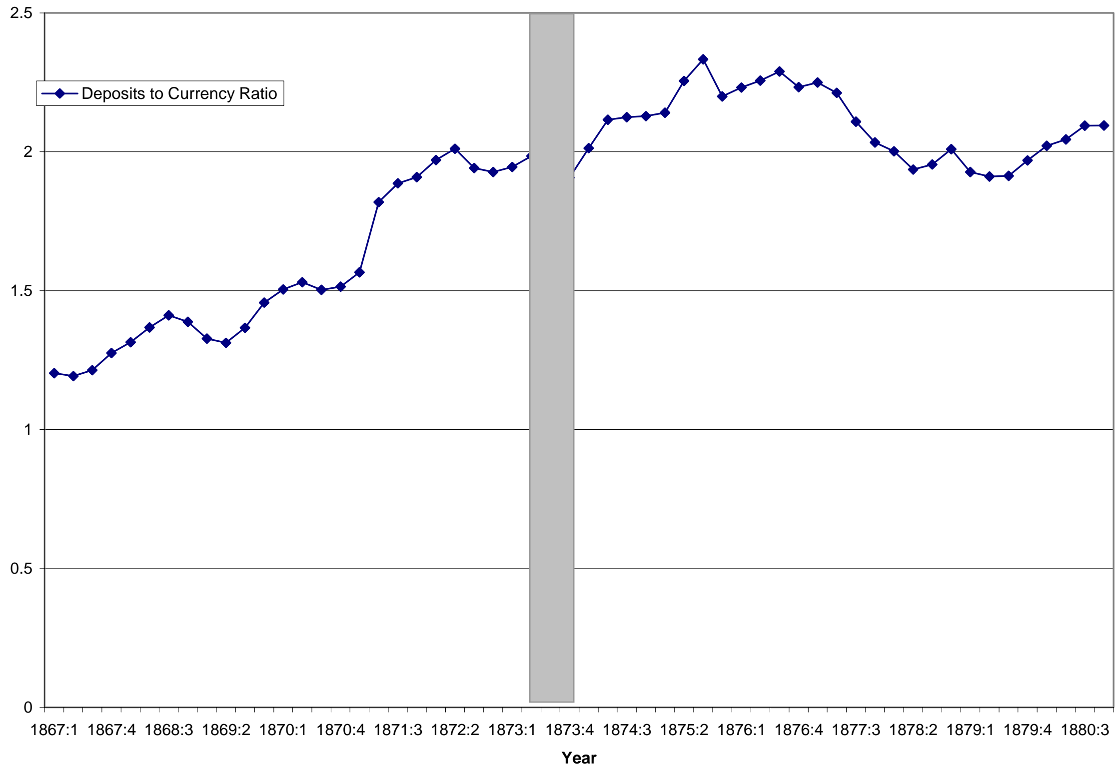

Figure 7: Log of M2 1867-1880.

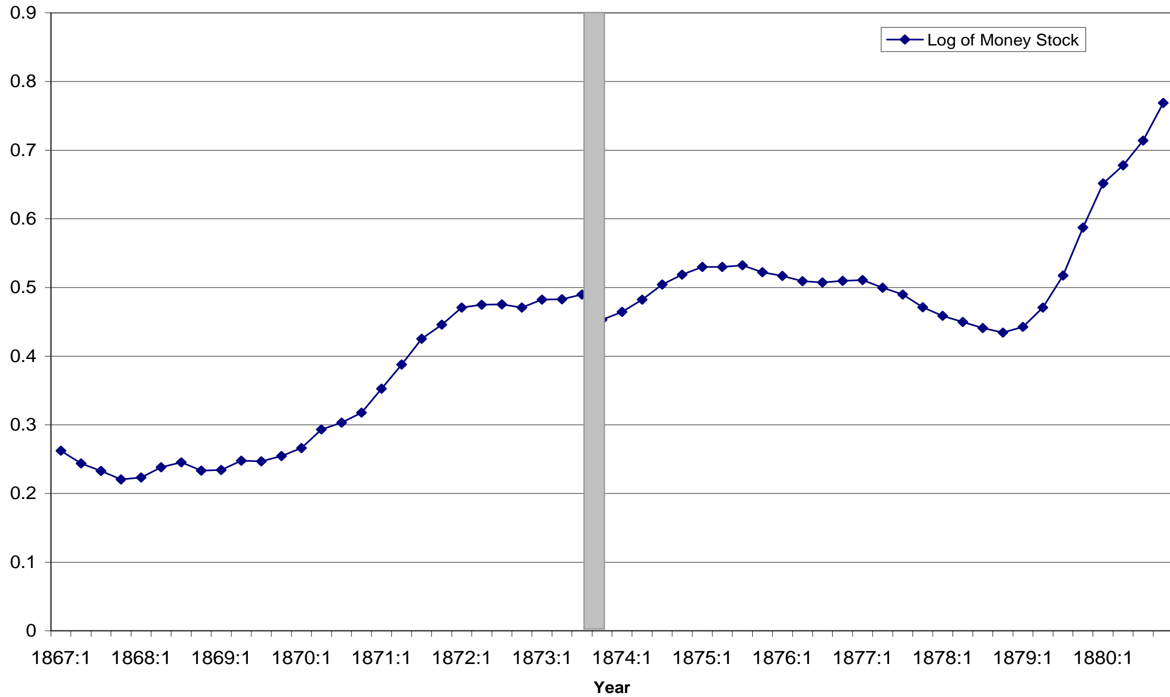

Figure 8: Interest Rates 1870-1874.

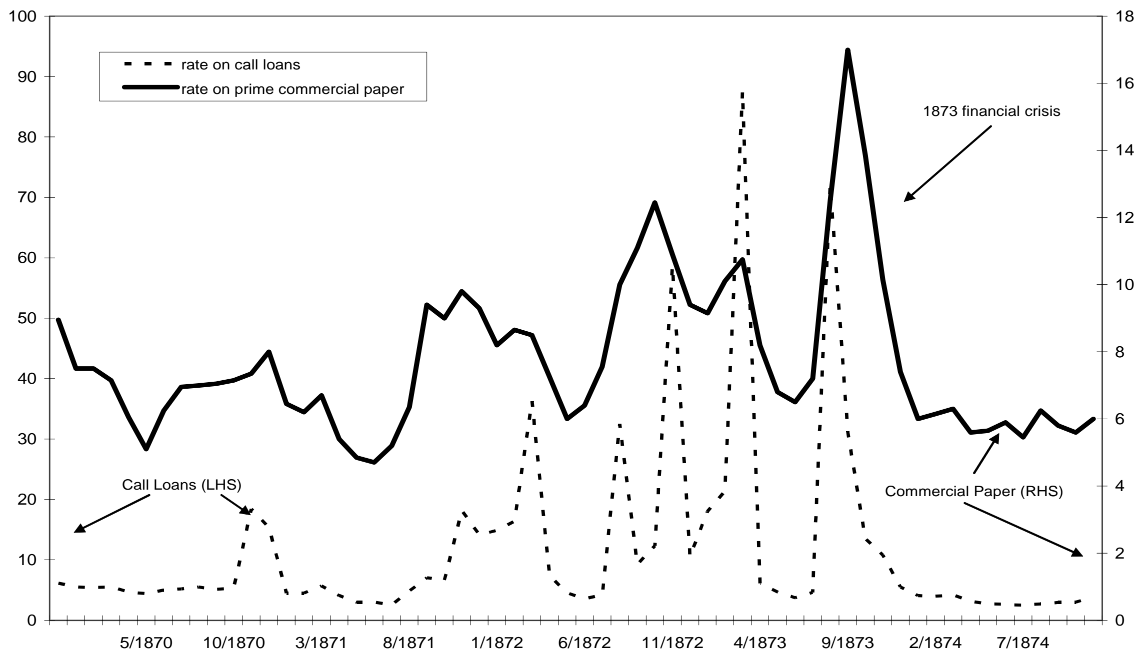

Figure 9: Interest Rates on Call Loans 1865-1880.

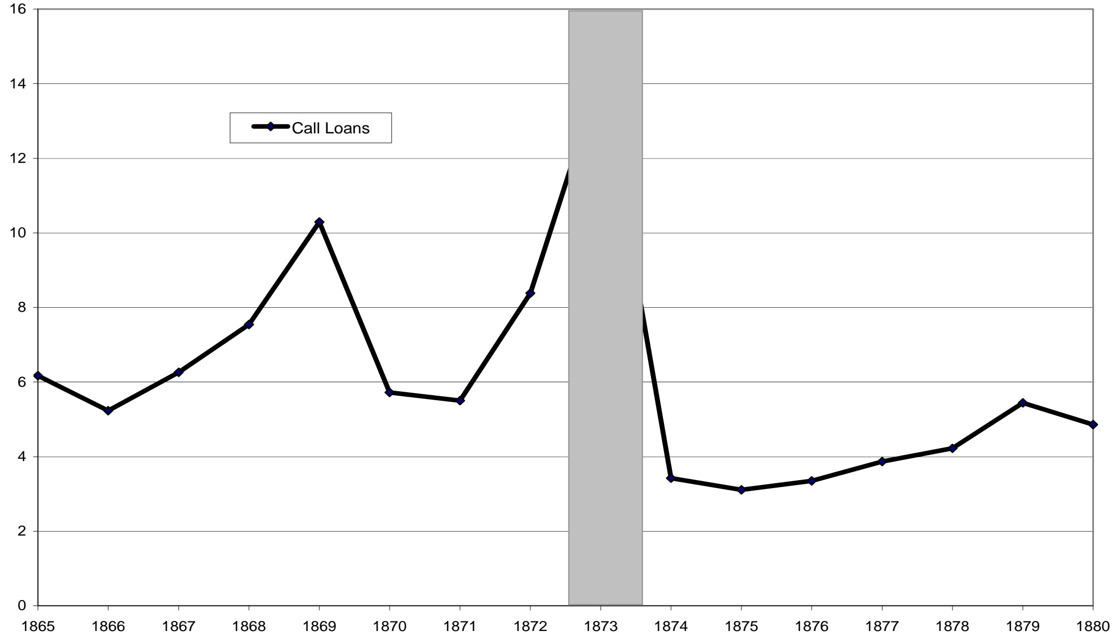

Figure 10: Log National Banks/Loans and Discounts 1865-1880.

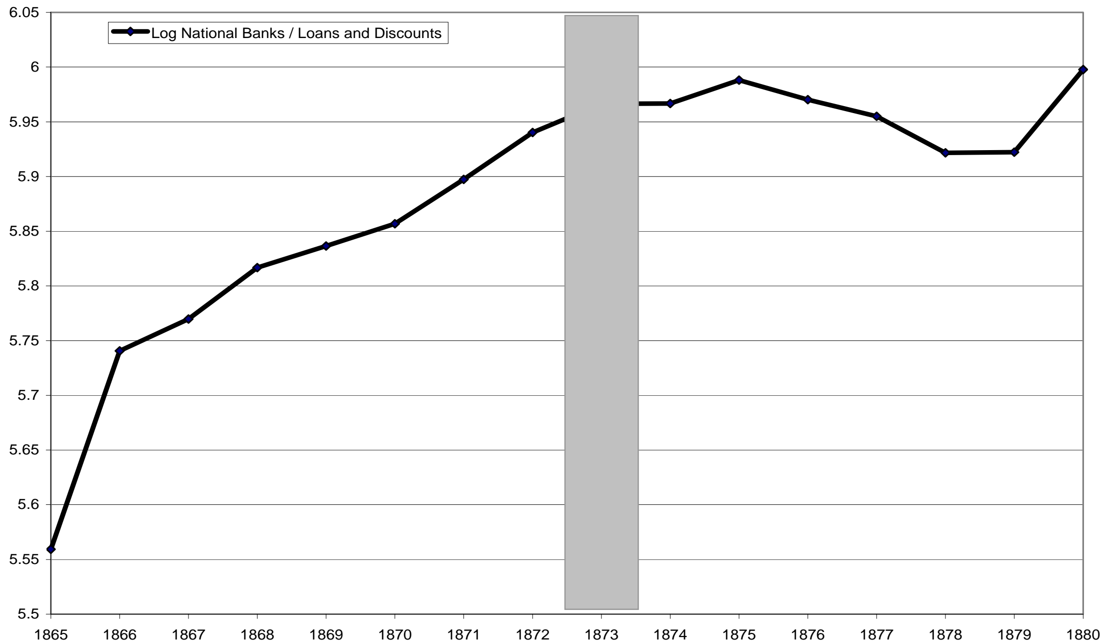

Figure 11: Defaults on Railroad Bonds 1870-1874.

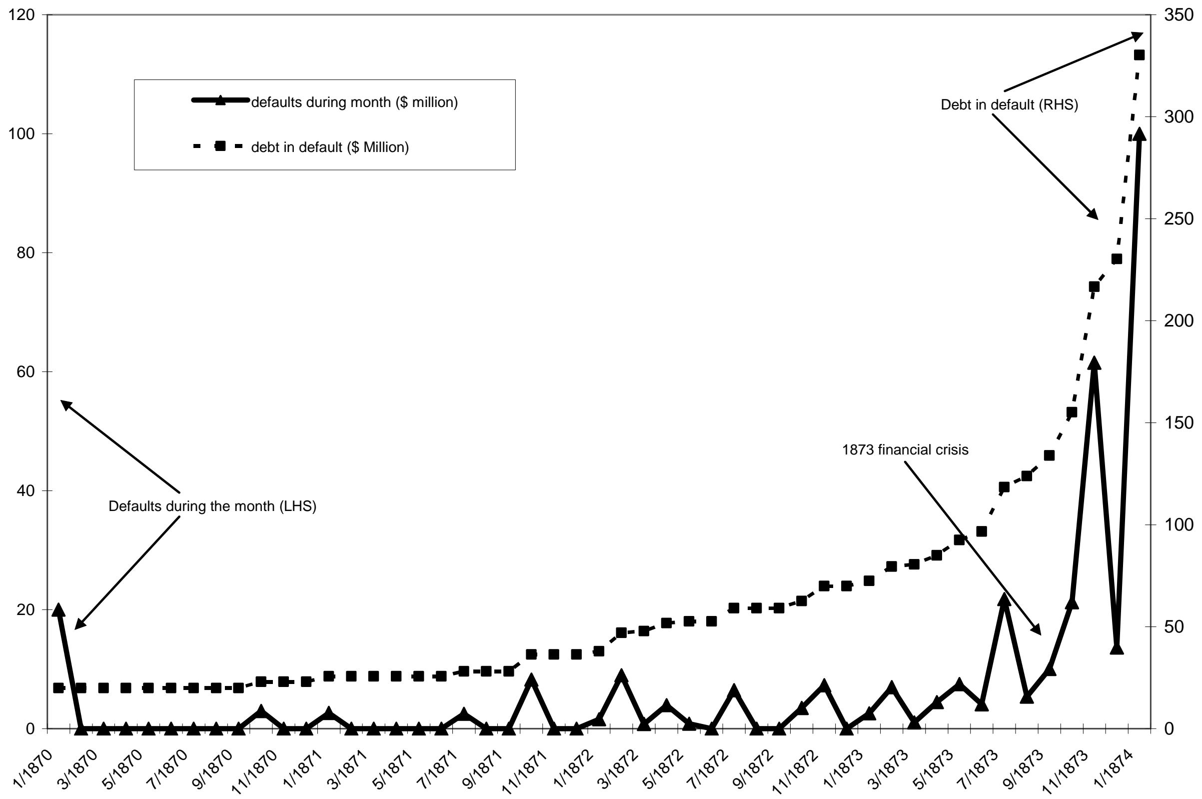

Figure 12: Log Investment (Capital Formation) 1869-1880.

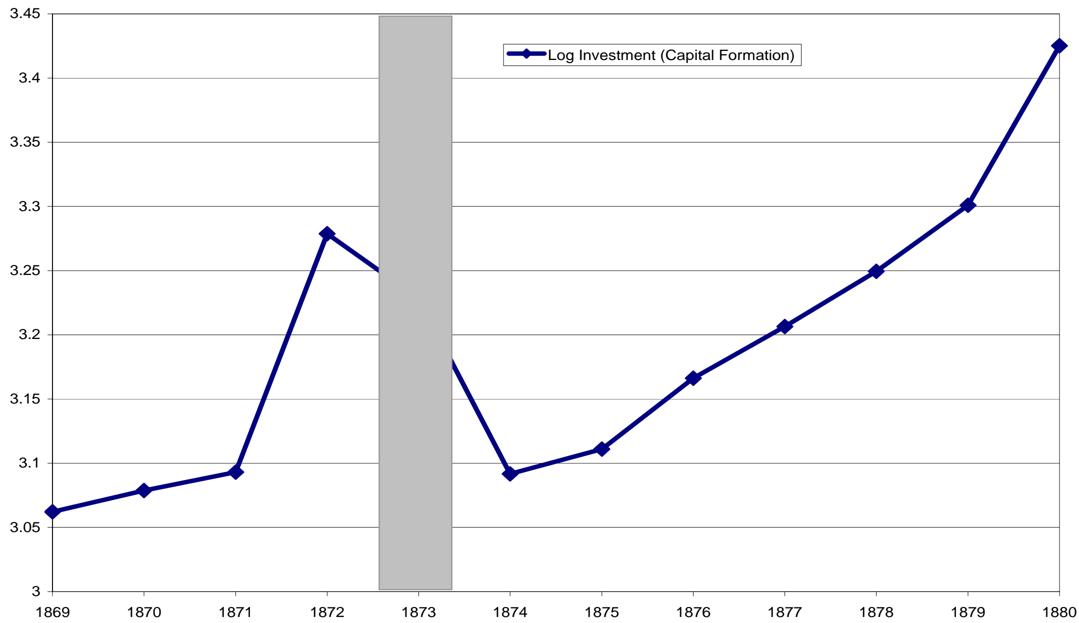

Figure 13: Log GNP (Galman-Kuznets) 1869-1880.

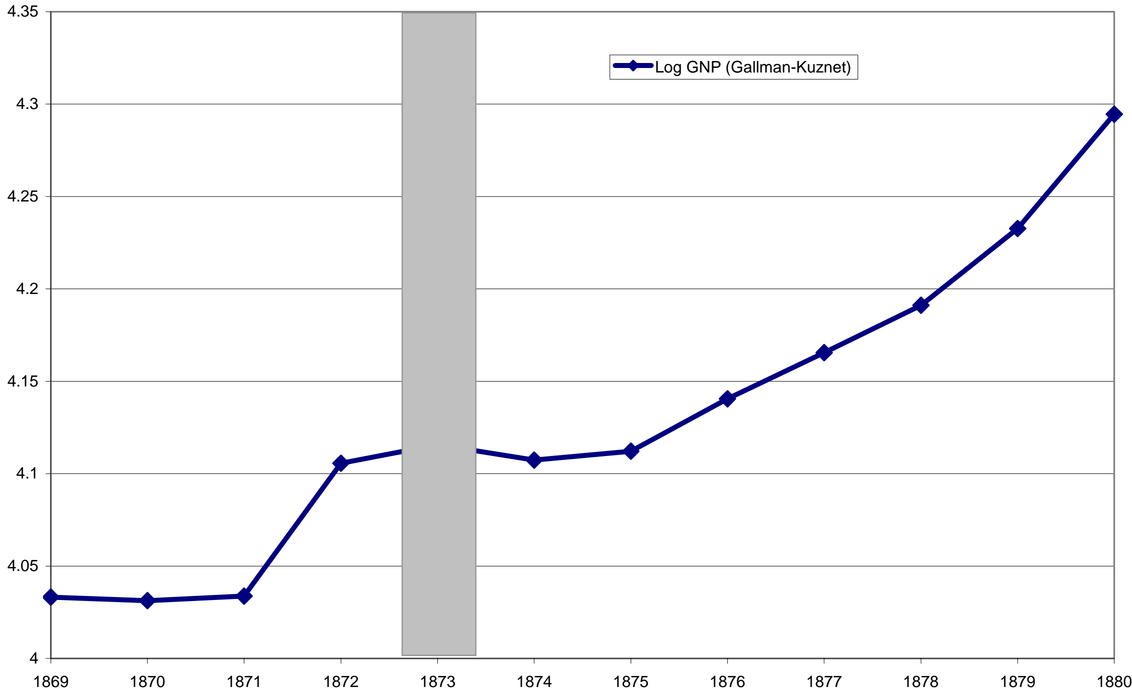

Figure 14: UK Investment in the US (Flow - Millions of Doillars) 1865-1885. Source: Davis and Huttenback

Figure 15: Miles of Railroads Built 1860-1880. Source: Poor's Manuals, selected years.

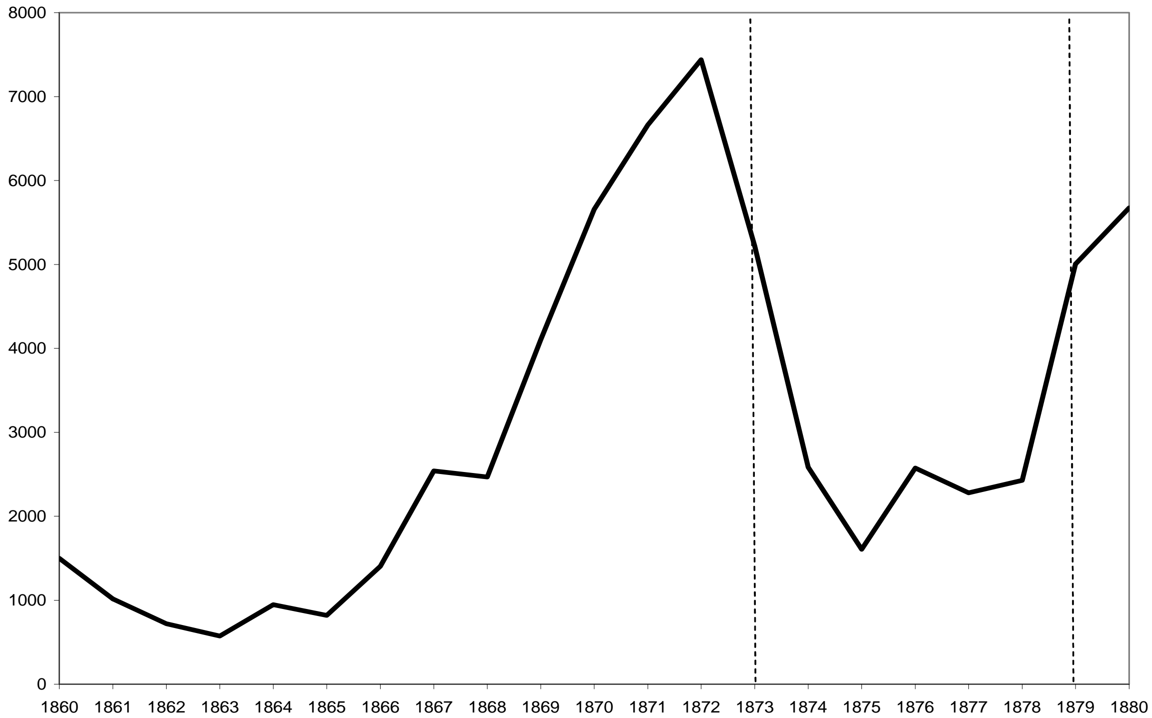

Figure 16: Railroad Mileage and Baldwin's Locomotives Built 1860-1880. Source: The Baldwin Locomotive Works 1831-1915 and Poor's Manuals.

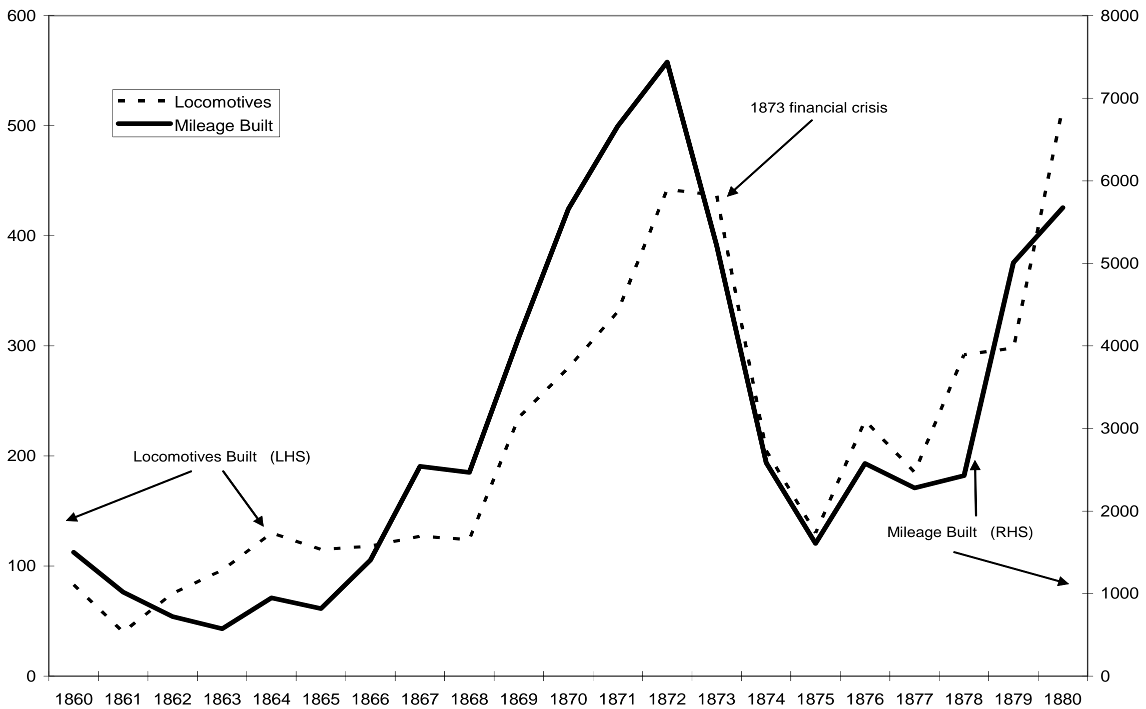

Figure 17: Employment at Baldwin Locomotives 1860 1880. Source: The Baldwin Locomotive Works 1831-1915 and Poor's Manuals.

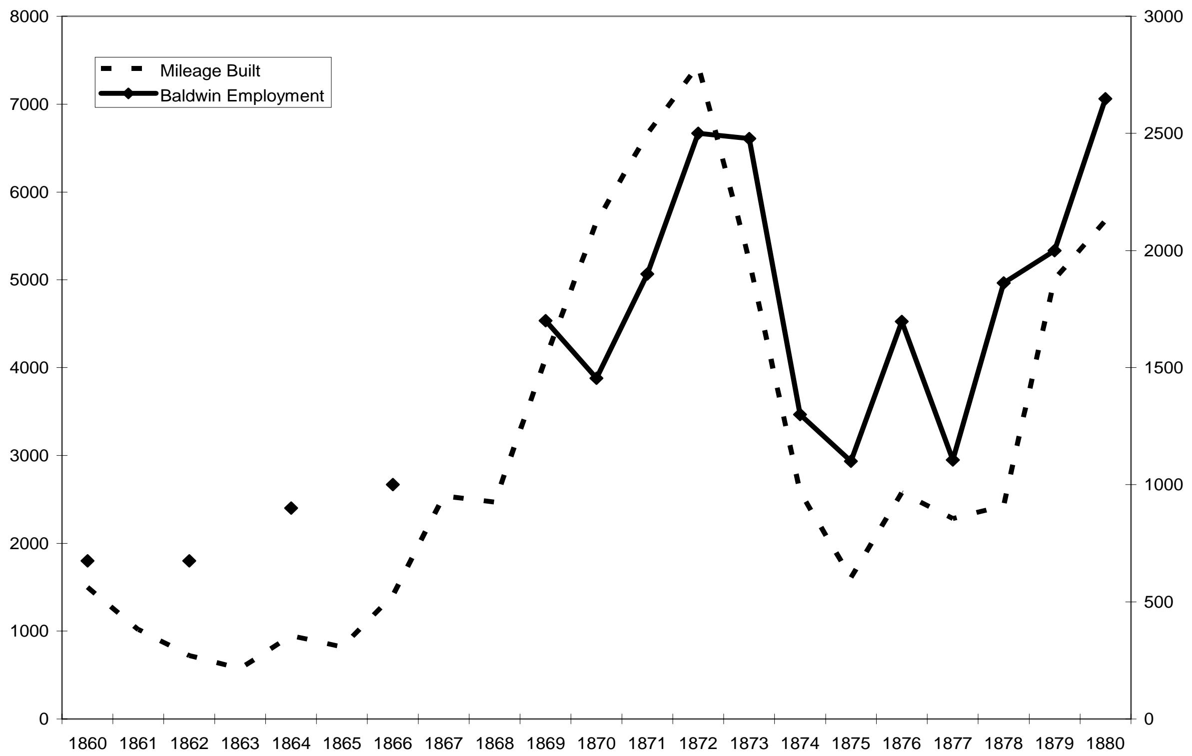

Figure 18: Industrial Production in Selected Sectors 1860 1880. Source: Davis (2003).

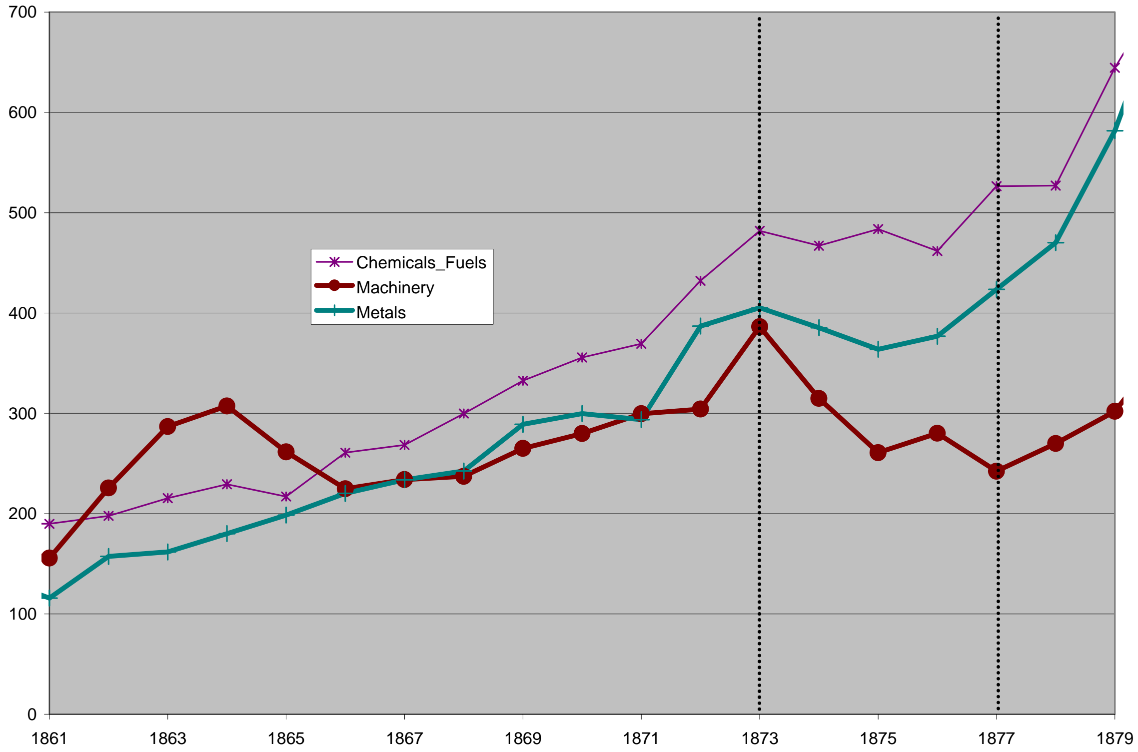

Figure 19: Industrial Production Railroads Related Sectors 1860 1880. Source: Davis (2003).

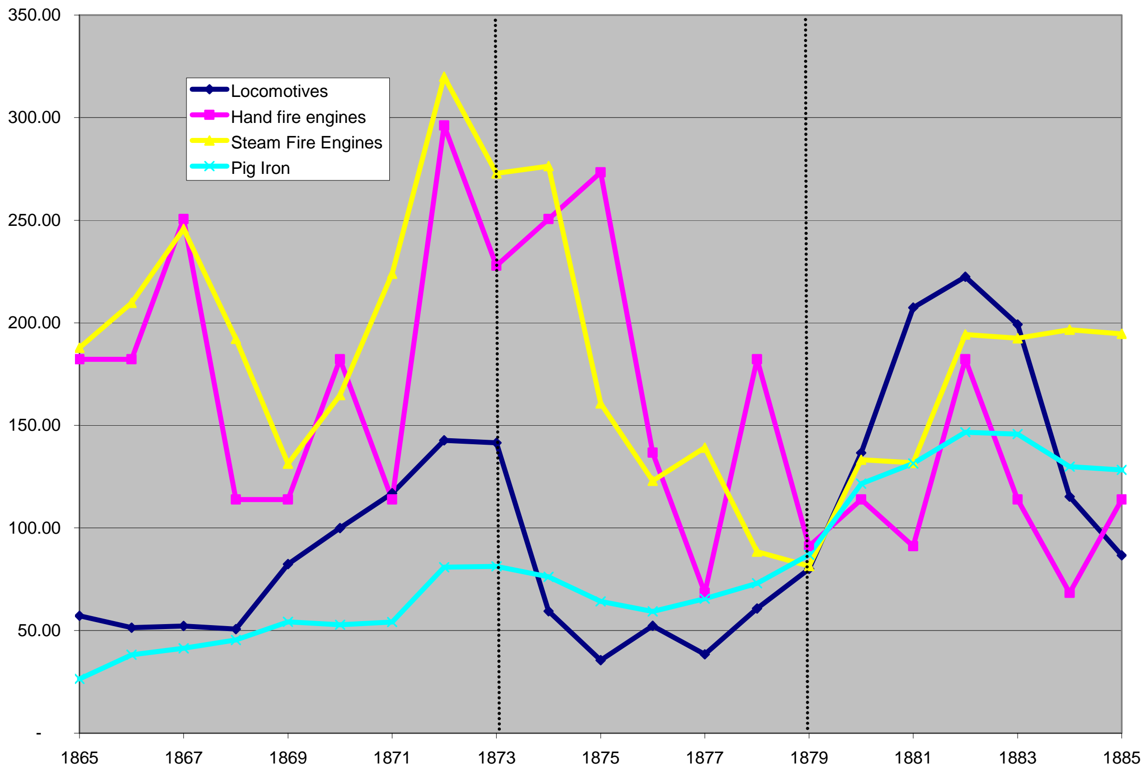

Table 1: Railroads and Construction Companies.

Period	Railroad	Construction Company
	Gilman, Clinton, and Springfield	The Morgan Improvement Company
1872-1874	Milwaukee and St. Paul	
1870-1874	Missouri, Kansas and Texas	Land Grant Railway and Trust Company
1871	Arkansas Central	
1872	Union Pacific	Credit Mobilier
1873	Northern Pacific	The Lake Superior & Puget Sound Land Company Oregon Railway and navigation Company Oregon and Transcontinental Company
1873	Chesapeake and Ohio	
Early 1870s	New Orleans, St. Louis and Chicago	
Early 1870s	Alabama and Chattanooga	
Early 1870s	Central Pacific	The Charles Crocker and Company Contract and Finance company
1873	Chicago, Burlington and Quincy	The River Roads
1862-1864	Southern Pacific	San Francisco and San Jose
1860s-1870s	California Pacific	
1865	Dubuque and Sioux City	

Table 2: Katy Voting Shares as of May 18, 1870.

Stockholder	Position	# of Shares	% of Voting Rights
Morris County, Kansas		1,650	4.33
Lyon County, Kansas		2,000	5.24
J. B. Dickinson	erstwhile president	1,501	3.93
Levi Parsons	**president**	**1,601**	**4.20**
George Denison	**vice president**	**3,001**	**7.87**
D. Crawford, Jr.	**treasurer**	**3,001**	**7.87**
Francis Skiddy	**director in Katy, and president of Land Grant Railway**	**1,749**	**4.58**
August Belmont		1,501	3.93
Levi P. Morton		1	0.00
J. Seligman		1	0.00
Shepard Gandy		1	0.00
R. S. Stevens	**General manager**	**1**	**0.00**
Henry S. Warren		1,390	3.64
D. Crawford, Jr.	Trustee	1,504	3.94
D. Crawford and G. Denison	Trustees	200	0.52
George C. Clark		200	0.52
L. C. Clark		124	0.33
F. R. Baby		200	0.52
John R. Parsons		120	0.31
H. C. Dickinson		248	0.65
H. A. Johnson	Trustee	600	1.57
James Robinson		700	1.83
G. H. Morgan		800	2.10

Morton Bliss & Co.		1,472	3.86
J. and W. Seligman & Co.		1,900	4.98
Land Grant Railway & Trust Co.	Construction company	10,135	26.57
Total (including equity owned by the railroad)		***38,150***	***100.00***
Held by Insiders		***9,353***	***24.52***
Held by Insiders & Land Co.		***19,488***	***51.08***

Table 3: Top Management of the Katy and the Land Grant Railway & Trust Co.

Panel A: Top Management of the Katy			
Executive	Position	# of Shares	% of Voting Rights
Levi Parsons	president	1,601	4.20
George Denison	vice president	3,001	7.87
D. Crawford, Jr.	treasurer	3,001	7.87
Francis Skiddy	director in Katy, and president of Land Grant Railway	1,749	4.58
Panel A: Top Management of the Land Grant Railway & Trust Co.			
Francis Skiddy	president	-	-
D. Crawford, Jr.	treasurer	-	-