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Abstract

Banks play a greater role in the German financial system than in the United States or Britain. Germany's large universal banks are admired by those who advocate bank deregulation in the United States. Others admire the universal banks for their supposed role in corporate governance and industrial finance. Many discussions distort the German Banking system by over-stressing one of several types of banks, and ignore the competition and cooperation between the famous universal banks and other banking groups. Tracing the historical development of the German banking system from the early nineteenth century places the large universal banks in context.

Keywords: Universal Banking, German Banks, German Economic History

JEL Codes: G2, G3, N2

On November 12, 1999, President Clinton signed the Gramm-Leach-Bliley Act. Among other changes this legislation repealed the Glass-Steagall Act of 1933, which had separated commercial banking from investment banking. Many press accounts viewed this law as a sweeping reform of the American financial sector. More sober observers noted that earlier legal and regulatory changes had broken down barriers to branch banking and to inter-state banking, effectively redrawing the landscape for U.S. banks. The future of American banking is open to speculation, but a consistent theme in recent regulatory and now legal changes has been the creation of universal banks, institutions that offer a full range of financial services under one corporate roof. Universal banks are the cornerstone of the financial system in several European countries, including Germany. The universal bank has long had its admirers among critics of the U.S. banking system, and those critics have often used German banks as a point of reference in their criticism. Economists interested in banking from theoretical or policy perspectives have also used contrasts between the German and other financial systems (usually the U.S. or British) to understand the nature and implications of various forms of banking institutions.[1] In contrast to the United States, with its well-developed financial markets and comparatively weak financial intermediaries, Germany's financial system has relied on strong banks and weak financial markets. Even today only about 700 firms are listed on the German stock exchange, compared to about 7000 in the United States, while at the same time there are more German than U.S. banks on any list of the world's largest banks.

One reason for the renewed interest in banks and financial systems is the growing realization among economists that financial systems are important for economic growth. Ross Levine and Sara Zervos (1998) find, in an example of a growing literature, that both stock market liquidity and banking development predict growth in cross-country regressions, even when other

[1] The New York *Times*, November 5, 1999, saw the legislation as dramatic. Charles Calomiris (2000, Chapter 6) emphasizes that recent changes in U.S. banks reflect changes in attitudes by bankers and their regulators, often under the pressure of foreign competition, and notes that American institutions had developed their own style of "universal banking" well before the 1999 reform.

economic and political factors have been controlled. Levine (1997, p.690) has correctly concluded that "...the weight of evidence suggests that financial systems are a fundamental feature of the process of economic development and that a satisfactory understanding of the factors underlying economic growth requires a greater understanding of the evolution and structure of financial systems." The papers Levine surveys stress several different channels for the effect of financial systems on growth, and not all agree on the financial system's importance. But the burden of proof now lies with those who agree with Robert Lucas' view that economists "badly over-stress" the role of financial systems in economic development.[2]

The recent interest in universal banks dovetails with a long-standing theme in German economic history. Dating at least to Alexander Gerschenkron's famous essay on "Economic Backwardness in Historical Perspective," many have attributed to Germany's universal banks a leading role in the development of industry. The argument in a nutshell is that German banks used their size and scope to develop unusually close ties to industrial enterprise. Through these ties, the argument goes, the banks were able to provide firms with financing on terms unavailable from banks in other countries. The claim is usually framed in a comparative context, with the implication that British or U.S. banks were different in ways that made them less supportive of industry and thus less able to foster growth and development.

This perspective on German banking has something to recommend it. But it misses important features of the historical record and what it can tell us about banking in general. The credit banks that were the focus of Gerschenkron's discussion did not comprise the entire German banking system. Focusing on these large banks obscures the important and complementary roles played by other types of banking institutions that are interesting in their own right and that have no direct equivalent in the U.S. or Britain. I stress two points. First, the German banking system had several different types of institution. These institutions at first developed an implicit division of labor that allowed different institutions to concentrate on different markets, and later competed with each other in many markets. The large universal banks that some admire are the product of this process. Second, an a-historical perspective risks missing the context in which the credit

[2] Lucas (1988, p.6), quoted in Levine (1997, p.688).

banks developed. The large-scale institution that fascinated Gerschenkron emerged well into Germany's industrialization process and was as much the product as the cause of economic growth. Considering the German banking system as a whole and tracing its development in historical context clarifies the logic of each part of the system and its connections to the others, and sharpens the contributions of this history to our understanding of financial intermediation today.

German banks in our period can be divided into five broad groups: *Sparkassen* (savings banks), credit cooperatives, private banks, credit banks, and specialized banks.[3] I discuss each of the first four groups in some detail, but omit discussion of the various institutions that make up the final group. These specialized banks include the central banks and their forerunners, and government institutions intended to finance real estate and agriculture. I omit discussion of securities markets except as they bear on the banks.[4] The paper stresses the nineteenth century because it was in that period that this system developed and the issues related to financial economics are clearest. We begin with some necessary background on the economics and history of the period.

1. Background

Recent textbooks on banking divide a bank's services into four categories: liquidity and payment services, asset transformation, risk management, and monitoring and information processing. During the nineteenth century, Germany witnessed important changes in the way banks provided all of these services. Our discussion will stress the final function, monitoring and

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[3] For our purposes the key difference between a private bank and a credit bank is size and scope, and the fact that the latter were joint-stock firms. German banking authorities today divide banks into universal banks on the one hand and specialized banks on the other. The former group includes the credit banks, the *Sparkassen*, and the credit cooperatives. Our categories are more appropriate to the nineteenth century.

[4] Eckhard Wandel (1998) is a general survey of banking and insurance in the nineteenth and twentieth centuries. There has been comparatively little research done on securities and securities markets in Germany.

information processing. Most microeconomic research on banking in the past two decades relies on an approach that is reflected in and relies on Douglas Diamond's seminal papers. In Diamond's model the bank takes deposits from the public and uses those deposits (plus, perhaps, its capital) to fund projects undertaken by outside enterpreneurs. The bank's services to its investors are usually called "delegated monitoring," but more generally the bank screens borrowers, monitors their conduct, audits their claims about their ability to repay (state verification), and enforces the terms of loan contracts. Under general conditions the bank can provide these services to its depositors for less than it would cost the depositors to do so without the intermediary, and this is the reason banks exist. Admirers argue that the German universal bank, in effect, was better-suited to the role of delegated monitor for individual firms (in the sense of Diamond (1984)) than other types of banks.

Diamond's model implies that there are two types of information problems for a financial intermediary, and there are now two strands in the literature, which develop each problem. The first asks *how* the bank acts as delegated monitor: to whom does it lend, how does it structure loans, what other kinds of terms (such as covenants or representation on a firm's board of directors) does it require, and does it help firms to acquire outside finance through issuing bonds or equity? Gerschenkron's discussions and most that follow it focus on this question. But the second information problem should not be ignored. If banks provide information and monitoring services then by definition they know more about the projects the bank has funded than do the bank's depositors. An opportunistic banker could use this informational asymmetry to enrich himself at the expense of his depositors. Given this problem, how can banks collect deposits? The literature has focused on several features of banks that act as commitment mechanisms, giving the bankers an incentive to act honestly at each stage. Discussions of German banks tend not to pay much attention to this second information problem, but clarifying these issues helps us to understand how German banks developed and functioned in the nineteenth century.

The historical context explains much about Germany's banks and the long interest in them. Germany industrialized much later than Britain, and this difference forms the point of departure for Gerschenkron's argument. Britain's industrial revolution was well underway by 1800, a point at which most of Germany was still poor and agricultural. Industrial output did not begin to grow much until the 1830s, and most economic historians view the 1850s as the beginning, in Germany, of what might compare to the British industrial revolution. By 1914 Germany had surpassed Britain in the output of many industrial products, and German firms could undercut the British in markets for steel, machine tools, textiles, and dyes and many other chemical products in markets where British firms did not enjoy tariff protection.

Prior to 1871 Germany was a group of independent states rather than a single country. For the purposes of this paper, “Germany” means the territories that formed the German Empire founded in 1871. Standard histories often note that at the Peace of Vienna in 1815 there were nearly forty independent German states. This is true but misleading; a few large states comprised most of the area and population. In 1871 an enlarged Prussia counted for 60 percent of the population and 64 percent of the territory of the Empire. Four other states (Bavaria, Saxony, Baden, and Wurttemberg) comprised a further 26 percent of the Empire’s population and 23 percent of its territory. Economic growth proceeded unevenly across Germany, with some areas of Prussia and Saxony starting to industrialize in the late eighteenth century, and industrialization coming to the rest of Germany later. Between 1815 and 1871, German states were nominally associated at a political level through first the German Confederation and, after 1866 for Prussia and most of the rest of northern Germany, the North German Confederation. More significant for economic purposes was association through several customs unions. The *Zollverein* (Customs Union) created in 1834 is rightfully seen as the most important step in the economic integration of the German states. This arrangement was a treaty among sovereign states that gave Prussia a leading role, abolished all tariffs among member states, and established a low external tariff for all goods crossing its border. The *Zollverein* later negotiated trade agreements with Britain, France, and other countries, and adopted monetary conventions that simplified the multiple currencies of its member states.

1.1 Claims about the credit banks

Gerschenkron’s essay “Economic Backwardness in Historical Perspective” raised one of the fundamental questions of economics, which is how poor countries become rich. He focused on how the countries that industrialized after England did so, and how institutions such as the state or banks might have helped them overcome deficiencies in capital or other requirements for growth. Gerschenkron thought that German banks had provided more help to industry than had been the case in Britain. This was because, in his view,

> ...the German banks, and along with them the Austrian and Italian banks, established the closest possible relations with industrial enterprises. A German bank, as the saying went, accompanied an industrial enterprise from the cradle to the grave, from establishment to liquidation throughout all the vicissitudes of its existence (p.14).

The comparison is to Britain. British banks, he thought, were obsessive about liquidity and only lent to firms on a short-term, hands-off basis. New firms required capital from other sources (such as the personal wealth of the entrepreneur, his friends, or family), and growing firms had to rely on retained earnings. The only external financing available was through the issue of bonds and equity, which in a world of badly-developed securities markets and poor information about new and growing firms was expensive. These limitations were not too much for Britain, the first industrial country. Personal wealth was often considerable, the initial scale of most enterprises small, and in many activities lack of overseas competition gave new firms breathing room to develop and perfect their technologies.

But none of this, the argument goes, was true for German entrepreneurs when their turn came in the 1840s and later. To compete with British and other entrepreneurs Germans had to use techniques that entailed large-scale, fixed investments. Germany was poorer than Britain, so personal wealth was less likely to suffice. Markets for securities were even worse in Germany than in England. Had it not been for the banks, the German industrial revolution would have been later and slower. As it happened, Gerschenkron argued, German banks developed methods to provide all of a firm's financial needs, from short-term loans to long-term debt finance to support for bond and equity issues. German banking practice helped new firms to develop and prosper in the face of competition, and German banking practice allowed firms to make the ever-larger investments necessary to take advantage of new methods in the steel, chemical, and electrical industries

This aspect of Gerschenkron's argument has inspired a great deal of historical and theoretical work. Casual references in discussions of universal banks are too numerous to mention. Recent discussions by economic historians stress aspects of the story that will not receive as much attention here (Richard Tilly 1996a, 1996b; Harald Wixforth 1997). Carline Fohlin (1999b) provides an overview of research on the credit banks, including her own. The development of German banks has also inspired more theoretical efforts. Martin Hellwig's (1991) thoughtful and far-reaching discussion serves as both a sympathetic restatement of Gerschenkron's argument and an overview of the economic literature on banking and corporate finance. Sandeep Baliga and Benjamin Polak (2001) focus on the choice between bank-monitored debt and bonds. Their effort is to explain how the historical conditions obtaining in Britain and in Germany during the initial experience of industrialization account for the rise of each financial system. One appealing feature of their model is its implication that an economy can be locked into a German-system even when that system is not efficient. Marco Da Rin (1996) also constructs a model in which each country acquires a financial system that reflects economic and political conditions during industrialization, systems that persist long after the logic for their differences has disappeared. Da Rin (1997) is a more general effort to use the economics of information to reinterpret Gerschenkron's argument. Robert Hauswald (1996) uses a similar approach to interpret developments in German banks during the second half of the nineteenth century as a process of learning.

Gerschenkron's discussion of the German banks has also formed the point of departure for considerable empirical research. Calomiris (1995) and Calomiris and Daniel Raff (1995) use empirical evidence to focus more narrowly on the costs of finance to firms in the United States and in Germany at the turn of the twentieth century. They find that U.S. firms paid more for finance than German firms, and attribute the difference to the lack of universal banks in the U.S. Others have sounded a welcome note of scepticism about the claims made for Germany's banking system. In several papers to be discussed later, Fohlin provides empirical evidence on German banks and their connections to industry, showing that in some ways the received story is at best oversimplified. Jeremy Edwards and Sheilagh Ogilvie (1996) summarize and extend the skeptical view, noting that most of the features of the bank/industry nexus thought by Gerschenkron to have been common, if not universal, could not have been the case in more than a small number of large enterprises.[5]

Another vein of skepticism comes from the implicit reference points, England and the United States. While still the subject of some disagreement, it now seems that British firms were not hampered by their banking system in the period up to 1850 or so. During the industrial revolution itself, most firms could make do with financing for raw materials and inventory, and for those purposes the rediscounting of bills of exchange sufficed. But there are also cases of banks making important, long-term loans to industrial firms. The problem is that we do not know how typical these banks were. Later in the nineteenth century British banks clearly refused, as a rule, to involve themselves in anything but short-term lending. This concern with liquidity reflected in large part their heavy reliance on short-term deposits, but may also reflect the reluctance of the Bank of England to support illiquid banks during financial crises.[6] Banks in the United States had a different history, but once again we have reason to doubt simple stories about them never providing industrial loans. Naomi Lamoreaux (1994) has shown that in the early nineteenth century, New England banks were heavily involved in the industrial concerns of the banks' promoters.

Gerschenkron made a second argument that is closely related to the first, but which drops out of many discussions. He thought that through these close connections "...banks acquired a formidable degree of ascendancy over industrial enterprises, which extended far beyond the sphere of financial control into that of entrepreneurial and managerial decisions" (p.14). Put bluntly, German banks controlled German industrial firms. This control supposedly increased in the 1880s and 1890s, when a wave of German bank mergers made it more difficult for a bank's

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[5] A new line of research that stresses the importance of legal traditions and the functioning of legal systems echoes an old tradition in economic history, but has not yet been applied to the issues at hand here. See Levine (2000) and Thorsten Beck, Asli Demirgüç-Kunt and Levine (2000) for examples.

[6] Micahel Collins (1991) is an excellent survey of the British banking system, focusing on its ties to industry.

customer to threaten to leave an overweening banker. And Gerschenkron thought that the banks used their power in part to police cooperation within the industrial cartels that had become common by the 1880s:

> The momentum shown by the cartelization movement of German industry cannot be fully explained, except as the natural result of the amalgamation of German banks. It was the mergers in the field of banking that kept placing banks in the positions of controlling competing enterprises. The banks refused to tolerate fratricidal struggles among their children (p.15).

Thus in Gerschenkron's own view the universal bank in Germany was responsible for not just rapid economic growth, but for the strength of Germany's cartels.[7] Concentration in German banking was a topic of great discussion in Germany from the 1880s and onward, and the relaxation of limitations on *Sparkassen* and credit cooperatives in the early twentieth century owed much to the sense that the credit banks needed competition from other financial institutions. Concerns about market power have, however, largely disappeared from modern discussions of German banks and their development in the nineteenth century. Fear of the power of concentrated banks motivated several important changes in bank organization that we study below. One of the most influential contemporary works was by a director of the Darmstädter bank who feared legislative efforts to fight the growing concentration of banks at the time he wrote.[8] A somewhat different fear of the power of large banks was the motivation for some opposition to the 1999 U.S. banking reform.

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[7] Hilferding (1981) is a famous Marxist statement of the position that German banks were responsible for organizing and policing "monopoly capitalism." We know little about the implications of cartels for the German economy. Steven Webb (1980) argues that cartels in the steel industry enhanced productivity by encouraging technical advance and stabilizing output. There are not enough such studies to generalize to industry as a whole, or to the larger economy.

[8] Jacob Riesser (1912)'s views have been widely influential, in no small measure because the National Monetary Commission published an English translation of his book in 1911. This work is a remarkably comprehensive and thoughtful account of the German banking system during the late nineteenth century.

1.2 Historical, legal and institutional setting

The development of banks reflects both the broad outline of German constitutional and economic history and some specific features of company and banking law. Prior to 1871 most matters of banking law and related regulatory issues were left to the individual states unless specifically managed through a treaty on, for example, currency. Under the *Zollverein*, and with the gradual abolition of laws limiting the freedom of occupation, German entrepreneurs could locate anywhere in the German free-trade zone and produce for the entire market. Bankers also used the federal structure to evade early limitations on banking activity. If Frankfurt (an independent city-state until its incorporation into Prussia in 1866) refused to grant a bank charter, financial entrepreneurs could set up a bank in nearby Darmstadt and provide the same services to firms in Frankfurt and elsewhere. As Rondo Cameron (1956) noted, this happened in the case of the first true joint-stock credit bank, the Darmstädter Bank.[9]

Another legal issue shaped banking history and varied from place to place in Germany. Much of the alleged role of German banks turns interlocking directorates, and it is important to see that the legal forms of many firms precluded the ties stressed in the literature. In the mid-nineteenth century it became clear that in banking as in other sectors, there was a need for large firms that could raise capital by issuing equity shares to individuals who in turn would bear only limited liability for the firm's obligations. The essential distinction between private banks and credit banks is that the latter were joint-stock banks. Most German states did not have liberal, general incorporation laws until the 1850s or 1860s. Enterprises that wanted to operate as a joint-stock corporation with limited liability had to seek specific permission from the relevant government. Many German states viewed joint-stock incorporations with suspicion and either refused permission or granted it only on terms that made the deal unattractive. One reason for this stance was the sense that limited liability allowed entrepreneurs to escape their debts. Another was the State's desire to extract rents by in effect charging entrepreneurs for the right of limited liability. Prussia was especially tough. In the period 1770-1850 it agreed to the creation of only 84

[9] Collection of banking statistics was largely a state affair, even after 1871. Uneven quality and scope of these statistics means that we will have to use information on several large states to substitute for information on Germany as a whole.

joint-stock companies, most of them either insurance, mining, or ironworks firms. Prussian policy relaxed in the period 1851-57, with the government agreeing to 119 new joint-stock firms, but only 8 of these were banks or other financial institutions (Thieme 1961, Tables 1-4). The new German business code adopted in 1861 permitted joint-stock incorporations, but only on a case-by-case basis. Some smaller German states, including most Hanseatic cities, extended this to a general incorporation policy. But general incorporation on this basis did not come to Prussia and most other large states until 1870.[10] Firms had two ways around the problem. One was to incorporate in another state, as already noted. Smaller states were often willing to agree to incorporation in return for some kind of favors such as special terms for financing government debt. This strategy did not always work, however. A small state or independent city could be under the sway of opposing business factions.

Another avenue was to forgo joint-stock incorporation and instead organize as a *Kommanditgesellschaft.* The *Kommandit*, which was not unique to Germany, was a form of partnership where a small number of general partners bore unlimited liability and ran the firm. The limited partners had little say in the firm's operation. A related corporate form was the *Kommanditgesellschaft auf Aktien*, a hybrid between the partnership and joint-stock forms. The *Kommanditgesellschaft auf Aktien* could be established by registration at a court and thus did not require the special permission intitially required for the joint-stock firm. This corporate form was clumsier than a joint-stock company, but by allowing the firm to raise capital from many individuals whose liability in the firm was limited, it mimicked important features of joint-stock incorporation. This form was rare in German banking by the end of the nineteenth century, but in the 1850s and 1860s several new credit banks had been organized as *Kommandit*, given the difficulty of securing permission for a joint-stock incorporation. The *Kommanditgesellschaft auf Aktien* was less common among industrial firms. Smaller firms could be either a general partnership *(Offene Handelsgesellschaft*) or a private limited-liability corporation introduced late in our period (the *Gesellschaft mit beschränkter Haftung*, or GmbH). For later purposes it is

[10] See Horn (1979, p. 128, especially note 22).

important to note that well into the late nineteenth century many large German firms were something other than joint-stock firms.[11]

1.3 An overview of the banks

Many discussions of German banks focus on the credit banks to the exclusion of the other parts of the system. Table 1 shows the shares of the various bank groups in the financial system for the late nineteenth century, demonstrating how misleading this perspective can be. The four types of banks are distinguished by their assets and liabilities, ownership, legal status and limitations, and clientele. Private banks developed in the late eighteenth and early nineteenth century to finance trade and government debt. Most private bankers were individuals or family groups, or small partnerships. By the 1830s some of the larger private banking houses had pioneered the lending practices that Gerschenkron thought fostered economic development. Their range of services was more limited than the large universal banks that followed, but most private bankers offered both loans and investment-banking services and thus straddled the divide typical of banks in the United States or in Britain. The first credit bank dates to 1848, but most were formed in the 1850s and 1870s. Many credit banks were established by private bankers or groups of private bankers, and at first the credit banks carried on the basics of the private banker's business on a larger scale. The distinction between a private bank and a credit bank is that the latter had a corporate form and could raise much more capital. Well into the nineteenth century credit banks and private banks worked together, forming consortia for specific undertakings and later on organizing themselves into fairly stable groups led by a large credit bank. Some of the

[11] Edwards and Ogilvie (1996, Table 2) note that in 1913, the net capital of all industrial joint-stock companies comprised less than 18 percent of the total capital stock in industry. The Discontogesellschaft and the Handelsgesellschaft, two banks founded in the early 1850s, started as *Kommandit*. P. Barrett Whale (1930, pp.331-333) presents a lucid outline of the different forms of association in Germany. Jürgen Kocka and Hannes Siegrist (1979, Table 1and appendix 2) list the 100 largest industrial firms in Germany in 1887. Most of the firms started prior to the 1870s, not surprisingly, had only recently become joint-stock firms.

reduction in the relative size of private banks shown in Table 1 reflects the tendency of credit banks to buy out and absorb private banks.

Two other groups of banks have developed into universal banks during the twentieth century but did not have this range of services during the nineteenth century. The *Sparkassen* originated as urban institutions intended to give poor and working class people a safe place to deposit their savings. Some of these institutions were individually quite large, but their asset policies were conservative, stressing real estate and government paper. These portfolios gave them little direct role in industrial or commercial lending, and largely for that reason they are downplayed in most accounts. They receive attention here partly because of some interesting features of their design, but also because their practices played a role in the development of other banking institutions, especially the credit banks. Credit cooperatives have also evolved into universal banks, but in the nineteenth century their business consisted of taking deposits from members and non-members and using those deposits to fund loans to members. Most loans were intended to provide working capital to farms or small businesses. Credit cooperatives were collectively a much smaller part of the banking system during the nineteenth century than the *Sparkassen*, but their ability to lend to a difficult clientele raises the interesting issue of how they survived and prospered. As Table 1 shows, credit banks always held fewer total assets than the *Sparkassen*, and as late as 1880 private banks held more assets, collectively, than the credit banks.[12]

[12] For comparison, consider the situation as of June, 2001. Credit banks taken together accounted for 28 percent of all German bank assets, the Sparkassen group (which today includes the *Landesbanken*) accounted for 35 percent, and the credit cooperative group, 12 percent. These figures cannot be compared directly to those in Table 1 because they exclude some institutions whose counterparts are in Table 1 (Deutsche Bundesbank, *Bankenstatistik Juni* 2001. *Statisches Beiheft zum Monatsbericht* 1, Tables 1 and 3).

1.4 Bank structure and central banks

Recent research on banking in Germany and elsewhere has stressed the role of central banks and banking instability in constraining bank loan portfolios. One strand of this work stresses the ability of branched banks to diversify their loans and liabilities and to withstand regional shocks. The best-known case is Canada, where bank mergers in the early twentieth century produced banks with branches nearly everywhere in the country and a banking system that withstood even the pressures of the Great Depression (Michael Bordo, Hugh Rockoff, and Angela Redish 1996). At the opposite extreme stands the United States, where interstate branching was forbidden until the 1950s and most states (and the national banks) required institutions to have only one real office.[13] Germany has not figured heavily in these discussions of banking stability, but it is clear that the German banking system was not as vulnerable to shocks as its U.S. counterpart. In structure the large German credit banks occupy a middle ground. They developed branching networks, although not as extensive as those in Britain or Canada. Their strong connections with smaller institutions provided some of the benefits of branches in other countries. By the turn of the twentieth century, a large credit bank was lending to a diversified group of firms, and drew its deposits and other liabilities from all over Germany.

Two related features of the German banking system are more unusual and bear some relation to the credit banks' behavior. The first is the question of bank liabilities. During the nineteenth century paper money in most countries was convertible into gold or silver, and the obligations held by the public were issued by either the equivalent of the Treasury as a public obligation or by banks as a demand liability. Once again the United State occupies as extreme position here. Until the creation of the National Banking system in 1863, all banks in the U.S. issued their own banknotes, and these notes formed the bulk of the money supply. Gary Gorton's (1996) study of reputation formation in bank note markets in the United States for the period 1839-1858 includes some 3,000 distinct banks' notes. England had both fewer banks and placed

[13] Calomiris (2000, Chapter 1) provides more detailed evidence on instability in U.S. banking and cross-country comparisons that suggest the importance of branching for bank stability.

more limitations on banknote issue during the nineteenth century, but rural banks were generally allowed to issue banknotes if they satisfied certain reserve criteria.

German states, on the other hand, strictly limited both the right to issue notes and the amount and denomination of notes issued. To issue notes a German bank required a special charter, and as of 1851 only 9 banks in the entire country had this right. This number increased to 29 in 1859, a figure which seems like a large increase in a German context, but which is still smaller than the number of note-issuing banks in New York City in that year.[14] In 1856/57 there was a financial crisis, and many German banks suspended convertibility of notes. This crisis led to the ascendancy of the Bank of Prussia as the premier note-issuing bank in Germany. Dieter Ziegler (1993, p.496) notes that part of the problem in this crisis was that some smaller German states had allowed note-issuing banks to set up and do business with inadequate coverage requirements, and several larger states (including Prussia) reacted by making it illegal to use "foreign" notes on a particular state's territory (thus a Bavarian bank's notes were not allowed to circulate in Prussia, and vice-versa). The Bank of Prussia's strength during and after the crisis owes more, however, to the strict coverage requirements it had prior to the crises, and the resulting public confidence in its notes.

Some note-issuing banks that gave up or lost the right to issue notes reincorporated as joint-stock banks. Others failed and were purchased by larger banks. At the establishment of the Reichsbank in 1876 only a few other note-issuing banks still existed. In 1905 their numbers were reduced to five (including the Reichsbank). The minimum denomination for a banknote was 100 Marks until 1906, when the minimum size was reduced to 20 Marks. Average annual earnings in the relatively well-paid industry, transport, and distribution sectors in 1905 was 849 Marks; a

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[14] One reason German states restricted the right of note issue was fear of competition with the *Darlehenskassenscheine* they issued to finance their own budgets. These obligations were short-term notes, but circulated as means of payment and were close substitutes for paper money. Karl Hellferich (1898) identifies at least 21 German states that issued these obligations prior to 1871. I thank Jochen Streb for noting this connection.

minimum size of 100 Marks made such notes of little use as a daily medium of exchange.[15] The Reichsbank became the primary note-issuing bank in Germany. Even then, however, the coverage requirements for notes were strict, and banknotes remained a relatively small part of the German money supply. The question of deposits is more complicated, as we shall see, depending on the institution and the time period. But for much of the nineteenth century the primary industrial lenders, the private banks and later the credit banks, made little effort to collect retail deposits.

Tilly (1998) has recently stressed the role of a lender of last resort in determining bank attitudes toward industrial lending. Banks may be more willing to enter into long-term commitments if they know a lender of last resort will provide liquidity in a general crisis. The U.S. had no central bank or other official lender of last resort until the formation of the Federal Reserve system in 1913. Gorton (1985) notes that clearing houses and other private-order associations of banks did provide liquidity during crises, but they were insufficient. The Bank of England's historical role as a lender of last resort is the subject of some debate, but most historians agree that its status as a private, for-profit institution limited its ability to provide liquidity during a crisis, and that it had an incentive to tolerate the failure of banks it viewed as competitors. Mae Baker and Collins (1999) show a long-term decline in British bank lending to industry over the period from the 1870s to 1914, with sharp declines associated with financial crises in 1878 and 1890. Their results and the contrast with Germany are consistent with the view that British banks avoided industrial lending because they had to remain relatively liquid at all times. The Bank of Prussia and later the Reichsbank had different priorities. The Bank of Prussia was founded in 1847 as a central bank of issue. The Bank was owned in part by the government and in part by private individuals. The Bank issued notes under a special charter and acted as the government's agent. The Bank of Prussia also engaged in profit-making activities, including lending, and especially the discounting of bills. Firms whose bills met certain criteria could always have their bills bought and sold by the Bank of Prussia, making these bills safe and liquid investments for other banks. In financial crises the Bank of Prussia acted, to some degree at least,

[15] This figure includes some salaried managers but is dominated by workers (Ashok Desai 1968, Table A.4).

like a lender of last resort. Banks that were in trouble could sell bills out of their own portfolio to the Bank of Prussia. The Reichsbank, which was for all practical purposes a renamed Bank of Prussia, continued this practice.

2. *Sparkassen* and credit cooperatives

Two often-overlooked institutions play a major role in Germany's banking system today. The *Sparkassen* (savings banks) started in the late eighteen century as institutions where the urban poor and working class could earn interest on deposits. Credit cooperatives developed independently in urban and rural areas starting in the 1850s as self-help institutions that made loans to members who could not otherwise obtain loans from formal sources. The institutions are different, even though some accounts have confused them.[16] They are considered together in this section because even though they are different and have been, for most of their histories, each other's major competitors, they share institutional features that highlight common problems, and were together the primary competitors for the for-profit banks.

2.1 Origins and development of the *Sparkassen*

Germany's *Sparkassen* were part of a European-wide development of similar institutions. Geroge Alter, Claudia Goldin, and Elyce Rotella (1994) note that early American mutual savings banks were part of the same movement. The basic idea was to provide a safe place for poor and middle-class people to deposit their savings. Many accounts view an institution formed in Hamburg in 1778 as the first of its kind in Germany. The bank was set up as a branch of a local charitable organization, which was typical of an early wave of *Sparkassen* established towards the end of the eighteenth century (Jürgen Mura 1996, p.106). The movement did not take off until after the settlement of the Napoleonic Wars (1815). There were 281 *Sparkassen* overall by 1836 (Günter Aschauer 1991, Table 6). Table 2 provides an overview of the number of institutions, savings accounts, and deposits for three large German states and for Germany as a whole in the

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[16] The confusion may arise from an old name for rural credit cooperatives, literally, "Savings and loan associations."

period 1850-1910, when comparable data are available. The table also hints at the variations in *Sparkassen* experience within Germany. Saxony, with its more industrial and wealthier population, had a thicker and richer network of savings banks than did the more agricultural and less prosperous Bavaria.

There was considerable diversity in many features of *Sparkassen* design in their early years. They could be chartered either as private institutions or as entities owned and controlled by some level of government such as a municipality, a district, or a province. In Prussia especially most savings banks were chartered by a city, but some were chartered by provincial governments or legislatures. In larger Prussian cities there also emerged a type of savings bank that was specific to a neighborhood, with all the neighborhood savings banks in a city guaranteed by each other and the city government. In rare cases a *Sparkasse* belonged to a firm (and was intended for its employees) or to a professional organization. Of the 1765 Prussian *Sparkassen* operating in 1913, 46 percent belonged to a city, about half that many to a county (*Kreis*), and ten percent were either private or belonged to an association (Manfred Pohl 1982, p.325). Another variation concerned clientele. Some *Sparkassen* were "open," that is, made their services available to all. Others were "closed," available only to the poor. Most German *Sparkassen* would eventually be open.

Regulation of savings banks took two forms. In section 2.4 below we discuss the development of auditing arrangements. An earlier and more important effort reflected the *Sparkassen's* purpose. Regardless of charter, deposits were guaranteed either by the liability of its owners (in a private institution) or by the liability of the government (for those owned by government entities). Insurance pools for these deposits would arise later than in the United States, but the from the outset owner's liability guaranteed that savers would be able to get their money. The deposit guarantee was central to the institutions' mission: only a firm assurance that savings were safe would encourage the poor to entrust their savings to a financial intermediary. To limit its potential liability, either the chartering entity or the state government limited the type of assets *Sparkassen* could hold. These regulations varied over time and across German states, reflecting local financial needs and differing perceptions about what constituted a safe asset. Restrictions on lending reduced the incentive to make risky loans and reduced the possibility of fraud by ruling out many loans that could go to "insiders." As of 1811 all savings banks in Bavaria were forbidden to grant loans that were not secured by real property (Manfred Pix 1981, p.142).[17] This restriction is not as dramatic as it seems, since many business loans in Europe at the time were secured by real estate, but the restriction explains the limited range of *Sparkassen* assets (primarily mortgages and state debt). The comparable regulation for Prussia differed in taking a more tolerant view of credit granted on the strength of a co-signer. In 1856 some one-eighth of all savings bank assets in Prussia were loans of this form, but these loans had become less important by 1905. The weight of different investments in total assets varied over time and across places, but in general mortgages and government obligations accounted for at least two-thirds of all assets. In Prussia, where data on assets are available for the period 1856-1910, mortgages on urban property grew from about 23 percent of total assets to nearly 40 percent. The increasing importance of urban mortgages reflects the rapid growth of German cities and the housing-construction that entailed, as well as the increasingly central role of *Sparkassen* in mortgage finance. About 36 percent of Germans lived in cities in 1871, rising to 62 percent by 1910 (Hans-Ulrich Wehler 1995, Table 71). Bearer securities, mostly government-issued, fluctuated between 20 and 32 percent of total *Sparkassen* assets in Prussia. The remainder of assets consisted primarily of other loans, which declined steadily in importance from 13 percent in 1856 to 2 percent in 1910, and deposits at public institutions (Aschauer 1991, Tables 30 and 31).

Another motivation for these restrictions had less to do with the *Sparkassen's* safety than with the government's desire to use the deposits marshaled in this way to finance government debts. Most German states were burdened with enormous debts in the decades that followed the peace of 1815. (Tilly 1980, p.61) calculates that Prussia, for example, devoted 13-14 percent of its annual budget to debt service during the 1820s and 1830s. The *Sparkassen* were important parts of the program to restore government solvency. The *Sparkassen* paid interest on deposits, but even at two or three percent this was a cheap source of finance for a hard-pressed regime. The Bavarian government not only encouraged communities to form *Sparkassen*, it exempted them

[17] Real estate loans were considered the safest assets, next to government obligations. This may surprise readers familiar with the boom-and-bust cycle of real estate markets in the United States in the nineteenth century. Mortgages of the type issued by *Sparkassen* had low loan-to-value ratios.

from stamp duties (a tax on legal documents) if they agreed to invest their money in State debt. In its early years the Augsburg *Sparkasse* lent *all* its funds to the Bavarian government. In Bavaria's case this caused serious problems at many savings banks when the state itself experienced a fiscal crisis in the early 1840s (Pix 1991, p.151). Over time the *Sparkassen* broadened their asset portfolios, but a recurring complaint from their competitors was that governments favored the development of *Sparkassen* because they were so important to financing local government operations.

The *Sparkassen* were intended as places for the poor to save. How well did they serve this function? Data are fragmentary, but few *Sparkassen* were dominated by the middle classes, as their critics claimed. Ashauer (1991, Table 11) shows that in a selection of savings banks taken from the period 1828-1850, children usually comprise about one-third of all savers, and servants, apprentices, factory workers, and laborers account for at least another third. More systematic information becomes available later and reinforces the point. Records for the Munich municipal *Sparkasse* allow us to trace the changes in its deposits over time. In 1850 about a third of all accounts were held by parents and trustees, about one-third were servants, and most of the rest were workers and others who would not be wealthy. The composition of savers changes over the period 1850-1908, but mostly in reflection of Munich's industrialization. By 1908 servants were only 17 percent of savers, while the representation of workers had increased dramatically.

Another way to examine this question is to consider the size distribution of savings account balances. For Prussia these data can be tabulated for the period 1850-1908. In 1850 about one-third of all accounts had 60 Marks or less, and about 5 percent had 600 Marks or more. The latter category becomes more important over time, rising to 24 percent of all accounts by 1908. Most of the increase comes at the expense of accounts in the middle; those with 60 or fewer Marks are still 28 percent of all accounts in 1908 (Aschauer 1991, Table 26). The relatively sharp decline of the middle-sized accounts was grist for the claim that workers and others were being excluded from the *Sparkassen*. There may be some truth to the charge, but the change mostly reflects the growth of incomes in Prussia. Critics also made much of the short office hours kept by most *Sparkassen*. In the early 1860s, 73 of Prussia's 268 *Sparkassen* were open two days per month or less, and in Saxony, Bavaria, and Baden, a majority of *Sparkassen* had office hours only one day per week. The savings banks in several large cities were only open two hours per week until the late 1880s (Aschauer 1991, Table 29, and text).[18] These were surely not convenient institutions for their depositors, but we should bear in mind that savings accounts were intended as vehicles to save towards emigration, training, or old age, and not as demand accounts. Most required a notice period before withdrawals. In the late 1870s the Berlin *Sparkasse* allowed customers to withdraw up to 100 Marks in a four-week period without any notice, but withdrawals of 100-500 Marks required three months' notice (Pohl 1982, pp.324-325).

Sparkassen and their entire role in the banking sector have not received the research attention required to make firm statements about their role in industrial lending. Most of the literature stresses the exceptional nature of *Sparkassen* that did lend to industry, but this judgement is based, as Wehler (1995, p.631) notes, more on a shared legend than detailed research. There are several clear examples of *Sparkassen* playing a direct role in industrial lending. Heinrich Poschinger (1879, p.280) notes the "somewhat peculiar" case of a *Sparkasse* in Danzig, which in the 1850s was doing extensive business in bills of exchange, presumably for merchants and other businesses. Tilly (1966, pp. 126-127) discusses the private *Sparkassen* established in the Aachen area in the early nineteenth century in connection with David Hansemann's Association for the Promotion of Industry and Thrift. These institutions were so successful that in 1851 the Aachen authorities decided to shut down the municipal savings banks. Hansemann's *Sparkassen* provided discounting and other services to businesses, in effect competing with private banks. Toni Pierenkemper (1990, Table 2) notes that the firm of Haver and Boecker received a loan from the local *Sparkasse* in 1890. His larger point is to stress the importance of family resources in financing the initial stages of German firms, even in the later

[18] These figures come from reports written by a workingman's association that viewed *Sparkassen* as important to the well-being of the working classes. The brevity of office hours should be viewed in the context of a large city where working hours were long and workplaces could be located long distances from the insitution. The credit cooperatives discussed below also had few office hours, but these were coordinated with the rhythm of their members' lives (after church, for example). The Elberfeld *Sparkasse* was only open on Thursdays from 4 to 6pm, when most workers were still at their jobs.

nineteenth century when the banking system was well-developed. Haver and Boecker had until that point relied exclusively on financing from family wealth; the *Sparkasse* loan was its first from a financial intermediary.

A less narrow perspective suggests that *Sparkassen* did play an important role in industrial development. They provided capital for many public infrastructure projects, including railroads, canals, water-supply and sewage systems, projects that provided customers for German industrial firms, created the infrastructure necessary to carry out their orders, and made possible the large urban agglomerations implied by industrialization. The *Sparkassen* also played an indirect role in the banking system in this period. First, as their supporters noted, the savings banks extended the "banking habit" to a wide range of people that other banks did not view as desirable customers. Later on the Deutsche Bank and other large banks would come to rely heavily on retail deposits to finance their lending operations, and their ability to develop deposit networks owes much to the *Sparkassen*. Second, by mobilizing otherwise unintermmediated savings and making them available for mortgages, state debt finance, etc, the *Sparkassen* indirectly enlarged the pool of capital available for entrepreneurs. Finally, the savings banks (and to a smaller extent the credit cooperatives) were viewed as an important alternative to an increasingly concentrated for-profit banking system.

The *Sparkassen* began their existence as specialized institutions with strictly limited powers. By World War I they held a large fraction of all intermediated financial assets in Germany. At the outset of the twentieth century two important legislative changes laid the groundwork for their transformation to full-scale universal banks. Starting in 1909, they were allowed to offer checking and related payment accounts.[19] Further changes in 1915 and 1921 enabled them to underwrite and sell securities, completing their transformation to universal banks.

[19] *Sparkassen* had already provided a means of payment. As early as the 1830s, individuals would use their *Sparkasse* account book to make payments, a practice made possible by the fact that the funds were payable to the bearer of the book.

2.2 The origins and development of credit cooperatives

Unlike the *Sparkassen*, credit cooperatives were given wide banking authority at the outset. After the failed revolutions of 1848 many German progressives turned to concrete, non-political means to aid the poor and working classes. The first groups of German cooperatives owe their existence to two such self-help efforts. Hermann Schulze-Delitzsch (1808-1883) founded several cooperative associations during the 1840s and 1850s. By 1861 there were 364 Schulze-Delitzsch credit cooperatives with nearly 49,000 members (Herrick and Ingalls (1915, p.267)). Friedrich Raiffeisen (1818-1888) was at first an imitator of Schulze-Delitzsch. The number of Raiffeisen cooperatives at first grew rapidly, but was later eclipsed by cooperatives affiliated with a group formed by Wilhelm Haas (1839-1913) in the 1870s. Haas' first involvement with the cooperative movement took the form of working with Raiffeisen and his circle, but Haas broke with Raiffeisen in 1879. Schulze-Delitzsch's organization also included cooperatives for the purchasing of raw materials, and a few consumer and producer cooperatives. Raiffeisen's credit cooperatives also engaged in purchasing agricultural inputs and marketing agricultural products, and the Haas group included distinct creamery, purchasing, and marketing cooperatives. Table 3, which provides indicators of the number and sizes of the various credit cooperatives, shows that by World War I Haas' group was by far the most numerous in Germany. Throughout this period the Schulze-Delitzsch cooperatives were overwhelmingly urban, while the Raiffeisen and Haas cooperatives were mostly rural.

Credit cooperatives shared many important features regardless of their type. They were all local, private, free-standing organizations, owned and controlled by their members. Some German governments made modest, indirect grants to support cooperatives, but for the most part the German cooperatives stood aloof from any state support or involvement. Control of the entire system was very much "bottom up," with each individual cooperative deciding who could join its institution, and at what level to associate with other cooperatives. Local credit cooperatives had two leadership committees similar to the dual-committee structure we will discuss in detail in section 3.3.1 below in the context of the credit banks. The membership as a whole (*Generalversammlung*) met annually to elect officers and to make decisions on basic policies such as interest rates. Membership was not automatic, but once accepted into the cooperative all members could participate on an equal basis in elections for management positions and on the important policy issues put to a general vote. The cooperative's day-to-day business activities, as well as its bookkeeping, were undertaken by a treasurer. In most rural cooperatives the part-time treasurer was the only paid official, while in urban cooperatives there were often full-time employees.

There were important differences in the structure and operation of credit cooperatives. The more urban Schulze-Delitzsch cooperatives often switched to limited liability (when it became legal for cooperatives in 1889), paid dividends to members, had more paid staff, and were larger than the Raiffeisen or Haas cooperatives. Schulze-Delitzsch thought that cooperatives should have substantial shares (member equity contributions), in part to lower the institution's leverage, in part to screen out the poor. Most rural credit cooperatives had only nominal shares. Liability was an especially contentious issue. The Raiffeisen organization was firmly opposed to limited liability for local cooperatives. The Haas organization thought it generally best for cooperatives to have unlimited liability, but recognized that in regions where wealth differences were large (such as east Elbian Germany) limited liability might be the only way to attract wealthy members.

Two other differences relate to lending policies and are relevant to the rise of the regional cooperative banks discussed in section 2.3. Schulze-Delitzsch advocated short-term loans, usually 90 days or less, that could be renewed several times if need be. Discounting bills was a major form of lending for urban cooperatives. Rural cooperatives, on the other hand, tended to make long-term loans (often 10 years or more). Raiffeisen argued that short-term loans were of little use to farmers. In his defense of the Raiffeisen-style cooperatives, Theodor Kraus (1876, p.4) argued that agriculturalists needed credit for longer periods than the urban workers and small businessmen typical in Schulze-Delitzsch cooperatives. One could in theory take a long-term loan by repeatedly rolling over short-term loans, but this entailed considerable transactions costs.[20] The

[20] Loans from rural cooperatives usually had a 90-day recall provision. The historical records of individual credit cooperatives studied in Guinnane (2001a) suggest this recall was extremely rare, usually associated with problems in the *loan* rather than the cooperative's illiquidity.

rural cooperatives also tended to have nominal or at least small shares, meaning that they were highly leveraged. Their primary liabilities were deposits from members and non-members. These were typically time deposits. But given their long loans, even a three-month withdrawal notice requirement meant that a rural cooperative was lending long and borrowing short. The rural cooperatives were by construction less liquid than their urban counterparts, a difference that concerned Schulze-Delitzsch (1875), but he was probably missing an important feature of the rural institution's design. In the Calomiris-Kahn (1991) model of demandable debt, depositors try to liquidate their accounts when they have reason to fear that the bank's asset portfolio has suffered a shock and is no longer sufficient to cover its liabilities. A conventional bank needs to maintain liquidity because it is one way to contend with the informational asymmetry between the bank's managers and its depositors. Credit cooperatives did not face this asymmetry to the same degree, and were able, as a result, to have less liquid portfolios.

Schulze-Delitzsch, Raiffeisen, and other cooperative leaders stressed different reasons for credit cooperatives, but all based their movement on the assertion that formal credit providers such as banks were not able to serve the urban artisans and rural smallholders that formed the basis of the cooperative's membership. Their economic critique of banks was similar: the cooperative's members made poor loan customers for banks because they entailed unusual information and enforcement problems. Raiffeisen and other leaders argued that in a cooperative limited to a small geographic area, such as a village or several hamlets, actual and potential members had considerable knowledge of each other's habits, character, and abilities. In 1912, 71 percent of all Raiffeisen credit cooperatives were located in places with 2000 or fewer people (Generalverband 1912, Table 3). People in this context could impose a wide variety of economic and extra-economic sanctions on one another. Because of these information and enforcement mechanisms, cooperatives could dispense with the costly conditions other lenders used to provide information and enforcement. Schulze-Delitzsch cooperatives had to have different policies in part because they were located primarily in urban areas and thus had more limited information and enforcement abilities. Their members could not hope to know each other as well as members of a small rural community, and enforcement mechanisms that worked in rural areas would not necessarily work in a city.[21] Abhijit Banerjee, Timothy Besley and Timothy Guinnane (1994) show that some crucial differences in cooperative design were rational adaptations to differences in external conditions. Guinnane (2001a) uses the business records of several rural credit cooperatives in the late nineteenth and early twentieth centuries to test three implications of this information/enforcement hypothesis. The sources bear out the basic claim. The credit cooperatives acted as if they had good information and could enforce loan terms on borrowers.[22]

2.3 Regional credit institutions for *Sparkassen* and credit cooperatives

Sparkassen and credit cooperatives each had their own aims and methods. Yet they faced a common inability to diversify caused by their restriction to a small geographical area. To the extent their depositors and borrowers faced common economic shocks, which was often true in a single urban area or small rural district, the institution faced the prospect of losing deposits at the same time its loans were not performing. One can imagine two ways to deal with this problem. The first would be to allow the institution to draw deposits from or to make loans outside its locality. This approach could be effective in achieving diversification, but creates its own information problems. At any distance large enough to achieve diversification, the institution's managers would be less well-informed about potential borrowers and depositors would be less well-informed about the institution. This approach was mostly rejected by both the *Sparkassen* and the credit cooperatives. These institutions held government bonds, but they did not to any appreciable extent diversify the geographical basis of either their lending or their deposit base. The other way to deal with this problem was common to both *Sparkassen* and credit cooperatives. Each group developed regional institutions that could take deposits from and make loans to

[21] As Duncan Watts (1999) shows, the "small world" phenomenon may imply that even in a large urban environment, individuals may be connected through a small number of acquaintances. Still, this is a different phenomenon from a village where everyone literally knows everyone else.

[22] The rural credit cooperatives bear some resemblance to modern institutions such as the Grameen Bank that use joint-liability lending contracts to overcome their borrowers' lack of collateral. For a discussion of this comparison see Maitreesh Ghatak and Guinnane (1999).

member *Sparkassen* or credit cooperatives. The regional banks could also borrow from and lend to the larger capital market, providing some insurance against shocks to all members of their group. In the case of the credit cooperatives the regional banks (in their case, "Centrals") were closely linked to regional auditing associations that are discussed in the next section.

The development of regional banks for *Sparkassen* blended several developments. Early in the nineteenth century some *Sparkassen* began to work with *Landesbanken* or *Provinzialbanken*.[23] *Landesbanken* and *Provinzialbanken* had been established by German governments to provide several kinds of loans to defined entities, and *Sparkassen* were just one of their clients. Helmuth Poensgen (1910) notes that the *Landesbank* for the Rhine province, for example, at various times served local credit cooperatives, regional and local governments, and selected charitable institutions. Depending on the German state, these regional banks could invest surplus funds lent to them by a savings bank and could lend to *Sparkassen* that suffered liquidity problems.[24]

A second development marked the beginning of large-scale cooperation among *Sparkassen*. For several decades there had been an effort to make all savings banks accounts transferrable across institutions at little or no cost. This innovation was advanced by worker's associations on the grounds that workers often moved between cities and forcing them to pay fees

[23] The institutions are similar; the former was a state bank, usually in a smaller German state, while the latter was a provincial bank in a larger state such as Prussia. Their surviving counterparts are now all *Landesbanken*.

[24] The 13 remaining *Landesbanken* (and the *Sparkassen* themselves) are now at the center of a serious dispute between the German government and the European Union. Several *Landesbanken* have become quite large and still enjoy a costless liability guarantee from their sponsoring government. The *Sparkassen*, which are nearly all still owned by a city or state government, enjoy the same guarantee. The largest *Landesbank*, WestLB, is among Germany's largest banks and uses its very high credit ratings to compete with for-profit banks in Germany and elsewhere. The high credit ratings are solely the product of the liability guarantee; the *Landesbanken* are not in good shape taken on their own, as Hans-Werner Sinn (1999) shows. The European Commission ruled in July of 2001 that the liability guarantee was a prohibited state subsidy to the bank.

or forego interest on *Sparkassen* deposits discouraged use of the institutions. The situation was remedied in the late nineteenth century, when the *Sparkassen* began to set up mechanisms whereby a depositor in Berlin could withdraw money from a Munich *Sparkasse*. To facilitate this process German savings bank associations established *Girozentralen* that could transfer money and settle accounts across *Sparkassen*. This development was intensified when the Check Act standardized rules for writing and clearing checks. This Act as extended in 1909 allowed *Sparkassen* to be the drawee for checks. Active pursuit of these new possibilities led to the formation of a true savings banks "group," with new or enlarged *Landesbanken* and *Girozentralen* to facilitate clearing of checks.

A similar problem arose early on in the cooperatives with a mismatch between deposits and loan demand faced by most cooperatives, especially the rural cooperatives. There were two variants on the problem. Sometimes, because of the location of other financial institutions or because of local investment opportunities, a credit cooperative persistently attracted more deposits than it was willing to lend. Others cooperatives, especially in areas well-served by *Sparkasse*n, were not able to attract deposits. Rural cooperatives also had problems with seasonality, given that many of their members and depositors depended either directly or indirectly on agriculture. Cooperatives were loath to use interest rates to match supply to demand. In a mutual organization, setting interest rates amounts to distributing surplus between borrowers and lenders, and both demand and supply were fairly inelastic in any case.

Credit cooperatives experimented with several solutions to these problems. Some of the larger Schulze-Delitzsch credit cooperatives at first had informal agreements to accept deposits from and make loans to other credit cooperatives. Private banks also served credit cooperatives. We cannot know how widespread the practice was, but some rural credit cooperatives invested their surplus funds with private bankers, and private bankers sometimes lent money to credit cooperatives. Eventually the cooperative movement developed its own institutions to serve these needs. Schulze-Delitzsch's group started a for-profit bank, the *Deutsche Genossenschaftsbank* *von Sörgel, Parrisius und Co*.[25] Founded in 1864, the bank was owned by cooperatives and by investors sympathetic to the cooperative movement, and served both credit cooperatives and other customers. After running into financial trouble it was sold to the Dresdner Bank in 1904.

Rural cooperatives took a different approach. They created regional credit cooperatives called "Centrals" that were owned by their member cooperatives. Raiffeisen's group had a single Central while the Haas group and some smaller cooperative associations developed several regional Centrals. Rapid development of these institutions did not take place until after 1889, when a new cooperative law made it possible to form a limited-liability Central whose members could be, in turn, cooperatives. Centrals took deposits from member cooperatives and could also lend them money, on either a long-term or seasonal basis and to bail out troubled cooperatives. Centrals also served as a conduit to the larger capital market, investing in government obligations and other securities and in some cases obtaining loans from for-profit banks. One case study suggests that Centrals played an important role not in lending funds between member credit cooperatives, but in allowing credit cooperatives to be net lenders to the Centrals' other members (cooperative creameries, marketing cooperatives, etc).[26]

Some in the cooperative movement saw the need for an all-German Central. In 1895 the Prussian government chartered a bank that was intended to parallel the Reichsbank and to serve the needs of all cooperatives within Prussia. The Prussian Cooperative Central Bank (usually called the *Preussenkasse*) remained a governmental body, run by Prussian bureaucrats and directed by royal appointees. (An advisory body included leaders of the cooperative movement.) The original capital was all subscribed by the Prussian government, and although cooperatives and their Centrals were permitted to purchase additional shares, few did. The *Preussenkasse* played several roles, some of which were unrelated to the cooperatives. A Central could use the *Preussenkasse* as its Central, borrowing when needed and depositing excess funds at other times. Some credit cooperatives dealt directly with the *Preussenkasse*. This institution was controversial

[25] The present-day Deutsche Genossenschaftsbank (DG Bank) is the descendant of a different institution discussed below.

[26] See Guinnane (1997), especially pp. 254-262, for detail on the central cooperative banks.

in the period prior to World War I. The Schulze-Delitzsch movement actively opposed it, seeing in it subsidies that would enable the government to exert too much influence over the cooperative movement. Others thought the individual Centrals served all the legitimate needs of their member credit cooperatives and that the *Preussenkasse*'s only real role was to provide support to the relatively weak cooperatives in Germany's eastern provinces. Some historians have used the *Preussenkasse* to argue that the entire cooperative banking system was the product of government subsidies. This view is inaccurate; the *Preussenkasse* came late in the groups' development, many cooperatives had no connection to the new bank, and the implied subsidies were in any case small.[27]

2.4 Supervision of *Sparkassen* and credit cooperatives

Both *Sparkassen* and credit cooperatives would seem to be institutions prone to serious problems of fraud, managerial incompetence, or both. The former were responsible to city and other officials who might or might not know anything about banking, and most rural credit cooperatives were run by part-time managers who had little formal accounting experience. Both institutions also faced a serious externality implicit in their "brands" and competition with other financial institutions. If a single *Sparkasse* experienced problems this fact was often reported in the press as reflecting some general weakness in *Sparkassen* management. The problem was even worse in credit cooperatives, where sniping among the various groups often took the form of arguing that cooperatives of one type (e.g., Schulze-Delitzsch) were inherently flawed. Insolvency in the smallest of credit cooperatives was discussed in the press for months. Both *Sparkassen* and credit cooperatives developed methods to supervise their institutions, although the methods adopted were at first different.

Regulation of *Sparkassen* varied across German states, but there were some common features. Prussia was the first German state to have systematic, state-wide regulation of its savings banks, starting in 1838. The underlying notion was to permit savings banks to operate as they

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[27] The *Preussenkasse* survives to this day in the present-day Deutsche Genossenschaftsbank (DG Bank).

wished subject to some basic rules. These rules included an “open” clientele, with the proviso of maximum account balances (to discourage wealthy depositors) and a maximum share of all liabilities owed to wealthy people. In Bavaria, on the other hand, the government took closer control of the *Sparkassen* early on, in part to harness them as a vehicle for the financing of state debts as noted above.

The deposit guarantee that made the *Sparkassen* attractive to depositors also presented a moral-hazard problem for their owners. The savings banks had no owners separate from their chartering authority, and their depositors had neither the incentive nor the means to do much monitoring of the institutions’ activities. Government officials, savings-bank leaders, and others interested in the movement recognized this problem and took several approaches to dealing with it. Clerks and managers posted bonds. In many places city officials sat on the *Sparkasse*’s board of directors as a matter of course. A Prussian ministerial decree of 1875 required the employment of supervisors for internal bookkeeping. As early as the 1890s *Sparkassen* organizations were providing external audits to their members, but a legal requirement for such audits did not come in Prussia until 1925.[28]

Supervision was more important for the credit cooperatives. The legal limitations on asset portfolios served to keep *Sparkassen* away from the most dangerous activities, and their size and reliance on paid employees altered, if it did not reduce, the potential for fraud. Credit cooperatives had far less limitation on their activities. They could lend to any member for any “productive” purpose. Their reliance on loans secured by co-signers or other means actually prevented them from making the safest loans, mortgages, for most of the period considered here; some of the loans that created trouble for cooperatives were forbidden to *Sparkassen*. Reliance on volunteer (and part-time paid) managers posed its own problem. Little wonder, then, that the credit cooperatives developed more stringent supervision methods earlier in their history. The credit cooperatives took a different approach. Schulze-Delitzsch had advocated external audits of cooperatives in his group, and Raiffeisen and other rural cooperative leaders developed an

[28] None of the available histories of the *Sparkassen* movement discuss the history of external audits in any detail. Stiftung Westafälisches Wirtschaftsarchiv (1998, p.26) refers to the organization for the Rhein-Westfalia region. I thank Richard Tilly for his help with this question.

informal system whereby local cooperatives had their books checked by someone else. This system became more formal over time, especially in the rural cooperatives, and in 1889 the new law made external auditing compulsory for cooperatives. This feature of the law came at the request of the credit cooperatives themselves, who feared that failures in improperly-run cooperatives would damage confidence in the group as a whole, and who feared equally that direct State supervision would be the first step towards State control. Under the 1889 law, every cooperative had to be audited at least every other year. A cooperative could simply ask the court at which it was registered to appoint an auditor. Or the cooperative could join an auditing association, groups that had existed for some time but were only given the right to function as specialized cooperative auditors in 1889. Auditing associations were private, voluntary groups owned and controlled by member cooperatives. They employed specialist auditors who examined the cooperative's books and both corrected errors and made recommendations for changes in business practice. Their only real power was to eject a recalcitrant cooperative from the auditing association, but this was a powerful public signal and made it difficult for the ejected cooperative to continue operating. Some auditing associations worked closely with a regional Central, and in those cases the auditors had the additional power of recommending that a Central approve or deny loans to a cooperative. Not all credit cooperatives joined auditing associations after 1889; a minority of older, more established institutions continued to rely on private auditors. This pattern reflects the auditing association's purpose, which was to substitute external supervision for confidence in a particular institution's managers. The older cooperatives had already developed good reputations and felt no need to submit to the auditing association's standards.[29]

3. The credit banks

Gerschenkron's argument focused on credit banks. These large institutions had distinctive features and some distinctive methods, but some of the attributes that Gerschenkron thought were peculiar to credit banks had appeared much earlier with the private banks. This section considers

[29] Discussions of Centrals and their lending powers show a keen appreciation of the moral hazard problems created by bailouts. See Guinnane (1997, 2001b) for more on the cooperative auditing system.

first the private banks, then the credit banks, and then the evidence on Gerschenkron's view of the credit banks.

3.1 Private banks

The forerunners of the universal banks that emerged in the second half of the nineteenth century were smaller banking houses called *Privatbanken* (private banks). Mayer Amschel Rothschild (1744-1812), founded the most famous, but not the first, German private bank. Some of the important features of the famous credit banks emerged in private banks during the early part of the nineteenth century. For this reason and others they warrant attention. Our discussion will be selective, focusing on the role of the private banks in financing industry and their relationship to the later joint stock banks.

Private banks emerged in the late eighteenth and early nineteenth century in various parts of Germany. Most private banks were a single individual or family group, sometimes with partners. Individual bankers could be linked in complicated ways by marriage and blood relationships, as indeed were the Rothschilds. Any estimates of the number and size of private banks in different German regions would be imprecise because private banks were rarely incorporated and sometimes an individual or family engaged in banking alongside other activities. The origins and early specialization of private banks reflects the nature of economic activity in the regions in which they were located. Banks did not emerge until the early nineteenth century in Berlin, and at first were primarily occupied with financing the Prussian government's debt. Private banks in the maritime city of Hamburg, on the other hand, had employed the city-state's location to develop an extensive business in financing imports and exports, and many retained a hand in non-bank business longer than was typical elsewhere (Pohl 1986b). Elsewhere in Germany banks also developed first as adjuncts to merchant trade. Some banks emerged when a transportation enterprise gave up carriage to focus on finance when the latter became more profitable. Wilhelm Treue (1980, p.94) notes that in other cases a merchant split his business among sons leaving one to be a merchant and another the banker. Niall Ferguson (1998, pp. 42-45) notes that Mayer Rothschild began his career as a dealer in antiques and rare coins, a business that allowed him to accumulate capital and acquire the court contacts that would facilitate his success in banking. The origins of private banks in mercantile houses accounts for the strong representation of private banks in important trading cities like Cologne. This fact also explains why Bavaria, with its relatively underdeveloped trade and industry, had few private banks until the mid-nineteenth century. The most important banking center in the early nineteenth century was Frankfurt, which had been a trading center for centuries.

Private banks in the nineteenth century remain under-studied, and most of what we know about them comes from some cases studies and from Tilly's excellent account of financial developments in the Rheinland in the period 1815-1870.[30] The Rheinland was not Germany's only industrial region, but it became one of the most important. As Tilly notes, private banks in the Rheinland emerged entirely from trade, but grew and developed in interaction with the region's industrialization. Rhenish private bankers were about one-sixth of all Prussian banks in 1820 (Tilly 1980, p.36). Thus Rhenish banks illustrate the involvement of banking in industry that is our main concern, but it is not necessarily true that their methods were typical of private bankers elsewhere in Germany.

The private banks' lending operations preceded their roles as investment banks. Lacking balance sheets for private banks as a whole, any statements about their operations will be impressionistic, but there are important common themes in the case studies. The most important lending instrument was the current account, an overdraft vehicle where the borrower paid interest only on the balance outstanding at a particular time. Usury laws in Prussia and other parts of Germany at first limited interest rates charged on loans.[31] Bankers raised loan yields by charging

[30] In addition to Tilly (1966), there are several studies intended as comprehensive accounts of German banks, but which devote only limited attention to private banks (for example, Pohl 1986a). Several studies that focus on private banks concentrate on later periods (for example, Klaus Donaubauer 1988, and Wixforth and Ziegler 1994). Treue (1980) is one of the only recent discussions of private banks in Germany as a whole for the early nineteenth century.

[31] Treue (1980, p.101) notes that in response to a government inquiry in1848, the Düsseldorf Chamber of Commerce said that current accounts were the most common form of bank credit. Most usury restrictions were abolished in the North German Confederation in 1867 and in south Germany soon after.

borrowers a commission fixed at a percentage of turnover. Private banks also lent via bankers' acceptances and by re-discounting bills of exchange that arose from transactions between two firms. Security for these loans took several forms. Sometimes a borrower's apparent wealth was sufficient to assure the banker. Often the banker would demand an explicit mortgage. In other cases a third party guaranteed the loan. Accounts quote a lively correspondence among bankers as to the wealth and credit-worthiness of various actual and potential borrowers.

Most discussions of banking and industrial development stress the industrial firm's need for long-term finance, a type of finance most banks are thought not able to supply. When private banks lent through the current account they ordinarily expected that any given overdraft would be repaid within a fairly short time, say six months. Such loans would be renewed repeatedly, with a bank lending to the same customer many times over a decade. This short-term lending was motivated by the banker's expectation that the loan was financing goods in shipment (for merchants) and raw materials, wages, and inventories (for industry). Private bankers did not see their ordinary lending operations as suited to the long-term finance of fixed investments.

In their limited reliance on retail deposits, private banks were different from those in England or the United States, where the equivalent of private banks early on used retail deposits to fund loans. At first German banks mostly lent their own capital, and throughout the nineteenth century a bank's capital remained a large fraction of its liabilities. The restrictions on bank-note issue meant that private banks played a smaller role in the provision of money substitutes, although some devices were used. Some customers used book transactions with their bank to settle debts with other customers of the same bank. Bills of exchange also circulated as a money substitute. A more interesting development was the "dry" bill (a bill that did not arise out of third-party transactions), that in some places was an important part of commercial life. A creditor could draw a dry bill directly from his banker, and then use the bill to pay his debts with third parties. The system was similar to modern checking systems except that the bills had an expiration date (Tilly 1967, pp.170-171).

This feature of private banks reflects both legal restrictions on the issue of banknotes as well as the perception that there was little profit in serving the needs of households. Private banks took deposits, but not in the sense of modern demand deposits. The Cologne Chamber of commerce estimated that in the period 1847-1850, only 40 percent of private bank liabilities came from deposits. Some of these deposits were fairly small, but others were large, long-term investments supplied by wealthy rentiers. Unfortunately we cannot know what fraction of deposits can be attributed to small depositors, but in the Rheinland the large-scale withdrawal of small deposits during the crisis of 1848 caused some stress to private bankers who in turn largely abandoned that source of finance (Tilly 1966, p.64). Banks reduced their deposit interest rates and funds left the banks for the *Sparkassen*. In its annual report for 1850, the Schaaffhausen bank (at that point a joint-stock firm) stated its intention not to seek deposits, seeing them as dangerous to the bank's security.[32] Presumably the strength in the *Sparkassen* system at this point played a role here. The private banks, or for that matter the Schaaffhausen, could have instituted deposit accounts with required notice for withdrawal, but these accounts were already available to the public in strong, secure institutions. Individuals and firms who retained significant deposit accounts kept them for other reasons. When banks began to underwrite stock and bond issues in the 1830s and 1840s, bankers acquired a new source of funds. Banks were used as disbursement agents, and bankers were usually represented in the firm's management and so were well-placed to know when funds would be withdrawn for payment. Thus balances held by such firms could be used more efficiently than other funds subject to withdrawal with less predictability.

The lending practices developed for commercial purposes served well during the private banks' heyday, and in fact were largely adopted by the later joint-stock banks. The more distinctive feature of the private banks was their role in investment banking, or what contemporaries called "foundational activities." To a greater extent than elsewhere, German private banks began in the early nineteenth century to help firms raise external finance through securities issues. Much of the early activity stemmed from railroad construction. Some German governments other than Prussia provided extensive financial assistance for railroad construction, but Prussia at first provided little.[33] The scale of such projects was beyond the means of local

[32] The statement is cited in Donaubauer (1988, p.29).

[33] This attitude later changed. Knut Borchard (1968, pp, 296-298) estimates that up to 1850, about 9 percent of all railroad construction funds in Prussia were provided by the government,

entrepreneurs. They turned to private bankers, whose national and international connections could provide the needed capital. At first the securities were most often bonds, as most German states strictly limited the creation of joint-stock enterprises. But from the bank's perspective the economic basis, and reward, to stock and bond issue was similar. Just as and investment bank would today, a private bank would help new or expanding firms develop a securities issue and then sell it through partners and intermediaries. The bank initially held some of the issue in its own portfolio, both to signal the issue's quality and to help maintain the price in the thin markets of the day. For most securities, and invariably with large issues, the banks worked in groups, sometimes pairing a leading German private bank with smaller German private banks as well as banks abroad, in France, Austria-Hungary, etc. For example, the incorporation of the Rhenish Railroad Company in 1837 required the participation of four Cologne private banks as well as the assistance of both the Frankfurt and Paris branches of the Rothschild family (Donaubauer 1988, p.26). These arrangements were necessary, given the weak formal markets for securities at the time. Most German cities lacked a securities market, and any large issue would overwhelm demand on the small but comparatively well-developed Frankfurt market.

The banker's return from such investment-banking operations could be enormous. Tilly (1966, pp. 108-110) notes that in some cases just the *direct* return could amount to 20 or 30 percent on the outlay, and argues that the return was necessary to compensate the bank for the risk involved. At least in part, this is true, and he cites several statements by bankers suggesting that they thought that even these rewards were not worth the risk. Another perspective would stress the barriers to entry into the banking sector. One barrier was reputation; in selling a security the private bank was staking its reputation on the security's value, and such reputations could not be built up overnight.[34] There were also explicit agreements among bankers not to compete for

compared to about 73 percent for Germany outside of Prussia. See Jan Bongaerts (1985) for details on early railroad construction and Colleen Dunlavy (1994) for a more general discussion of the role of the State in railroad construction in the U.S. and Germany.

[34] J. Braford DeLong (1991) has shown that in the United States at the turn of the twentieth century, J.P. Morgan's group earned profits at least as large as Tilly cites. DeLong notes that the only

certain business, implying a more traditional barrier to entry. According to Tilly (1966, p.102), "nearly every stock and bond issue ... involved some kind of agreement" of this sort. The largest private banks were, by the end of their heyday, in some cases larger than the new joint-stock banks that eventually replaced them. The Oppenheim bank had more than twice as much capital at the end of the 1860s as the Schaaffhausen, the first of the joint-stock banks. The size of individual private banks was less important because of their habits of working together closely. Banks borrowed from other banks on a regular basis; the Rothschilds were called the central bankers to the Rheinland (Tilly 1966, p.67).

The history of the private banks support a case for close connections between banks and industrial firms in two ways. First, recent arguments for the superiority of the universal bank emphasize the scope of its operations and its ability, by providing several different types of finance, to obtain, preserve, and use information on its customers. This feature of the later joint-stock credit banks is clear in the private banks that preceded them. A private banker would lend to a firm or individual for many years through the current account and other vehicles. The relationship could transcend any individual, with the initial borrower's son using the same bank, later run by the initial banker's son. Over time, the information built up by this relationship reduced the cost of lending. When the firm decided to issue securities, the private bank was in a position to underwrite the securities or to enlist the help of other private banks in doing so. In either case the bank's knowledge of its customer helped the firm overcome the "lemons" problem studied by Diamond (1991). Second, the private banks did not always wait until entrepreneurs came to them seeking loans. There were cases of the banker playing a leading role in the formation of a new enterprise, either bringing together existing firms or helping to create something new from scratch. The banker's incentives to play this role were many. They would earn fees and other income from the initial financing, and to the extent new enterprises strengthened and expanded the business of his current customers, the banker increased the profitability of his current business.

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barrier to entry in investment banking at the time was reputation; Morgan was earning, in effect, a quasi-rent from his ability to pledge his reputation.

Partly because of this power, and partly because of their information and desire to safeguard their investments, private banks early on placed representatives in the managements of firms they helped to create or finance. Nearly every joint-stock firm in the Rheinland founded between 1830 and 1870 had a private banker or his representative on either the supervisory or management board. Private banks exercised control in part through ownership of shares directly, but they also worked to acquire proxies, sometimes only for the purpose of influencing a single shareholder's meeting. For example, in 1851 the Oppenheims asked the Frankfurt Rothschilds for the right to vote the Rothschild shares at a meeting of the Colonia Insurance company's shareholders (Tilly 1966, p.107). Where there was no banker involved directly in the firm's management, there was someone else designated by a banker and understood to represent the interests of the banker and the banker's clients. These relationships are not surprising, but are often portrayed as a special feature of the later joint-stock banks.

The private banks receive little attention in recent discussions of the role of German banks in industrial finance. They remain comparatively under-researched, and the literature may not warrant general conclusions or comparisons. But two themes emerge from our discussion. First, many features of the later joint-stock credit banks are apparent in the private banks from the early nineteenth century. The private banks played a leading role in founding and managing companies, and they used their ability to provide both loans and investment-banking services to acquire a strong and profitable role in early German firms. Second, we see the role of a division of labor and interactions between various parts of the emerging German financial system. At a time when English or U.S. banks relied heavily on deposits from private households, German private bankers (temporarily) abandoned this source of finance. Although the immediate concern was the potential volatility of this liability, the underlying cause for the banker was the safe alternative available in the *Sparkassen* and later in the credit cooperatives.

3.2 Development of the joint-stock, universal banks

The essential differences between the private banks and the more famous credit banks of the late nineteenth century consist of size, corporate form, and scope. Over time the credit banks became much larger than any single private bank. Some of these banks had originated as

Kommanditgesellschaften auf Aktien, but after the liberalization of incorporation rules in 1870 most were joint-stock firms. The credit banks offered their customers a broader array of services than did most private banks, and their size and range of services is crucial to their supposed role in German economic development. But it is important to see the credit banks as developments of the private banks, and to understand how credit banks and private banks interacted in the first few decades of the credit banks' existence.

The first credit bank was formed on the ruins of a failed private bank. The Schaaffhausen, one of the largest Cologne private banks, had failed in 1848. The government gave permission to reconstitute it as a joint-stock institution to limit further damage during that crisis. The Schaaffhausen eventually became a major credit bank, but during the 1850s its operations were limited by its financial weakness. Most historians view another institution, the *Bank für Handel und Industrie* (usually known as the Darmstädter Bank), as pioneering the defining methods of the credit banks.[35] The Darmdstäder illustrates the role of private bankers and the early importance of foreign connections in the German banking system. The bank was modeled after the French Crédit Mobilier, which had been chartered in 1852. Crédit Mobilier represented a new kind of institution for France; it combined traditional banking functions such as taking deposits, making loans, and discounting bills with dealings in securities and the promotion of new and enlarged joint-stock enterprises. Abraham Oppenheim soon began work on a project to establish a similar institution in Germany. Oppenheim and his partner Gustav Mevissen had already played a central role in the new Schaaffhausen. Together with Moritz Haber, a Karlsruhe banker who was also Oppenheim's brother-in-law, they received permission from the Grand Duke of Hesse-Darmstadt to establish their bank in that city. The more natural choices of location would have been Cologne or Frankfurt (established financial centers) or Berlin (the seat of government). But Cologne and Berlin were Prussian and unsuitable given Prussia's attitude toward joint-stock firms, and the Rothschilds had enough political influence in Frankfurt to prevent the new institution in that city.

[35] The Därmstadter dates to 1853. Its name, "Bank for Trade and Industry," is indicative of its intended mission.

Darmstadt, which is less than 20 miles from Frankfurt, had to do.[36] The new bank's program as laid down in its statutes was typical, with some important variations, of later joint-stock banks. The Darmstädter was to accept deposits and make loans on current account, to deal in securities (both government and private), act as a financial agent for industrial enterprises (including issuing their securities), and to mobilize capital by issuing its own obligations to the public.

The Darmstädter Bank's creation illustrates some common features of the time. The first board of directors was composed entirely of residents of either Cologne or Frankfurt. Placement of the bank's shares required considerable foreign help, including that of the Crédit Mobilier. Cameron (1956, p.123) estimates that at least half of the new bank's initial capital came from France. Most importantly, the energy behind the bank's creation came from three private bankers. Joint-stock banks would eventually compete with and later absorb many private banks, but in their initial stages joint-stock banks were simply another project undertaken by private bankers.[37] The Rothschilds and their allies, in fact, almost immediately promoted a similar institution.

The Darmstädter's success led to immediate imitators. In 1856 the Berlin Handelsgesellschaft was formed and the Berlin Discontogesellschaft was re-established, both as *Kommanditgesellschaften auf Aktien* to evade Prussia's limitations on joint-stock institutions. Many other, regional, credit banks were also formed at this time. The financial crisis of 1857 cooled interest in new banks for a while, but the boom (1871-1873) that followed victory over France and the payment of a French war indemnity led to the creation of several more large credit banks along with dozens of smaller regional institutions. Establishment of new credit banks was

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[36] Berlin would have made most sense for financing of railroad construction and other projects that required government permission, but the the Prussian government had denied an application to establish a similar institution in Berlin in 1853 (Poschinger 1879, p.214); I thank Richard Tilly for this reference. Mevissen and Oppenheim had also applied for permission to establish a note-issuing bank in Hesse, but that government attached to its permission the condition that the Mevissen and Oppenheim construct a railroad through Hesse's territory. This condition made the note-issuing bank unpalatable and the two dropped that project (Franz Knips 1912, p.27).

[37] This account of the Darmstädter Bank relies on Cameron (1956). Others, including Riesser (1912, p.50) see the Schaaffhausen as playing a more central role in the Darmstädter's creation.

aided by the relaxation of incorporation laws in 1870, which made it easier to form banks and more importantly made it easier for firms to incorporate and to issue the securities that were so important to the new banks' business. Among the most important new banks were the Deutsche Bank, founded in 1870 by a group headed by the Berlin private banker Adelbert Delbrück, and the Dresdner Bank, created in 1872 and headquartered in that city. The severe recession that began in 1873 led to the liquidation of many banks, most of which were absorbed into the larger credit banks. By 1914 there were 8 "Great Banks" (the Great Banks were simply a group of very large Berlin banks) and 86 major regional credit banks.

The Deutsche Bank grew to be the largest credit bank in Germany by the late nineteenth century, and because of its size and somewhat different development requires special note.[38] This bank had at first refrained from the industrial issues that characterized its competitors, and instead worked hard to develop overseas branches and connections to assist in financing trade. By the end of the 1870s it had branches in the seaports of Hamburg and Bremen, as well as in London, Shanghai, and Yokohama. The Deutsche Bank also acquired substantial interests in banks in New York and South America. The London branch was a great success, but the other overseas efforts did not go as hoped, and by the later 1880s the bank had re-focused its efforts on the German market. The bank's first industrial stock flotation took place in 1890, and from that time on the Deutsche Bank developed its investment banking activities along the lines already pursued by the Dresdner and other large credit banks.

The Deutsche Bank was also largely responsible for an important innovation among credit banks, the active effort to use retail deposits to finance banking. As late as the 1880s most large credit banks, whether headquartered in Berlin or not, had only a few branches in the main business centers. They also retained the older private banks' policy of not financing their operations with deposits. The Deutsche Bank departed from both of these policies and was the pioneer among credit banks in the deposit business (Gall 1995, p.20). The bank began to supplement its branches with special offices intended for deposit-taking only (*Depositenkassen*) starting in 1871, and by

[38] The Deutsche Bank's assets were larger than those of any other credit bank after 1876, but Lothar Gall (1995, p.23) notes that contemporaries viewed the Discontogesellschaft as the more important bank by virtue of its market position and connections to other banks and firms.

1910 had 87 of these offices. Growth in deposit-taking was at first slow, but deposit balances grew from about 5 million Marks in 1871 to 780 million Marks in 1908. The minimum account balance was set at 100 Marks, which meant that the Deutsche Bank was not serving small savers, but it definitely competed with *Sparkassen* and to a smaller extent credit cooperatives for the savings of workers and the middle class.[39] The development of deposit-taking profoundly altered the balance sheets of the Deutsche Bank and other credit banks. In 1895 short-term liabilities such as deposits and balances on credit accounts were 51 percent of the Berlin banks' liabilities. By 1913 this figure was 76 percent (Whale 1930, p.24). This encroachment onto the territory formerly dominated by the *Sparkassen* was part of what provoked the latter's demand that they be able to provide checking services.

As they developed their branches the largest credit banks each had a presence in several if not most regions of Germany, even if headquartered in Berlin. This regional diversification enhanced their ability to do business in several industries (as most industries were regionally concentrated) and enhanced their ability to weather shocks to a region or industry. The Berlin banks in particular tended to work as the leaders of a larger group of banks (*Konzern*), meaning that the number of branches understate their effective regional spread and their own assets understates their effective economic weight. The regional banks needed a Berlin bank to acquire access to the Berlin money market, to employ funds they could not profitably invest at home, and to carry out large transactions for themselves and their customers. The Berlin banks needed the regional institutions to diversify and extend their ties to borrowers and investors. The connections between a Great Bank and other institutions could take several forms. Sometimes the Great Bank owned a regional institution outright. More commonly the Great Bank owned a minority share of

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[39] In section 2.1 above we noted that by 1908, more than a quarter of all *Sparkassen* accounts had balances of 600 Marks or more. Gall (1995, p.20) attributes the Deutsche Bank's leading role in deposit-taking to the fact that two of its original directors, Hermann Wallich and Georg Siemens, had extensive international experience and had observed the ability of English and other banks to use retail deposits profitably. Hellwig (1998, pp.339-340) offers an interesting perspective on this issue. He notes that deposits are not in fact a cheap source of finance if they make the bank unstable, and suggests that the eventual reliance on deposits was less obvious than it appears to us.

the regional bank, and might have a representative on the smaller bank's board of supervisors. Large banks also formed long-term relationships with smaller banks in which they had no formal ownership interest. A Great Bank's "group" could control assets considerably larger than those of the bank alone. In 1913, for example, the Deutsche Bank's group supposedly included more than a dozen large private banks and credit banks. Using a narrower definition of the bank's group, Jeidels (1912, p.27) notes that in 1902/03, the Deutsche Bank itself had capital plus reserves of 255 million Marks, but led a group with a total of nearly 500 million Marks. By one estimate, nine Berlin banks with their groups accounted for 62 of the 160 largest credit banks that existed in 1913. These 62 banks controlled 83 percent of all working funds owned by those 160 banks.[40]

Concentration among the for-profit banks reflects a rapid development in the 1880s and 1890s. Starting as early as the crash in 1873, failed banks were either bought up or re-capitalized by larger institutions. As we saw in Table 1, private banks declined in relative size over this period, and much of this change reflects the absorption of some private banks into credit banks. The literature has not reached any firm conclusions on the reasons for this development, but there are three lines of argument that each contain a kernel of truth. Riesser (1913) emphasizes changes in banking technology and methods that imply economies of scale. But his view is difficult to distinguish from efforts to exploit market power. A second reason for increased concentration in banking was the increased concentration and outright cartelization of large sectors in Germany industry. Wilfried Feldenkirchen (1988) points out that German law generally allowed firms to write binding cartel agreements, and in many sectors these agreements were in force among firms accounting for much of that industry's market share. The industrial cartels were neither as long-lived nor as effective as some accounts imply, but they had two related implications for banking. The larger firms that developed out of industrial concentration required ever-larger financial institutions to serve their banking needs. Banks were also sometimes drawn together into working relationships by the cooperation of their *clients* who had agreed to a cartel arrangement.

[40] Cited in Whale (1930, p. 30 and p.32). These bank groups were fluid and other authors would define particular banks' groups somewhat differently. Riesser (1912, Beilag [Appendix] VII) is careful to distinguish associations based on ownership or significant investments by the leading bank from those based on "friendly relations."

A final reason for the increasing power of the largest banks was often stressed by contemporaries such as Albert Blumenberg (1905), but has dropped out of more recent discussion. Between 1884 and 1914 there were several changes in the law governing the foundation of companies and the issuance of stock, the tax law on securities, and the rules about trading securities on securities markets in Berlin, Frankfurt, and elsewhere. These laws all strengthened the role of Berlin-based Great Banks in the securities business, a consequence that was in some respects unintended. The 1884 law on company foundation established a minimum share size of 1000 Marks, required that all of a new company's equity be subscribed before the firm could come into being, required the investment banker to acquire shares only at par, and established strict rules about publication of fees and related details. Norbert Reich (1979, p.263) notes that this was a ten-fold increase in the minimum share size and made it much more difficult to market individual shares. The 1884 law also eased the use of proxy voting and enhanced the role of the supervisory board, two additional moves thought to enhance the role of those, like large banks, that could acquire access to proxies to force specific decisions. The legislation was intended to end some abuses that had contributed to investor losses in the 1870s, but its effect was to make it more difficult to found a company without the active assistance of a very large bank. Only a large bank could effect the sale (to itself, if need be) of these large blocks of equity, and only a large bank could if need be hold the equity long enough for the price to rise and thus enable it to make a profit on shares it had acquired at par. Further legislation in 1892 and 1896 tightened rules for listing stocks on exchanges in ways that some have argued enhanced the role of large institutions, such as the banks, that could hold stocks while waiting for the required time period to pass before listing a new issue.

The tax legislation of the 1880s and 1890s was thought to have similar effects. The 1881 law required that most securities transactions pay a flat stamp tax. This was changed to a one-tenth per thousand ad valorem tax in 1885 and increased in 1894. Offsetting transactions within a single firm were at first not considered transactions within the meaning of the law, so that if a bank bought a share from one customer and sold it to another, neither customer paid the stamp tax. The same feature applied to Berlin banks executing orders on behalf of their provincial partners. This feature of the law obviously favored the large banks with direct access to the securities markets, and quickly led to the decline of brokerage business among smaller banks without such access, especially those located outside financial centers.

Earlier writers, such as Whale (1930) and Riesser (1912) thought that this legislation had provided an important impetus for the power and concentration of the large banks. Reich (1979) agrees, claiming that the 1884 provisions on company formation enhanced the power of banks and through them promoted increased concentration in other sectors. Fohlin (2000a) notes correctly that their arguments were little more than *post hoc ergo propter hoc*, and she attempts to remedy this deficiency. Her data consists of 29 annual observations on measures of aggregate bank balance sheets. Unlike earlier studies, she attempts to isolate the impact of a legislative change by controlling for other factors (such as aggregate incomes) that might affect bank performance. She finds no clear impact from the reforms undertaken during her sample period. Given that 1884 is her first annual observation, she cannot assess the importance of that year's reform. More convincing is her demonstration that English banking underwent a similar concentration movement at much the same time, without any comparable legislation enhancing the power of the large banks. Fohlin's paper highlights the need for more detailed research on how the large banks reacted to the new opportunities this legislation afforded.[41]

In their mature form, at the turn of the twentieth century, the credit banks could offer a wide array of services, although in practice only the largest spanned the entire gamut. Much of what they did reflected the earlier practices of private bankers, although on an enlarged scale. They lent on current account, they discounted bills, and they used banker's acceptances to earn fees without tying up their own capital. They also ran securities operations, helping firms to develop and sell both equity and bond issues. Two additional sets of services are important to debates discussed below. The largest banks operated what amounted to internal securities markets. If a Deutsche Bank customer wanted to purchase a particular stock, the bank might well sell it to him either out of its own holdings or by executing a trade from another Deutsche Bank customer who wanted to sell that security. The large Berlin banks also performed these services for the customers of the regional banks in their group. Brokerage customers who purchased securities this way typically agreed to allow the bank to exercise the security's proxy rights. In

[41] Gerlach (1905) is a more extensive discussion of the tax issues.

this way a large German bank could vote a large number of proxies for some firms not because they owned much of that firm's equity, but because the bank's customers owned that firm's equity. A related matter concerns trust services. German banks provided these services for widows and orphans, charitable institutions, etc., just as in other countries. The bank would naturally place some of the trust's funds in securities. The banks usually retained the right to vote any proxies (*Depotstimmrecht*), increasing the total number of votes they might hold in the control of any given firm.

3.3 Arguments for the Universal, Joint-Stock Bank

The literature on credit banks makes three different arguments concerning their ability to provide a superior form of finance for industry. Each of these supposed advantages stands alone, and none are necessarily specific to a universal bank, but each is brought up in this context. First, an old line of argument stresses close institutional ties between banks and the firms that were their customers. Second, a more recent argument drawing on innovations in corporate finance notes that a universal bank can serve a firm throughout its life-cycle, allowing the bank to retain and use information that is otherwise lost as the firm proceeds from financial institution to financial institution. Finally, comparison with the United States suggests that the size and scope of German banks offered network efficiencies in the placement of securities. We take each argument in turn.

3.3.1 Bank-customer attachment through supervisory boards

Many older accounts of bank-firm ties point to a feature of German corporate structure that allowed a bank to place a representative on the borrower's oversight board. A German joint-stock firm (*Aktiengesellschaft*) was required to have both a supervisory board (*Aufsichtsrat*) and a management committee (*Vorstand*). The management committee consisted of the firm's senior employees, who ran the firm and made day-to-day decisions. The supervisory board's role was, as a matter of law, ambiguous, and what they actually did is a matter of some debate. (The supervisory board's actual role is still a matter of debate, although a series of legislative efforts have tried to strengthen its hand in corporate governance.) In theory the board met periodically to set long-term strategy, to review important management decisions, and to act as a sort of internal auditor, checking summaries of the firm's financial statements. Supporters of the view that German banks had close ties to their borrowers point to the practice of putting a representative of the firm's banker on the supervisory board. The argument is simple: this representative could both monitor the firm's conduct at a lower cost than would otherwise be the case, and help protect the bank's investment by helping to set long-range policy.

There are three objections to the view that these ties offered the information and monitoring advantages implied by some accounts. Edwards and Ogilvie (1996, pp.435-437) stress that only the joint-stock firm needed a supervisory board. Although most of the largest industrial firms were joint-stock enterprises, joint-stock firms accounted for a small minority of firms and a small fraction of industrial capital in Germany. Thus the particular institutional connection stressed in the literature was simply absent for most firms, including many large firms. A second objection turns on the power of the supervisory board. The bank's representative on a purely formal supervisory board would receive reports, etc., but the business-history literature is divided on whether these boards ordinarily had much power. Some were clearly rubber-stamps, implying that any monitoring possibilities were not exploited. Monitoring, of course, is endogenous; if we had a complete picture of supervisory boards we might find that bankers used their votes when some important matter was to be decided and were otherwise passive.

Another objection is perhaps obvious: why does a bank need a representative on a firm's supervision committee? Most credit as we have seen was extended on the current account, with short repayment schedules. Banks could and did demand updated information when renewing or increasing credits and, it is hard to believe that the bank could not receive more detailed reports than those presented to the supervisory board when it required them as a condition for doing business. Much the same can be said for its monitoring role. In any formal decision the bank had only the one vote it controlled and any other votes it could acquire by persuasion. Presumably it could accomplish the same ends simply by informing the board of supervision of its views on any important decision, with the implied threat of severing business relations if the board voted against its views. The argument must be that by placing a representative on the board of supervision the bank acquired better and lower-cost information than was available otherwise. This claim, while plausible, has never been made precise.

A final objection is empirical. Until recently we had only vague impressions of how many banks and firms were attached through connections between supervision committees. A more systematic study, even if limited by the nature of the sources available, was long needed. Fohlin (1999a) helps to fill the gap, using three overlapping samples of joint-stock firms listed on the Berlin exchange to study interlocking directorates in the period 1880-1913. She finds that attachments broadly defined rise dramatically in the period 1882-1910, with direct bank representation becoming fives times more common in her sample of long-lived firms (Table 1). Bank representation on firm supervisory boards increased most rapidly between 1891 and 1905 for firms that had newly gone public (Table 3). This pattern would at first seem to conform to an information story, with the bank wanting a close tie to a firm that has little track record. The ambiguity here is that many newly public firms were in fact old enterprises that had just changed to a joint-stock firm. The rise of these directorates is also, as Fohlin suggests, somewhat puzzling. The German financial market was becoming more complex, as was the technology used by the firms in question. But it is not clear that the bank's desire for information via this channel would be any greater than during the early part of her period, when both banks and their clients were newer and possibilities for poor or fraudulent decisions more rife.[42]

In a more ambitious effort, Fohlin (1998) attempts to assess whether bank attachment affected a firm's liquidity constraints. This important paper is perhaps the only study that directly addresses this aspect of Gerschenkron's argument that German banks were able to support industrial investment; it matters little whether the Deutsche Bank had a representative on a firm's supervision committee if that firm did not appear to benefit from the relationship. She finds no evidence that bank attachment lessened a firm's liquidity constraints. The methodology she employs is based on the idea that we can measure the degree to which a firm is credit-constrained by studying the dependence of investment on the firm's internal funds. In a perfect capital market investment would depend on the firm's opportunities, not its internal funds. This simple and appealing notion requires considerable additional structure to yield a testable model, however, and

[42] Fohlin's data does not provide complete lists of supervisory board members prior to 1901, a problem she addresses in several ways. Her data are also limited to joint-stock firms listed in Berlin.

as she notes, Fohlin's approach rests on a particular approach to what has become a controversial area of research.[43]

3.3.2 Economies of scope

Another line of argument about the economic role of the credit banks turns on their scope and operations rather than their direct institutional ties to borrowers. This argument is conceptually distinct from the argument discussed in the previous section. This second type of argument stresses the range of banking services offered by credit banks. These services were already combined into one institution by the largest of the private banks. But a large credit bank, including but not limited to the Great Banks, could assist firms with nearly any financial need at any stage in the firm's life cycle.

We must first dispel one myth about the operations of credit banks. Credit banks underwrote securities as part of their investment-banking services, and they could control large blocks of voting rights as a by-product of their brokerage and trust operations. But they did not ordinarily take substantial, long-term equity positions in the firms they dealt with. Some accounts have made it sound as if the banks regularly owned substantial shares of their main customers. One can see the theoretical appeal of this counter-factual claim. Equity positions might reduce the bank-client informational asymmetry, and would give the bank the power to discipline the client when necessary. Whatever the theoretical appeal, the view that German banks took long-term equity positions is false. Calomiris (1995, Table 8.4) shows that "permanent" participations in firms never amounted to more than 3 percent of total bank assets for credit banks in the period before World War I. Credit banks only held large blocks of securities at the time of issue, to signal their quality, and when an issue had proven unsuccessful or the bank needed to buy up issues to maintain their price (Whale 1930, p.47).[44]

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[43] Steven Kaplan and Luigi Zingales (1997) doubt that the correlation of cash flow and investment reflects finance constraints. Hubbard (1998) is a recent review of literature on the question. See also Chirinko and Huntley Schaller (1995).

[44] Of course, three percent of the assets of the Deutsche Bank could be a large share of the equity of a small firm. Below we discuss a case, which is instructive because it is unusual, where the

Most favorable, earlier discussions of the credit banks appeal to the notion that offering a range of services allowed the bank to develop long-term, close connections to clients, and that these connections could overcome information problems. Calomiris (1995) provides a coherent statement of this position that draws on recent theoretical approaches in corporate finance and financial economics. He frames his argument as a comparison of U.S. and German financial intermediaries, but the heart of his discussion is the credit banks and Gerschenkron's argument. Calomiris uses the modern corporate finance literature to outline a pecking-order theory of firm financial needs. What defines the place of financial instruments in the pecking order is "the elasticity of their cost with respect to problems of asymmetric information" (p.262).[45] As firms mature, they proceed up the pecking order to different types of finance. New firms may have to rely on insider's wealth and retained earnings. Sorting out the "good" new firms from the lemons is too difficult even for specialists such as banks. Firms that are initially successful can obtain bank loans. Banks protect themselves against information problems by spending resources to screen and to monitor borrowers. The debt contract itself may reduce the lemons problem.[46] As the firm develops a track record its financing may change in several ways. Informed investors may purchase equity stakes, and the firm may be able to take on "outside" debt in the form of bonds or loans with protective covenants. Eventually the firm may graduate to more junior instruments such as equity.

At every stage in this pecking order, the firm needs a financial intermediary to lend it money or to underwrite its securities issue. To do its job the financial intermediary has to collect and use information on the firm. Calomiris' argument for universal banks turns on what happens to this information when the firm graduates from one kind of finance to another. In an American-

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Deutsche Bank did hold a significant equity position in a firm.

[45] The model Calomiris sketches is based on Myers (1984), Myers and Majluf (1984), and Diamond (1991).

[46] Townsend (1979) shows that debt contracts reduce the problem of state verification in finance, and Myers and Majluf (1984) show that the lemons premium associated with firm payoffs that are unobservable *ex ante* is smaller for debt contracts than for equity contracts.

style financial system, the firm goes from institution to institution as its needs change. With each change information that was developed at the previous stage is lost. With a universal bank the firm never has to change bankers. A new firm can take its first loans from a bank. As part of the lending arrangement the bank will learn about the firm and its activities and monitor the firm as it uses the loan. As the firm matures and wants to sell equity to some investors the bank may arrange the transaction. Later the bank will gather even more information about the firm as it prepares to act as an underwriter for securities issues.

The credit banks could take their firms through this entire cycle. The historical record suggests (and Calomiris does not deny) that the different kinds of finance coexisted and were provided by the same bank. That is, the Discontogesellschaft could underwrite a mature firm's equity issues and lend it money at the same time. But the main implication of Calomiris' view of German banks is that because information was not lost, if the bank and the firm both had an expectation of a long-term relationship, then the firm could face lower costs of finance and the bank could lend to firms that could not obtain bank loans in a U.S.-style system. The expectation of this long-term relationship is central. Taking it as given for the moment, a bank that expected a long-term relationship with its clients would invest in more information early on and therefore lend to a broader range of clients, knowing that it could amortize its investment over a long relationship, and perhaps take its profits at the "back end." Under Calomiris' argument the supervisory board attachments studied by Fohlin and others were perhaps useful adjuncts to the bank's efforts to learn about and monitor its clients, but they were not a necessary feature of universal banking (nor was there anything about universal banking that would make such attachments more likely or useful to the bank). What *is* special about a universal bank is its ability to keep its clients as they grew and prospered, and the incentives that ability created at every stage of the relationship.

But this only works if the firm and the bank have a credible commitment, implicit or explicit, to do business again in the future. This raises an important time-consistency issue. Lending to new firms is costly. Banks that think they have a long-term relationship with a firm can postpone charging a firm its full information costs, allowing the new firm a lower interest rate (and perhaps more credit) than would otherwise be possible. But what prevented a new firm from borrowing from the Darmstädter Bank for a few years, then switching to the Discontogesellschaft when it wanted to issue equity? There are three potential mechanisms, one of which we have already ruled out. If the Darmstädter Bank owned a big share of the firm it could presumably influence such a decision. But we know that circumstance to be rare. A bank ordinarily owned a large share of a firm only when the firm was probably in trouble and in no position to change banks anyway. Hugh Neuburger (1977, p.74) notes that it was risky for even healthy firms to change banks, because the public would assume that the bankers initiated the change and thus think the firm was in trouble. The cost of gathering information provided another mechanism to bind the firm and bank together. In our example, the Darmstädter Bank knew a lot more about this firm than the Discontogesellschaft, and can probably underbid the other banks for the firm's underwriting business. The problem with this mechanism is that it implies only a limited ability to shift a new firm's borrowing costs into the future. If the Darmstädter thought it faced competition from other banks at every step in the game, it would have to charge the firm its full costs at each stage. Calomiris recognizes the power of a third argument but may understate its role in the German case. In a highly concentrated banking system, collusion among banks may be enough to prevent firms from switching and therefore will prevent the time-inconsistency problem from arising. This may not be all bad, as Calomiris notes, if the costs from superior financing methods outweigh the costs associated with collusion. But this third view goes a long way to turning the entire argument on its head; it implies that German banks could do what they did because they were large and collusive, not that they became large and able to collude because they were good at what they did.

Calomiris is frank about the limitations of his empirical support. The most direct test of his argument is also impossible without the complete history of all new enterprises, however tiny or half-baked, that exist for no country. We would want to know how many start-ups were able to receive bank support, and whether they proceeded through their "life-cycle" in the way the pecking-order model implies. More importantly, we would want to know how this compared to another country, such as the United States, that did not have universal banks. Lacking this direct test Calomiris focuses on the differing mixes of securities in the U.S. and Germany and on the costs of bank credit and securities issue. He shows, first, that bonds were a larger fraction of outstanding corporate claims for industrial firms in the U.S. than in Germany prior to World War

I (Table 8.5). This relative failure to graduate to the final stage of the financial pecking order implies that U.S. firms found it harder to signal their quality to uninformed investors, and so had to rely on bond finance to tap securities markets. He also shows that banker's "spreads," or the cost to the firm of issuing common stock, were higher in the United States than in Germany (Tables 8.7 and 8.8). This last point gets to the heart of his argument, but is, as he notes, not as clean a comparison as one would want. The U.S. data come from the 1920s while the German data come from period before World War I, and the samples are not for precisely the same types of firms. Tilly (1996b) has provided stronger support for Calomiris' view with data on spreads for Germany from the period 1885-1913. Tilly's German spreads are less than half what Calomiris estimated for the United States.

3.3.3 Network economies

The arguments from scope stress the universal bank's ability to form long-term ties with its clients. But German credit banks had a second advantage over U.S. banks. Through their own branches and those of their group, the credit banks had a presence in most cities of any size. This offered them the benefits of better diversified asset and liability portfolios. The regional coverage also made it easier for credit banks to place securities through their brokerage and trust services. The German banks had in the nineteenth century what would only briefly arise in the United States at the turn of the twentieth century. American investment bankers such as J.P. Morgan had to work through large, cumbersome consortia of banks, insurance companies, and other institutions to place the securities they underwrote (De Long 1991). At each level of these consortia there was another information problem and another group of people who needed rents to keep them honest. Before the Glass-Steagall Act (1933) forbad the practice, national banks in the United States had used affiliates to market securities. Bank distribution networks were especially prized because underwriters thought bank customers would buy and hold the securities, giving them a stable price (White 1986, p.36). The U.S. system began to approximate the German as national bank affiliates helped underwrite and market securities through large, increasingly national networks. One of the German banks' advantages in underwriting stemmed from their ability to retail securities more efficiently.

3.4 Case studies of bank-industrial connections

The claims made about Germany's universal banks are general, but the evidence adduced in their favor is by necessity based on a small number of well-studied cases.[47] These cases can be informative, and laying out several helps to understand the foregoing arguments. One instructive example of bank/industry connections comes from the involvement of the Deutsche Bank with two of the leading firms in Germany's dynamic electrical industry, Siemens and Halske (founded in the 1850s) and the *Allgemeine Elektricitäts-Gesellschaft* (AEG, founded in 1883 in close cooperation with Siemens and Halske). The Deutsche Bank's ties to both firms were close. Georg Siemens was a leading figure in the Deutsche Bank from its creation, and also a cousin (and former employee) of Werner von Siemens of the electrical firm. The bank had also played a leading role in rescuing the forerunner of AEG when that firm ran into financial trouble. The AEG was Siemens and Halske's major competitor, a competition that was at first restrained by explicit market-sharing agreements between the two firms.

Sometimes the Deutsche bank acted to protect its clients, either from other institutions or from the client's own imperfect judgement. In 1898 the Deutsche Bank insisted on the inclusion of other banks in a Siemens and Halske bond issue, trying to earn for Siemens the goodwill of the Drmstädter Bank, which had influence with the Berlin city government (an important customer for an electrical manufacturer). This is surprising only because the Siemens management had originally objected to the Darmstädter's inclusion on the grounds that this bank was too friendly with rival electrical firms. Here the Deutsche Bank was using its more developed political sense to earn Siemens contracts it might otherwise lose. In another episode the Deutsche Bank seems to have taken a view on how its various clients should merge. In the early years of the twentieth century the German electrical industry experienced a shake-out, and in 1902 there was extensive discussion of possible mergers among some of the leading groups of firms. One possibility under discussion was a merger between AEG and the Schuckert group, with the possibility that Siemens and Halske would join later. As it turned out Siemens and Halske rather then AEG was the group

[47] That is, in addition to the econometric analyses by Tilly, Fohlin, and the others already mentioned.

to merge with Schuckert. The Deutsche Bank helped with the latter deal by rounding up shares of Schuckert to help approve the merger. There is no clear evidence that the Deutsche Bank intervened to prevent the AEG/Schuckert merger or promote the Siemens/Schuckert deal, but it is clear from internal memoranda that the bank's management doubted that any merger of AEG with Siemens would have been workable, given personality conflicts between senior managers at the two firms.

In other cases the Deutsche Bank intervened tactfully but firmly in the internal management affairs of Siemens and Halske. This was the case, for example, in 1906, when conflict between the Siemens family and the director of the Siemens-Schuckert works (Dr. Berliner) nearly led to the latter's resignation. Wilhelm von Siemens, at the time the chairman of the electrical firm's board, saw fit to explain his side of the dispute to the Deutsche Bank's representative to the board, and the bank's response was firmly on the side of Berliner. The dispute had a long history, but from the Bank's viewpoint Berliner's resignation would have harmed the firm because it would have called into question both the firm's stability and its valuable ties to the Deutsche Bank. Berliner stayed.

A final type of involvement suggests the power of an institution as large and influential as the Deutsche Bank. Siemens-Schuckert and the AEG had worked out a deal to share contracts evenly for the Constantinople Tramway Company. In the winter of 1913-14, Siemens was surprised to find itself excluded from a new round of contracts for the project, the reason given being non-existent technical problems with Siemens' motors. This episode was a serious matter both because of the contracts in question and because of the implied public challenge to Siemens' technical competence. Rather than appeal to the firm awarding the contracts, Siemens went to the Deutsche Bank for help. The Bank's response was, apparently, to put discrete but brutal pressure on the Belgian firm financing the Constantinople project. The Deutsche Bank tried to defend Siemens-Halske on technical grounds, but when that approach failed the bank threatened to use its influence with a bank in Barcelona (!) to withdraw financing from a streetcar project in which the Belgian firm had considerable influence. Siemens and Halske won the Constantinople project.[48]

Another instance is well-known and often comes up in connection with Gerschenkron's view that the credit banks supported the formation and preservation of industrial cartels. Steel cartels in particular were unstable because their member firms were more or less vertically integrated, and some vertically-integrated firms might produce relatively more or less of the "downstream" products. Phoenix Iron Co. faced this problem in 1904 when it was asked to join a new steel cartel, the Steel Works Association. Phoenix produced relatively little of its own crude steel and also had extensive market contacts overseas. In contrast to the rest of the Steel Works Association it had little to gain from price agreements on crude steel, and in addition had nothing to gain from agreements that divided up export markets. Entering the new Association would have forced Phoenix to abandon a long-term plan for developing the firm into a full-scale vertically-integrated producer of most steel products. On the other hand, the Steel Works Association would have been toothless without this major producer. Phoenix's board of supervisors included representatives of several Great Banks, including the Schaaffhausen, the Darmstädter, and both the Discontogesellschaft and some of its partner banks. These bankers' representatives forced an extraordinary shareholders' meeting at which the Phoenix management was instructed to join the Steel Works Association over its own manager's strenuous objections. The explanation given for this pressure from the bankers was the desire to insure price stability and markets for their other steel-producing clients.[49]

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[48] The basics of these incidents can be found in Neuberger (1977, pp.77-89). Volker Wellhöner (1989, Chapter 14) provides more background on Siemens and Halske and other electrical firms. See also Gall (1995, pp.34-40).

[49] One version of this incident appears in Otto Jeidels (1905) and has been cited several times in other accounts, including Whale (1930, pp.62-64). Feldenkirchen (1979) interprets this story in a similar way. Wellhöner (1989, pp.85-87) argues that the banks were simply reflecting the demands of their other steel-producing clients. Riesser (1912, p.591) agrees that in the case of Phoenix the bankers were instrumental in supporting the cartel.

A final episode once again involves the Deutsche Bank. The brothers Max and Reinhard Mannesmann had discovered a new process for the manufacture of cast-iron pipe. They started commercial production in 1886, and by 1890 wanted to take their firm public to raise capital for additional development and production. (The firm eventually became the Deutsche-Österreichischen Mannesmannröhren-Werke AG, today Mannesmann AG.) The Deutsche Bank was the lead underwriter for the 35 million Marks of shares issued in 1890. The bank kept 3 millions Marks for itself, although it probably intended to sell much of that block once the new stock's price was stabilized. But the firm ran into both business and technical difficulties, and did not pay any dividends until 1905/06. Once trouble became apparent the bank essentially took over the firm, appointing managers and directing policy. The bank wrote down the firm's capital several times, not least by asking the Mannesmann family to return some of the shares given to them with the initial offering. In 1893 the brothers Mannesmann resigned from the management committee (although Max moved to the supervision committee); the implication is that they were forced out. In this instance the bank had much to lose, not just its 3 million Mark investment but also its reputation for making sound investments.[50] Once the firm was brought to profitability it prospered, although how much of that success reflects Deutsche Bank policy and how much reflects growth in the demand for pipes is not known.

Incidents such as these could be multiplied many times by working through the extensive case-studies on the Great Banks and their relations to industry. These three accounts, however, are enough to illustrate the range of views taken, weaknesses in the current state of research, and the difficulty of answering some key questions to anyone's satisfaction. One problem is gaps in firm records, but that should not be exaggerated. A greater problem is the ambiguity of motives and results in several of these accounts. When the Deutsche Bank intervened to prevent Siemens-Schuckert from firing Dr. Berliner, it might have just been providing sound advice backed up by an implicit threat to sever financing. The incident can be presented as an extraordinary intrusion into the client firm's affairs, but any bank would feel free to inform itself of and perhaps express

[50] Gall (1995, pp. 40-44) takes the view that the Deutsche Bank essentially took the firm over. Wellhöner (1989, Chapter 9) emphasizes the benefits to the Deutsche Bank of its control over Mannesmann.

an opinion on questions concerning important personnel. Something similar can be said about the bank's lack of enthusiasm for a merger between Siemens and AEG.

The Mannesmann firm's apparent subordination to the Deutsche Bank at first seems more sinister. Some writers have portrayed this as an example of a bank taking over and dominating an industrial firm, but the story can be read differently. The Deutsche Bank was not only the firm's largest stockholder (other than the family), it was, once the firm ran into trouble, its only hope for loans. In insisting on changes in the business plan and management the bank was not necessarily involved in a malign extension of its influence so much as trying to make good a bad decision to play a leading role in the capitalization of a firm that was based on little more than a brilliant but as yet unproven technology. Wessel (1990, pp.126-128) emphasizes the enormous size of the initial Mannesmann firm; with a capital of 35 million Marks, it was approximately the same size as Siemens and Halske when the latter became a joint-stock company in 1897. Siemens and Halske, in contrast to Mannesmann, had a history dating back to 1848 and transformed itself into a joint-stock firm in part to meet the demands of a growing line of contracts. Writers critical of this sort of bank-firm tie ignore the larger lesson. Not only did the story have a happy ending, with Mannesmann working out technical problems and achieving profitability, it was able to obtain bank finance for an unproven technology at a relatively early stage. This episode is a good illustration of Calomiris' argument about universal banks' ability to foster new firms at a stage when they would be, in England or the United States, still reliant on family or other sources of finance.

More striking are the cases where the banks intervened to stifle competition among industrial firms, and here it is fair to say that the universal banks' admirers have not given sufficient attention to the possibly deleterious consequences of the banks' power. The Deutsche Bank was able to protect its client Siemens-Schuckert in the Constantinople contract, and its incentive to do so is clear. But beyond its breathtaking threat to the Belgian firm lies a presumption that the bank could and should use whatever influence it had to make sure its clients received orders and thus remained profitable. In many cases this bank-as-salesman role meant nothing more than steering the business of one customer to another, but in this case it implied a heavy-handed threat that actually harmed one Deutsche Bank client (the AEG) at the expense of another. The Phoenix case has much the same character.

4. Universal Banking in Context

By World War I Germany's banks were by world standard enormous. In 1913 the three largest incorporated entities (by assets) in Germany were banks, and banks comprised 17 of the 25 largest German firms in that year. Whatever their precise connections to industry, no reasonable observer doubts that German banks had achieved a role in the financial system unsurpassed by banks elsewhere. Missing from earlier accounts, however, has been the role played by other banking institutions, and how those institutions competed with the universal banks, helped to shape the universal banks, and eventually became universal banks. Here we trace the role of these several classes of banking institutions in creating the German banking system, first drawing out some themes implicit in our discussion of the nineteenth century, and then end with a quick sketch of developments in the twentieth century.

4.1 Competition, Emulation, and the Division of Labor

An overly credit bank-centered account misses three ways in which the *Sparkassen* and credit cooperatives helped shape the development of the credit banks. First, the several banking groups competed with one another. By 1900 many German savers had a choice of *Sparkasse*, credit cooperative, or credit bank as the institution to give their deposits. The *Sparkassen* demanded and won the right to offer checking accounts in part because the credit banks had begun to collect retail deposits, intruding on the *Sparkassen*'s traditional territory. Competition in the lending market was less complete, but still present. We know too little about *Sparkassen* involvement in industrial lending, but it is clear that by the late nineteenth century some of the larger institutions were involved in infrastructure investments that put them in competition with credit banks. On the other end of the scale, the most successful enterprises funded by credit cooperatives grew into firms of the sort that would make suitable customers for larger institutions. The competition prior to the First World War was more potential than real, however, and that potential is clear in the legislative changes that enlarged the scope of the *Sparkassen's* range of activities. In allowing *Sparkassen* to establish checking accounts and clearing systems lawmakers knew full well that this would lead to larger, more powerful financial institutions that would have the heft (if not the experience) to compete directly with the credit banks. This was not the only purpose of legislative change, but enlarging the scope of the *Sparkassen* was motivated in part by concern over the concentration in the credit bank sector (Pohl 1986a, p.69).

The institutions also emulated one another. This claim runs counter to what one might expect given the intense efforts of the several groups, especially the credit cooperatives, to claim that they used distinctive methods to serve markets the others avoided. But even in the nineteenth century different groups adopted methods pioneered by their competitors. The *Sparkassen* asked for and received the right to offer current account credits, a lending product pioneered by the earlier private banks and typical of the larger credit banks. The credit cooperatives also used current accounts (in fact earlier than the *Sparkassen*, not least because the legal restrictions on credit cooperatives were more lax), and early on adopted a two-tier management structure that resembled the largest of German firms. This decision reflected concerns about the safety of cooperatives as depository institutions and a hope that a structure typical of large banks would reassure potential depositors. The most striking example of emulation, however, is in the decision of first the Deutsche Bank and then other large credit banks to offer retail deposit accounts. Here they were drawing on the public's long history of confidence in the *Sparkassen* and credit cooperatives to acquire a new and relatively low-cost source of funding for their lending and underwriting activities.

At a more subtle level the development of the German banking system allowed innovation by not forcing any one type of institution to be all things to all people. This point is clearest in contrast to the United States. There are many reasons for the predominance in the U.S. of the unit bank and all that entailed, but one important reason was the concern that large branched banks would not adequately serve the needs of local communities. The fear was often expressed as a complaint about "deposit siphoning;" that a branched bank would accumulate deposits in one locale and use them to fund loans elsewhere. The result was a banking system based on a "one size fits all" model of financial intermediaries.[51] In contrast to Germany, most U.S. banks were similar in the nature of their assets and liabilities for the simple reason that the law required them to be so. Comparison between German and U.S. banking groups is difficult, but the following

[51] Richard Sylla (1969) shows that the fear of deposit siphoning was well-grounded once the National Bank system was in place.

gives a sense of how much more important commercial banks were in the United States: in 1900, the 13,000 U.S. commercial banks had total assets of about 11.4 billion dollars. In that same year, mutual savings banks, and savings and loan institutions, together had only abut 2.9 billion dollars in assets (United States Bureau of the Census 1975, series X 588-9, X 822, X 835). Compare this to Table 1; in the U.S. the commercial banks comprised the lion's share of the banking system, while in Germany they were actually smaller, collectively, than the *Sparkassen*.[52]

Recent contributions in U.S. banking history have stressed that unit banking was itself a serious brake on the development of universal banks, even prior to legislative proscriptions in the U.S., because only in the very largest cities could units banks be large or well-diversified enough to make large loans or underwrite securities issues. U.S. banks also lacked the marketing capabilities discussed in section 3.3.3 above. This kind of concern never seriously affected the development of credit banks in Germany. The size and structure that made German credit banks what they were was virtually prohibited in the United States, and one important difference was that the alternative banking institutions in Germany reduced political opposition by allowing different groups to bank with different institutions. No one could seriously claim that the credit banks robbed any region or community in Germany of effective banking services. *Sparkassen* existed nearly everywhere and had as their first priority the financing of local needs. Any city that felt neglected by other banking institutions could just establish one. Credit cooperatives were even more radically local, and any seven individuals could under the law form a credit cooperative.[53]

4.2 Universal Banking in the Twentieth Century

Germany's turbulent twentieth-century history has been reflected in the experience of its banking institutions, and while this is not the place for a detailed discussion we can draw out some themes from the formative nineteenth century. Germany now has three groups of universal banks.

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[52] The comparison in the text is not meant to imply a similarity between *Sparkassen* and U.S. mutual savings banks or savings and loans; they are simply, in each country, the major alternative to for-profit banks.

[53] Calomiris (2000, Chapter 1) discusses the political economy of branching restrictions in the United States.

Their names are familiar, as they are the credit banks, the *Sparkassen*, and the credit cooperatives. Perhaps the most striking innovation of the twentieth century is the transformation of the *Sparkassen* and to a lesser extent the credit cooperatives from small, specialized financial intermediaries into institutions that are collectively large and that offer a range of services that essentially mimics those offered by the credit banks.[54] This development is clearest among the *Sparkassen*. The first steps took place just prior to World War I, when they were first allowed to offer current accounts and checking accounts. This expansion of bank powers made the *Sparkassen* more attractive directly, by making individual institutions better able to serve businesses, and also indirectly, by promoting regional and inter-regional cooperation through *Landesbanken* and Giro groups. Equally important was the permission to deal in and later underwrite securities. The *Sparkassen* first became important marketers of securities during World War I, when they represented a large and growing share of all war loans placed by the German government. By the end of the war, German war loans accounted for over 35 percent of *Sparkassen* assets (Born 1983, p.29). They built on this experience in later years as they began to market other securities and then offer underwriting services. In 1921 *Sparkassen* were given full (universal) banking powers. The hyperinflation of 1922/23 led to an important relaxation of rules. With hyperinflation the *Sparkassen's* main liability, a time deposit, becomes unattractive, so limits on the fraction of all liabilities that could be current accounts were dropped.

The development of the credit cooperatives has been almost as striking. Credit cooperatives originally faced fewer of the restrictions on bank-like operations that affected the *Sparkassen*, so these developments have less to do with legal changes than with organization and economic development. The nineteen twenties began a long period of consolidation among credit cooperatives, reducing the number of local cooperatives to some 2500 and the number of regional credit cooperatives to three (with one apex bank, the DG Bank). The resulting institutions are larger individually, with both the DG Bank and the WGZ-Bank (one of the regional centrals) large

[54] There is a respectable view that says that the different banking groups are all universal banks, but in different ways. All three can offer a wide range of services, but the *Sparkassen* and credit cooperatives are less likely to control proxy votes or underwrite securities issues.

banks by European standards. The credit cooperatives have also, like the *Sparkassen,* entered into independent ventures that offer other services (such as insurance) to their members.

For credit banks the twentieth century has been (collectively at least) a less happy period. To be sure, life was not simple for the *Sparkassen* or credit cooperatives, either. The 1920s saw hyperinflation and stabilization that at first placed great pressure on institutions, like *Sparkassen* and credit cooperatives, that lent long and borrowed short. The credit banks were even worse hit, as hyperinflation and then the Great Depression weakened their primary loan customers. The Reichsbank, hemmed in by international agreements and reparations obligations, was no longer able to play its traditional role of lender of last resort.[55] This factor is one but not the only reason for the fragility of many credit banks that led to the concentration wave of the late 1920s and the bank failures of the early 1930s. The result of this long period of instability and depression was even more concentration among the credit banks and, eventually, a strengthened *Sparkassen* system.

The Allied powers charged with Germany's occupation and reconstruction viewed the Great Banks as sinister institutions willing and able to serve as foci of political support and possible future war planning, and insisted, while still able, that the banks be broken up and their powers strictly limited. With the restoration of sovereignty in the 1950s German bankers were able to shed some of these legal restrictions. The difference is that now the credit banks face serious competition from both the *Sparkassen* and the credit cooperatives. This competition is reflected in a long-term decline in the share of banking business done by the "Big Three" credit banks (the Deutsche Bank, the Dresdner Bank, and the Commerzbank — all that remain of the Great Banks). Their share in total bank assets declined from over one-quarter in 1950 to less than 15 percent by the mid-1980s. Statements to the effect that the German banking system is highly concentrated today often refer to the important role of the Big Three, but implicitly ignore the existence of two competing classes of banking institutions. Tilly (1996b) notes that the decline of the Big Three may simply reflect the rise of the *Sparkassen* and credit cooperatives, or it might reflect some deeper problem in the operations of the credit banks. He suggests that the locally-

[55] See Gödde (2000) for a discussion of the 1931 banking crisis.

based, decentralized *Sparkassen* and credit cooperatives might have been better-placed to contend with the various shocks to the German economy over the century.

Gerschenkron's views on German banks are still influential and inform a research program on banking in the Federal Republic today. John Cable (1985) was an early effort to study the implications of bank attachment for German firms in the post-World War II era. Edwards and Klaus Fischer (1994) is both a comprehensive overview of German banking and a highly skeptical treatment of the main features of Gerschenkron's argument. Chirinko and Julie Elston (1999) is another of the few studies to use firm-level data to study the impact of bank influence on German firms. They conclude, as does Fohlin for the nineteenth and early twentieth century, that bank influence does not materially affect a firm's credit constraints. Chirinko and Elston interpret bank influence instead as an alternative mechanism for controlling large enterprises with widely diffused ownership. Gorton and Frank Schmid (1996) reach slightly different conclusions, and along the way document what they see as signs of significant change between 1974 and 1985 in the way banks operated and influenced firms. For 1974 they found that equity ownership, but not the use of proxy votes, affected a firm's performance. The banks here differ from other holders of large blocks of equity in being better able to positively influence firm performance. By 1985 this bank advantage had disappeared; all that matters in the later sample is that some entity hold a large enough block of a firm's equity to have an incentive to invest in monitoring the firm. Edwards and Marcus Nibler (2000) echo this result, finding that ownership concentration is more important today than bank control of proxy votes, positions on boards of supervisors, or control of loan finance. These last three papers suggest an alternative interpretation of the Phoenix story: perhaps Phoenix's managers were acting in their own interest and against those of their stockholders, and the role of the banks was to exert power where dispersed shareholders could not.

This research on Germany today confirms an impression that the heyday of German bank power has long passed. Already by the late nineteenth century some industrial firms were so large that they needed more than one banker. Contributing to increased firm independence from banks was a rise in undistributed profits. Walther Hoffmann (1959, Table 1) documents a rise in undistributed profits from .71 percent of national income per year to 1.45 percent on the eve of World War I, rising sharply through the mid-1950s to nearly 6.5 percent. Hoffmann emphasizes the fragility of his estimates, but the strong trend suggests an increase in German firms' ability to self-finance. Any claims about bank influence on firms in Germany today has to be placed in the context of an economy where publicly-held joint-stock corporations are not as important as elsewhere. This is the heart of Edwards and Fischer's argument; even if we can document cases where one of the Big Three dominates an industrial firm today, as the Deutsche Bank did Mannesmann at the turn of the twentieth century, we would have to temper the conclusion with the fact that only about one-fifth of all turnover in the German economy is due to public joint-stock firms (in contrast to about 53 percent for the United Kingdom) (Wendy Carlin (1996, p.488).

5. Conclusions

Discussions of universal banks, whether motivated by theoretical questions, issues associated with the deregulation of banks today, or by efforts to explain German economic growth in the nineteenth and twentieth centuries, have given pride of place to the large credit banks that developed in Germany during the second half of the nineteenth century. These institutions indeed offered a wider range of services than did U.S. or British banks, and it is easy to believe that these banks were able to foster and support firms at an earlier stage and more effectively than could other types of banking institutions. This survey has stressed three parts of the historical picture that deserve greater attention, however. First, the literature contains important gaps, and a clearer picture of some institutions, especially the *Sparkassen*, is required before assigning too much credit to other banks. Second, the literature has downplayed or ignored the ways in which the Great Banks acted to restrict competition in banking and used their financial muscle to encourage their customers to adhere to cartel arrangements in industry. Here the small collection of anecdotes that circulate in the literature are not nearly enough to form any judgement about the role of the credit banks in restricting competition overall, but this issue requires careful thought before pointing to Germany's banks as a model for any other banking system. Finally, and most importantly, the Great Banks that receive so much attention were themselves developed out of earlier private banks for specific reasons, and matured in an environment shaped in part by the existence of other types of banking institutions. Today those other two classes of banking institutions, the *Sparkassen* and credit cooperatives, function as alternative universal banks, forcing the remaining large credit banks to compete not just with one another but with sophisticated, well-capitalized alternative institutions. If their admirers are correct, the credit banks grew to enjoy the size and role they had largely because they were better able to identify and monitor worthwhile investment projects than their competitors the private banks. More recent developments have suggested the limitations to whatever advantages they possessed.

The historical development of Germany's banking system holds a larger lesson for current research on financial systems and economic growth. Gerschenkron erred, as we have argued, in focusing too narrowly on a particular type of bank. He might well have been right about his larger points, that large universal banks can both foster industrial development and have the capacity to extract rents from their customers and indirectly from the economy as a whole. The basic questions he laid out continue to be the subject of considerable research by economists interested in economic development and banking policy today. In asking these questions economists need to avoid Gerschenkron's mistake, and pay careful attention to the possible multiplicity of banking institutions in a given country, how they interact with each other, and how history has shaped their present form.

Table 1: Relative weights of German banks, 1860-1913

Share of different financial institutions in total assets of all financial institutions

	1860	1880	1900	1913
Central bank and banks of issue	22.4	11.6	6.3	4.4
Credit banks	9.2	10	17.2	24.2
Private banks	35.3	18.5	8.6	4.4
Sparkassen	12	20.6	23.30	24.8
Credit cooperatives	0.2	4.4	4.10	6.8
Mortgage banks	16.9	26.7	28.50	22.8
Other	4	8.2	12	12.6

Source: Computed from Tilly (1992, Table 5.1)

Note: "Other" includes insurance companies, and social insurance organizations. Figures for *Sparkassen* and credit cooperatives includes their central institutions.

Table 2: Growth of the *Sparkassen*, Selected Indicators

State and measure	1850	1880	1910
Prussia			
Number of *Sparkassen*	234	1191	1711
Savings books per 100 population	2	11	32
Total deposits per capita	3	58	276
Saxony			
Number of *Sparkassen*	57	175	361
Savings books per 100 population	5	31	66
Total deposits per capita	7	115	359
Bavaria			
Number of *Sparkassen*	na	262	376
Savings books per 100 population	na	6	15
Total deposits per capita	na	17	18
Germany			
Number of *Sparkassen*	na	na	3072
Savings books per 100 population	na	na	33
Total deposits per capita	na	na	266

Source: Ashauer (1991, Tables 18 and 23)

Notes: Some data not available because of uneven collection of information by German states. Deposits in Marks, converted from other currencies (where necessary) in original source.

Table 3: Growth of credit cooperatives

Year	Urban credit cooperatives		Rural credit cooperatives	
	Number of institutions	Number of members	Number of institutions	Number of members
1860	300	50	N.A.	50
1870	1278	700	70	700
1880	1895	800-900	600-700	900-1000
1890	N.A.	800-900	1729	950-1050
1900	1900	800	9793	1650
1910	2103	1056	15517	2563

Source: Arnd Kluge (1991, Tables 4 and 6)

Note: Number of members in thousands. All figures are approximate, as the source indicates.

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