# Banks' risk-taking in the pre-World War I Period. The Midland Bank in Comparative Perspective and a Comparison of English and German Banks.

Dissertation

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# 1. Introduction

The banking system has long attracted attention for its role in the economy as an arbiter between savings and investments. As a part of the wider financial system, banks collect savings from households and provide loans and other financial services to individuals and firms to fund their investments. Considering this crucial function for economic growth and development, variations in banking business models and institutional structures are an important issue. Richard Tilly highlighted one aspect of the banking system's functions by claiming, '…economic development depends to an important extent on a society's ability and willingness to undertake risky investment…' (1986, pp.114–115). By investing in risky projects, banks foster growth, while abstaining from these projects and related services results in hampered growth and development.

The financial system provides resources for external funding, especially to industries with large fixed capital investments. Financially dependent firms profit from financial development due to lower financing costs (Rajan and Zingales, 1998). The literature emphasizes the positive effect of financial development, both banks and financial markets, on economic growth and development (King and Levine, 1993; Levine, 1997; Levine and Zervos, 1998; Rajan and Zingales, 1998; Levine, 2002; Demirgüç-Kunt, Feyen and Levine, 2013).

The literature on the link between finance and growth has drawn on the two cases of Great Britain and Germany in the late 19$^{th}$ and early 20$^{th}$ century. The impact of universal banks on Germany's growth during that time has been discussed at length by scholars (Gerschenkron, 1962; Neuburger and Stokes, 1974; Tilly, 1986; Edwards and Ogilvie, 1996; Da Rin and Hellmann, 2002; Burhop, 2006; Fohlin, 2007b). Likewise, England's specialized banking system, and its role in the economy, has attracted similar attention (Goodhart, 1972; Cottrell, 1979; Cassis, 1994; Collins, 1998). Both countries' banking systems were studied through comparative approaches (Foxwell, 1917; Tilly, 1989; Fohlin, 2001, 2014).

This dissertation sheds new light on the English and German banking systems in the decades leading up to World War I (WWI). Its primary focus is the banks' risk-taking, which enabled or restrained growth and investment. The dissertation has two objectives: make a direct comparison of the relative risk-taking between English and German joint stock banks, and trace risk-aversion and restraint on credit of one of the major English joint-stock commercial banks.

Chapter 2 approaches both countries' banking systems from a comparative perspective. Chapter 3 and 4 take a more detailed view at the asset and liability structure of the Midland Bank, the largest English commercial bank. While chapter 3 traces the development of the bank's emergence from a local lender to a nationwide bank, chapter 4 discusses the bank's divisional lending behaviour bias against provincial areas in the two decades before WWI.

The comparison to Germany provides a contrast in the relative decline of Great Britain's economy. Germany experienced higher growth rates and the emergence of chemical and electrical industries, which was unmatched by Great Britain (Cassis, 1990). Capital-intensive, large scale industry played a less central role than in Germany. In 1907 the British industry was dominated by staple industries: textiles, coal, shipbuilding, iron and steel made up 50% of industrial production and 70% of exports (Fohlin, 2014, p.17; Elbaum and Lazonick, 1986, p.9). In the 1890s, Britain lost ground to the new industrial leaders, Germany and the United States. Besides the overall financial system, the role of entrepreneurial and managerial failures as well as institutional rigidities that hampered growth are discussed by other authors (McCloskey and Sandberg, 1971; Elbaum and Lazonick, 1984). Table 1-1 displays the per capita GDP comparison of Great Britain and Germany. The difference in the rate of growth after very similar rates between 1870 and 1880 becomes clearly visible.

**Table 1-1: GDP per capita in 1990 $ (Growth rates in parentheses)**

| | **1870** | **1880** | **1890** | **1900** | **1910** |
|---|---|---|---|---|---|
| Great Britain | 3,190 | 3,477 (8.9%) | 4,009 (15.3%) | 4,492 (12.0%) | 4,611 (2.6%) |
| Germany | 1,839 | 1,991 (8.3%) | 2,428 (21.9%) | 2,985 (22.9%) | 3,348 (12.2%) |

Source: The Maddison-Project, http://www.ggdc.net/maddison/maddison-project/home.htm, 2013 version.

The English and German banking systems, as well as their financial systems, took different routes to their states in the late 19th century. By the end of the Napoleonic Wars, London hosted the most important international stock exchange, attracting bond issues from foreign governments, expanding railways and emerging industries. These bond issues were dominated by merchant banks that specialized in underwriting large issues. Another important business was trade financing. Imports and exports from Great Britain, as well as third-countries, were financed by bills guaranteed by London merchant banks and their international reputation. International securities' share of the London Stock Exchange increased from 8.3% in 1853 to 53.2% in 1913. From 1870 to 1914, London was the most important financial centre of the world, which contrasted with the development of the domestic economy (Chapman, 1984; Michie, 1987, p.54; Cassis, 1990; Michie, 1999).

Both areas, bond issues and trade finance, attracted foreign banks to participate in underwriting and trade finance. One example was the foundation of Deutsche Bank's London office in 1873. Through their London office, Deutsche Bank offered trade finance in pounds sterling (Riesser, 1912, p.320). The large financial markets and the importance of the pound sterling made London an attractive

place to invest short-term funds in banks that operated in the British Empire, leading to the build-up of deposits (Michie and Mollan, 2012; De Cecco, 1974; Michie, 1999).

The huge share of foreign securities listed at the London Stock Exchange led to the criticism of a foreign bias of the whole financial system. By issuing foreign securities, savings were channelled abroad instead of invested domestically. Not only did foreign securities shares attract criticism, but also the low share of domestic commercial and industrial securities, which made up 9.6% of listed securities at the London Stock Exchange in 1913 (Michie, 1987, p.54). By specializing in international issues and trade, merchant banks were supposed to neglect the domestic economy and deny access to long-term funding for domestic industries. Commercial banks, however, did not provide investment banking services, so companies had no institutions to access the capital market. 'City of London' was synonymous with the whole financial sector and its geographic centre was identified with foreign bias against domestic industry. Meanwhile, provincial exchanges and other informal funding through personal connections or local networks were left out by the focus on the major stock exchange (Edelstein, 1982a; Cairncross, 1953; Kennedy, 1976, 1987; Michie, 1987, p.124).

There were also positive examples of funding for new issues (brewing) and new technology (British Electric Traction, motor company; mining, electricity) with investors who were willing to take risky investments (Watson, 1996; Michie, 1981, 1988a).

The German financial system was traditionally viewed as a bank-based system with universal banks as its primary financial institutions. However, recent research suggests capital markets played an important role besides universal banks (Gehrig and Fohlin, 2006; Fohlin, 2007a, 2014, pp.31–33; Gelman and Burhop, 2008). After 1870, the Berlin Stock Exchange became the largest stock exchange in Germany. While only 200 joint stock companies were formed in Prussia from 1871 to 1873, it grew to 3000 by 1890 and 5000 by the turn of the century. The liberalisation of joint stock companies formation resulted in a boom in new companies, an increasing share of industrial securities at the Berlin Stock Exchange and a listing of nearly all new formed joint stock companies. Provincial exchanges like Frankfurt and Hamburg remained far smaller (Gehrig and Fohlin, 2006, pp.590–591; Fohlin, 2007b, pp.223–227).

Unlike German banks, English banks were not allowed to trade at stock exchanges. As such, English banks had to employ brokers to execute the buying and selling of securities (Fohlin, 2014, pp.65–67; Michie, 1987, pp.87–88).

England and Germany both experienced the liberalisation of incorporation in the 19$^{th}$ century and fostered growth from joint stock banks. England had a head start in their development by allowing the formation of note-issuing joint stock banks outside a 65-mile radius of London in 1826. Inside this radius, joint stock banks were founded without note-issuing in 1833. By this process, the banking system transformed from multiple private banks to large joint stock banks. Until then, the only joint

stock bank was the Bank of England, founded in 1694 by royal charter (Crick and Wadsworth, 1936, pp.10–18; Michie, 2016, pp.75–77).

A feature of the English banking system was the specialization of banking institutions without legal or regulatory pressure; commercial banks collected deposits, provided loans and payment services via bank accounts. Bill broker and discount houses specialized in discounting bills and created a link between areas of surplus savings and investment demands. These were connected by the London money market, which discounted bills. The emerging joint stock banks in London fostered the demand for bills from provincial banks. Commercial banking was, until the mid-19$^{th}$ century, split in two parts: London banks with an international orientation due to Britain's role in the international economy and provincial banks which were closely related to the regional economy and its development. These two parts were connected by the bill market (Collins, 1998, p.18; Cottrell, 1979, pp.13–16).

The number of joint stock commercial banks was stable between 1840 and 1860 and grew again after incorporation was fully liberalized in the 1860s and 1870s. The concentration process, starting in the 1880's, transformed commercial banks from a large number of small joint stock banks with small, regional branch-networks into a few larger banks with nationwide branch-networks managed from head offices in London (Collins and Baker, 2001b; Cottrell, 1979, pp.195–200).

The role of the provincial banks or Country banks is viewed as largely supportive for the local industry. Brunt put the close involvement to an end by the legalization of the joint stock company in 1826, but Cottrell provides examples of lending beyond short –term overdrafts until the late 19th century (Cottrell, 1979, pp.210–228; Collins and Hudson, 1979; Brunt, 2006). Newton (1996) addressed another example of a local network between industry and finance, covering the relationship between three Sheffield-based banks and their local industrial customers between 1850 and 1885.

In 1878, the City of Glasgow Bank went bankrupt with six other banks going bankrupt in England. The reason for the failure was lending to a small group of customers, putting the bank under too heavy a strain and finally causing its bankruptcy. As a consequence, the then common form of unlimited liability shares lost ground and was changed to limited liability shares (Best and Humphries, 1986, pp.227–228; Baker and Collins, 1999, pp.429–431; Kennedy, 1987, pp.121–122).

The concentration of the banking system put previously independent banks under the control of London-based head offices. The larger banks and branch-networks were put under standardized procedures to prevent over-commitments. Branch managers could only lend a limited amount. Larger enquiries had to be accepted by a committee at the head office. These limits varied and were revised in the 1890s. Furthermore, head offices were moved away from direct contact with local

customers (Cassis, 1990, p.4; Cottrell, 1979, pp.237–238; Best and Humphries, 1986, p.227; Capie and Rodrik-Bali, 1982; Capie, 1988, pp.74–79; Newton, 2000).

Even though no long-term credit was granted, commercial banks rolled over their short-term loans. While the usual term limit was 12 months, this procedure increased the length of borrowing (Cottrell, 1979, pp.210–247; Baker and Collins, 2003, pp.42–43, 195–201; Collins, 1998, p.13).

Government debt was issued by the Bank of England and British railway companies issued securities on their own. As a consequence, intermediaries for new issues emerged to exclusively handle foreign securities (Cottrell, 1979, p.181). These issues were dominated by merchant banks from the early 19$^{th}$ century until WWI. The most important banks from this group were Rothschild and Baring Brothers. These banks participated in only a few cases of new issues of domestic, industrial concerns. While the issues of governments, railways and other utilities were large, industrial issues were too small to be attractive customers of these banks (Chapman, 1984, pp.82–103).

In the late 1890s, commercial banks begin to participate in investment banking by facilitating payments and collecting subscriptions via their branches (Cottrell, 1979, p.241). Some were active with particular foreign government bonds, for example, Parr's Bank for the Japanese government and the London and Westminster Bank for Australian colonies and dominions (Suzuki, 1994; Attard, 2016).

The most prominent part of the German banking system were the universal banks or *Kreditbanken*. Universal banks were only part of the banking system, which also comprised other banking institutions that served different markets and customers. In the 1830s, private banks developed the universal banking business model to finance the building of the railroad network. In the Rhineland, these private banks financed the emerging industry. The first joint stock universal bank was the A. Schaaffhausen'scher Bankverein, founded in 1848 in Cologne, with other joint stock banks founded under corporate charter (1853 Darmstädter Bank). The liberalisation of incorporation in 1870 led to an increase in joint stock banks during the economic boom after the unification of Germany in 1871. Besides the joint stock universal banks, private banks competed in niches despite their lack of size (Fohlin, 2007b, pp.18–21; Tilly, 1966, 1986, pp.118–120, 1992, p.94; Guinnane, 2002, pp.74–80, 96–106).

The core business of universal banks to their customers was based on current accounts, by which they lent short-term loans to their customers. However, by rolling over these loans, they became quasi long-term loans. Apart from lending, payment services were facilitated via current accounts, investment banking services included shareholding and directorships were further built on the basic relation via a current account of the respective customer held by the bank (Riesser, 1912, pp.204–205; Pollard and Ziegler, 1992, p.21).

Besides the universal banks, other banks served parts of the economy. Mortgage banks (*Hypothekenbanken*) funded mortgages for urban real estate by issuing mortgage bonds (*Pfandbriefe*). Agricultural credit (*Landschaften*) banks served the agrarian economy. Savings banks (*Sparkassen*) served small clients and distinguished themselves from the universal banks (Fohlin, 2007b, p.24). Savings and cooperative banks collected deposits and offered other local retail banking services to small customers. In contrast to England were commercial banks dominated retail banking universal banks entered the retail deposit market by attracting workers and the middle class' savings only after the 1880s (Guinnane, 2002, pp.101–104; Fohlin, 2007b, p.66).

By concentrating on large industrial customers, universal banks neglected other areas of the financial system that were consequently served by other types of banks. As opposed to English merchant banks, German universal banks were predominantly focused on domestic issues. In the early years, universal banks had a strong focus on investment banking activities with a limited deposit base. As a result, their branch networks were limited compared to English commercial banks (Tilly, 1986, 1992, p.95; Fohlin, 2007b, pp.75–88).

Universal banks issued securities for companies and held shares of their equity afterwards. By proxy voting and putting their representatives on the companies' supervisory boards (*Aufsichtsrat*), banks exerted influence on strategic decision-making processes. However this channel of influence was limited to joint stock companies, because other firms did not have supervisory boards (Fear and Kobrak, 2010; Tilly, 1986; Guinnane, 2002, p.106; Edwards and Ogilvie, 1996, pp.435–437). The relationship between bank and customer distinguished German universal banks from their English counterparts who did not have seats on their customers' board of directors. The share of non-government securities held at universal banks was similar to English commercial banks, but via proxy voting universal banks were able to influence the composition of supervisory boards and decision-making at the companies (Fohlin, 1997, 2007b, pp.106, 120–125).

The German central bank, the Reichsbank, was founded in 1876 as the major note issuer of the new Reichsmark. The Reichsbank and its predecessor, the Bank of Prussia, were both partly owned by the government and partly private. The Reichsbank discounted bills freely to customers who met certain criteria. This policy enabled universal banks to minimize their cash reserves. Furthermore, it dominated Germany's clearing system by a large network of branches (Pohl, 1982, p.203; Tilly, 1986, pp.122–123, 144–145; Guinnane, 2002, pp.82–84).

In contrast to the Reichsbank, the Bank of England was a privately run and profit-oriented bank until 1944. Its relationship with commercial banks was significantly more competitive, and decisions in periods of crises were driven by its own interests. Pollard and Ziegler interpret the role of the Reichsbank as a 'fairly effective Lender of Last resort', while the Bank of England taught bankers 'sound banking' (Tilly, 1989, p.197; Pollard and Ziegler, 1992, p.29).

The development of the German banking system took place during German industrialization, beginning in the 1840s, when industries demanded large fixed capital. English commercial banks, however, developed over a longer period of time and a demand for short-term credit (Cottrell, 1979, p.244). As such, Collins suggested the British financial system's specialization was a result of more advanced development (Collins, 1998).

After outlining the historical and institutional development of the English and German banking systems the following part will introduce the dissertations three chapters and relate them to each other.

This dissertation attends to the differences between German and English joint stock banks in chapter 2. Chapter 3 and 4 then focus on English joint stock commercial banks by tracing the development of the Midland Bank through it's growth from 1881–1913 (chapter 3) and the divisional variations between London and provincial regions (chapter 4).

Chapter 2 compares the risk-taking of the joint stock banks of Germany and England. This is based on a single measurement of risk-taking: the banks' share return volatility. A similar approach was used by Capie and Mills (1995) and Grossmann and Imai (2013) for the same period, although only for English banks. Chapter 2 discusses a variety of banks and thereby covers a large share of each countries' banking system. While chapter 3 and 4 are entirely based on information collected from balance sheets, chapter 2 only includes assets and equity ratios. This was necessary since the two major credit-components of English banks, bills and advances, were not separately reported by published sources (Pohl, 1982, pp.144–145; Baker and Collins, 2003, pp.67–68). The archive footage used for chapters 3 and 4 provides this differentiation and complements the approach in chapter 2.

Chapter 3 and 4 are both established on archive documents of the Midland Bank and disclose new evidence regarding English commercial banking conservatism. The comparison between the two countries' banking systems is only briefly continued in these chapters. Chapter 3 includes two other commercial banks to provide a comparative perspective for English joint stock commercial banks. These chapters are closely related to literature that is built on balance sheet information (Goodhart, 1972; Cottrell, 1979; Cassis, 1987; Baker and Collins, 2003; Fohlin, 2001, 2007b).

While chapter 2 includes geographic issues regarding a London-based head office, chapter 3 includes the geographic dimension by tracing the Midland Bank's head office relocation from Birmingham to London. Thereby it traces the development from a local provincial bank to a London bank and contrasts it with older London banks. Chapter 3 provides some contrast to the traditionally categories of 'provincial banks', 'London banks' and 'London and provincial banks'. While chapter 4 only addresses the time after the move to London, it covers Midland's divisional-level lending throughout England and Wales, uncovering variations between regions.

The goal of chapter 2 was to determine whether English or German banks showed differences in risk-taking. The analysis was based on the banks' stock returns listed on the London and Berlin Stock Exchanges between 1890 and 1913. In the first step, systematic factors were excluded by a market model to calculate the bank-specific risk. This made it possible to compare both countries' banks. The stock exchange data were supplemented with information from balance sheets and other information.

Findings from the first step showed a higher bank-specific risk for German banks compared to English banks. Regression runs with bank-specific variables showed no country-specific differences. Compared to provincial banks, banks with head offices in Berlin had riskier shares. London banks showed no significant difference with English provincial banks, this finding contradicts the view of especially risk-averse London banks. A positive relationship between the equity ratio and risk was found. This supported the characterization of universal banks in Germany as more risk-friendly, as they were less dependent on deposits for funding. The increase of German branches contributed to lowering risk. Another factor was the earlier foundation of English banks, due to Great Britain's economic and institutional head start.

While chapter 2 centred on banks' share returns as a single measure, chapters 3 and 4 are based on assets and liabilities, as well as profit and loss accounts and relate income and expenses to the respective asset and liabilities' components.

Chapter 3 examines the claim of an increased risk aversion of English commercial banks that led to restrictive lending from the late 19$^{th}$ to the early 20$^{th}$ century. The lack of reliable information made it necessary to use accounting documents available from archives and thereby accept a narrower basis. The Midland Bank offered an example of centralizing in London by relocating the head office from Birmingham to London and building a nationwide branch-network. Until now, no study has traced the impact of that relocation. The documents cover the period from 1881 to 1913 and include these developments. Two other banks, the Union Bank of London and the National Provincial Bank of England, provide further evidence to compare with the Midland Bank.

The Midland Bank provided no evidence for a reduction of credit over the period of investigation. After a restructuring of credit instruments, an expansion began in the 1890s. The finding held for banks with a similar provincial origin, while older London banks kept a lower credit ratio. While advanced shares were stable and even increased, cash was adopted after the expansion to London at the high level of other London-based banks, as a reaction to public concern after the Baring crisis in 1890. The accounts showed an increase in published cash reserves through aggressive window dressing. This supported the impression of continuity.

Profit and loss accounts were a step down in advance returns, but also in the costs of capital after expanding into London. Rates, however, remained stable. Therefore, the Midland Bank's accounts

provided no evidence for restraint on credit. Other banks were limited by the heterogeneity of other large banks. While Lloyds Bank had a similar history with similar amounts of credit, other banks with London roots lent on a far smaller scale.

A common result of chapters 2 and 3 was the decline of return on equity's volatility in tandem with the declining equity ratio and growth of assets. The path dependency of Midland Bank's roots could explain the insignificance of a London-based head office.

Chapter 4 assesses the idea that an anti-provincial bias led to restrictive lending by English commercial banks throughout the concentration process. The archive documents of the Midland Bank provide accounting data at a divisional level between 1893-1898 and 1907-1913. The Midland Bank provided no evidence for a systematic neglect of provincial areas. Independent banks lent on a similar level as the respective divisions of the Midland Bank.

The provincial divisions reported no decline in credit over time. In contrast to the supposed influence of London's banking habits on the provincial divisions, the opposite occurred by increasing advances to the higher provincial level at London-based divisions. Higher loan-to-deposit ratios were closely related to high turnover in urban divisions, including London, but also Liverpool, Manchester and Sheffield.

The fixed regression runs in these divisional datasets support the positive link between credit and turnover. Weak evidence was found for a positive link between interest paid on deposits and the amount of credit. Extremely low interest payments on current accounts in London might be an explanation for lower credit at 'old' London banks. No evidence was found for a negative impact on lending at newly acquired banks after integration as a division of the Midland Bank.

The divisional variation, which was only touched in chapter 3, can be traced further. While chapter 2 covers the disparities between the financial centre and provincial areas by head office location, chapter 3 uncovers heterogeneity inside this group, stemming from each banks' origin. Chapter 4 makes a further step by displaying the Midland Bank's disaggregated accounts on a divisional level. By holding accounts from large customers and providing a wider set of services to them the Midland Bank moved towards the customer structure of the German universal banks, which focused on large customers. Thereby the Midland moved step by step towards investment banking.

The common finding of chapters 3 and 4 was nationwide banks and their London head offices did not result in any negative impact but the introduction of provincial levels of lending. While the major focus of the literature rests on head office location (Baker and Collins, 2003), the differentiation (Jaffé, 1910; Cassis, 1985) between the older London banks and newer provincial ones was enhanced by this dissertation. The expansion and acquisition of older and newer London banks helped understand the concentration process in English banking. Furthermore, the insights alter the image of a distant 'City of London' as a synonym for the financial sector.

# 2. A stock market-based perspective on English and German banks' risk-taking 1890-1913

## 2.1 Introduction

The Financial crisis of 2007–2009 has brought new attention to the interaction of the financial sector and the real economy, especially the banks´ decisions on lending, funding and risk-taking. Those decisions had a crucial role in the developments that led to the crisis, as well as the following credit crunch and recession of the overall economy.

Besides the role of banks in crises, these financial institutions also have an important role in facilitating economic growth. The literature supports the interpretation that both the development of banks and stock markets promote economic growth (Levine and Zervos, 1998; Levine, 2002; Rajan and Zingales, 1998). The disparities in growth between the English and German economies during the late 19th and early 20th century is one case frequently explained by differences in the two countries´ respective financial sectors, and in particular their banking systems. During these years, GDP grew faster on a per capita basis in Germany than in the UK, and labour productivity in Germany surpassed that of the UK.

**Table 2-1: GDP per capita in 1990 $ (Growth rates in parenthesis).**

| | 1870 | 1880 | 1890 | 1900 | 1910 |
|---|---|---|---|---|---|
| Great Britain | 3,190 | 3,477 (8.9%) | 4,009 (15.3%) | 4,492 (12.0%) | 4,611 (2.6%) |
| Germany | 1,839 | 1,991 (8.3%) | 2,428 (21.9%) | 2,985 (22.9%) | 3,348 (12.2%) |

Source The Maddison-Project, http://www.ggdc.net/maddison/maddison-project/home.htm, 2013 version.

**Table 2-2: German labour productivity in relation to UK.**

| 1871 | 1881 | 1891 | 1901 | 1911 |
|---|---|---|---|---|
| **92.6** | 88.7 | 94.0 | 98.8 | 119.3 |

Source: (Broadberry, 1998, p.382)

The critical point is relying on the supply of funding coming from the banking sector as the main channel, other than the capital market, to fund companies. In particular, the growth of new industries is an example that illustrates the "failure" of English banks.

During the industrialization of the late 18th and early 19th century fixed capital investments were necessary only on a small scale. English banks provided credit predominantly on short-term,

according to the demand of local industry, but the demand increased in the late 19th century during the second industrial revolution (Best and Humphries, 1986, pp.226–228). But still in Britain capital-intensive, large scale industry played a less central role than in Germany. In 1907 the British industry was dominated by staple industries: textiles, coal, shipbuilding, iron and steel made up 50% of industrial production and 70% of exports (Fohlin, 2014, p.17; Elbaum and Lazonick, 1986, p.9). On the other hand the German universal banks supported especially heavy industry and large companies and thereby neglected small companies (Tilly, 1986).

Two examples for successful new industries in Germany provide the electrical and chemical industry that constitute a part of the second industrial revolution and reflect the success of Germany in this period that contrasts with Britain's experience (Fohlin, 2001, pp.22, 36). The great banks concentrated their influence on particular sectors by shareholding and advisory board seats. In metalworking, light rail, and electrotechnicals great banks had in companies with a market share of over 70% on firms' advisory boards (Fohlin, 2007b, pp.137–139). These sectors exemplify the close relationship between universal banks and industry as a distinct feature, while English banks held nearly no equity shares (Baker, Eadsforth and Collins, 2009).

Rajan and Zingales have pointed out the importance of low costs for the access to external funding in particular for industries with high fixed investments (Rajan and Zingales, 1998). Using this reasoning, the risk-taking of banks is a crucial part for credit supply under the circumstances of the second industrial revolution. A bank that is more risk-averse might be more selective in providing credit to companies, especially when they are based on new technology. Instead of providing credit to companies, the bank then invests a larger share of assets in securities and other liquid assets.

The issue can be approached from different angles: One is the different range of services provided by English and German banks. The German banks as the centrepiece of a bank-based financial system are viewed differently than their English counterparts as more entrepreneurial and willing to undertake long-term investments in domestic industry. They offered commercial banking as well as investment banking services. In particular, new industries seem to have gotten support from the joint stock banks. Burhop found support for a decisive role of joint stock banks in new industries for the mid-19th century during early industrialization (Burhop, 2006, pp.56–57). Tilly also sees the role of German universal banks as largely supportive when it comes to funding risky projects (Tilly, 1986, p.150).

On the other hand, English commercial banks act as part of a market-based system with a more limited range of services. Their focus on liquidity provision and payments services is characterized as too conservative and risk averse to supply the necessary funding to newly developing industries. The non-development of universal banking in England is another aspect and is explained by an aversion to the risks of investment banking. Without support from a bank companies, that wanted to offer

securities for long term funding via financial markets, faced higher costs or no access at all (Collins, 1991, p.41).

English banks were small, locally oriented, and supportive in funding the local industry during the early and mid-19th century. In this period banks held close relationships to companies based on local networks (Newton, 1996; Collins and Hudson, 1979). The debate on restrictive funding or a "failure" of the banking system centres on the final decades of the 19th century up to the outbreak of WWI (Cassis, 1990, p.4; Collins and Hudson, 1979).

The English banking system changed during the last decades of the 19$^{th}$ century, in particular the 1890's, from many small locally managed banks to few large ones, managed from London. As one result the management was more distanced from many industrial areas. Furthermore formerly independent banks had to follow more centralized rules that restricted credit provision to local firms. Previously build networks between banks and firms, based on personal relationships, were destroyed by the growth of large banks with more impersonal information gathering and decision making processes. As a result the larger banks reduced lending to industrial clients in favour of the financial markets in London (Collins and Baker, 2001b, p.2; Newton, 2000, pp.182–183).

England experienced financial crises in 1878 and 1890 that seem to have led to an increase in liquid assets, while credit was reduced as a share of assets. Both events had an impact on banks' asset structure. After the bankruptcy of the City of Glasgow Bank in 1878 banks increased liquid assets and reduced credit. The Baring crisis of 1890 had a similar effect, in particular on credit. As a result bank lending was reduced (Baker and Collins, 1999, p.440). Expansion was a result of the attempt to diversify the risks of lending to a small group of customers. The Birmingham and Midland Bank expanded in the late 1880's to diversify the risks of a small number of large accounts in the same area (Holmes, Green 1986).

The German banking system experienced only minor events of financial distress in 1901 and 1907 (Tilly, 1986, p.145). But the background of the crisis in 1901 was very similar to the English experience and lasted from too large loans to two companies that resulted in the bankruptcy of two banks: Leipziger Handelsbank and Dresdner Kredit und Handelsbank. In this respect experiences were similar in both countries (Cottrell, 1979, pp.239–240).

Another aspect related to the "failure" of the English financial- and banking system is the very high quota of British foreign investment, also called a "Foreign Bias", explained by specialization and fragmentation of the financial sector that led to a focus on large foreign government and railway bonds. This critique primarily centres on merchant banks that underwrote only a few large industrial issues and otherwise neglecting domestic issues. Commercial banks did not offer the necessary services to issue domestic corporate shares or bonds while merchant banks focused on the large

international issues. As a result companies suffered from a lack of cheap access to the stock market (Edelstein, 1982b; Kennedy, 1987).

Cain and Hopkins (2002) put the Foreign Bias in the context of "gentlemanly capitalism" with a group of financers that focused on international finance and trade: and so had an impact on the City of London, politics and society. Especially since this situation concerns the issuing of securities, the commercial banks are touched predominantly as investors. Commercial banks have shown very little interest in domestic stock but held large shares of government bonds, what might be a result of risk-aversion too (Baker, Eadsforth and Collins, 2009).

An opposing position argues that companies used local informal ways for funding instead of the formal London stock market, which indeed was dominated by foreign bonds (Michie, 1987, p.124). The non-development of universal banks and underwriting of corporate issues by banks was not a "failure" but, in this probably more balanced view, simply not necessary. The English banks are understood as part of this more advanced and specialized financial system, while the German banks developed from relative backwardness so that universal banking is seen as part of a catch-up process (Collins, 1998). On the other side the universal banks' share of the German banking system was smaller than their counterpart, the English commercial or clearing banks. The impact on the economy might have been less significant. The limited breadth of investments into some sectors might have led to a neglect of risky projects in other sectors or smaller, non-industrial, privately held, firms as well (Fohlin, 2001, pp.19–20; Tilly, 1986; Edwards and Ogilvie, 1996, pp.433–437).

Another important aspect is the role of London as the leading financial centre in the late 19$^{th}$ and early 20$^{th}$ century. The pound sterling was the major vehicle to finance international trade, with an estimated share of 60%. The London Stock exchange was the major stock exchange for international government bond issues and a major place to finance railways from around the world. Commercial banks provided credit to this system that funded international trade and the stock exchange, by lending to brokers (De Cecco, 1974, p.86; Michie, 1999, pp.133–135). The merchant banks that undertook the underwriting of securities specialized in large issues that were very similar. As domestic issues were usually of smaller size, it can be argued that these banks simply followed their business model and had no "Foreign Bias" (Cottrell, 1979, p.181).

Both countries' financial systems are stereotyped characterizations of a market-based system (England) and a bank-based system (Germany). The former is dominated by markets for equity and debt that are the major source for long-term funding of corporations. Banks in this system operate on an arm's length basis with corporations to provide short-term credit and payment services. A common criticism of market-based systems and, in particular, the case of England, is a focus on short-term results and short-term investments, also called "short-termism". In a bank-based system, banks are the centrepiece of the financial system and provide long-term funding to corporations

while markets are less developed. In this context, banks develop long-term relationships to monitor their customers (Collins, 1998, p.2).

Following this discussion, the question arises: Have German banks been more willing to take risks than their English counterparts, or have they simply developed different ways to manage risks? The purpose of this paper is to conduct an analysis to see if there have been significant differences in the risk-taking behaviours of German and English banks. The alternative method of funding through capital markets will be excluded from the analysis. The method used is based on the volatility of total shareholder returns of each banks´ shares as measurement of each bank's risk-taking. Until now, no study has been done that compared both countries' banks based on stock market data. Grossman and Imai (2013), and Capie and Mills (1995) used a similar method to analyse the influence of contingent capital on bank's risk-taking, and in the latter work British banks' risk-taking in relation to a market index.

A common approach to analyse risk-taking and diversification is the use of accounting data. A disadvantage of accounting data, in contrast to stock market data, is the information is based on particular rules that were chosen by companies and might be used to cover risks. A second aspect is the backward-looking nature of accounting data, while share price movements include a forward-looking perspective of market participants on future returns and projects dependent on strategic choices (Stiroh, 2006, p.1352, 2010, p.163). A very similar approach would be to use banks' returns, calculated from balance sheets and profit and loss accounts, instead of banks' share returns. But a particular problem of English bank balance sheets is the reliability of reported profits. To create a more preferable image of the bank, published profits were smoothed out over time, and by doing this diminished or erased precisely the variation of returns that provides the measurement for risk (Cassis, 1987, p.3).

Beyond national characteristics, a bank's share volatility depends on factors related to the whole economy or the financial sector. These factors will be excluded by a market model. After this first step the resulting bank-specific risk can be used to estimate the impact of specific characteristics of each bank, for example size, number of branches and the equity ratio. The structure of the chapter is the following. In part 2.2, the data and its sources are explained. An overview of the institutional setting will be given and the sample of banks will be introduced in 2.3. In part 2.4 the approach is explained in detail and variables are discussed in 2.5. Part 2.6 reports the regression results and their interpretation. Conclusions follow in part 2.7.

## 2.2 Data and Sample Description

The data cover the entire period under investigation, from 1890-1913. Share data of English banks were taken from the *Investor's Monthly Manual (IMM)* which published information on securities listed on the London Stock Exchange. The *IMM* was published as a supplement to *The Economist* on a monthly basis. Information on share prices, dividends, months of dividend payments, and the number of shares are all provided by the *IMM*. The data for the prices of English Consols are also from the *IMM*. All the aforementioned information was found in and taken from the Yale School of Management's online database.[1]

The share data of German banks were taken from *Neumann's Kurs-Tabellen der Berliner Fonds-Börse (1890-1911)/ Kurs-Tabellen der Berliner Fonds-Börse (1912-1913)* that provides information on bonds and shares listed at the Berlin Stock Exchange, and was published on a yearly basis. These series include information on all securities that were listed on the Berlin Stock Exchange, including share prices, equity capital and the year of foundation in the case of companies. This publication includes information on the highest, lowest and last prices of all securities, listed on the Berlin Stock Exchange on a monthly basis. Prices of German government bonds were also taken from *Neumann's Kurstabellen*. Because in the first year (1889) *Neumann's Kurs-Tabellen* published only the average price per month, the prices for December 1889 were added from *Salings Börsenjahrbuch 2.Teil* to calculate the return for January 1890. Information on dividends and their months of payment were also taken from *Salings Börsenjahrbuch.* Because not all the German banks' dividends, especially before 1900, can be found here, *Der Deutsche Ökonomist* as well as *Berliner Börsenzeitung*, a weekly and daily newspaper respectively, where used as additional sources to gather the data.

Bank balance sheet data on English banks were taken from *The Economist*, and on German banks from *Salings Börsenjahrbuch*. Both sources provide information on assets and the book value of equity. These sources also provided the number of branches per bank for their respective countries. Years of foundation were taken from *British banking*: *A guide to historical records* (Orbell and Turton, 2001) and *Salings Börsenjahrbuch*. The information on the location of the banks' head offices was taken from *Salings Börsenjahrbuch* and *IMM* for Germany and England respectively. The prices of the German government bonds were taken from *Neumann's Kurs-Tabellen,* too.

All the data were hand-collected, with the exception of the *IMM* data. For England, the market index by Horne and Smith (Horne and Smith, 1934) has been used. For Germany, the market index compiled by Donner (Donner, 1934) has been used, and the data were taken from the NBER Macrohistory Database. Information on English and German discount rates was also taken from the NBER Macrohistory Database. The German data are based on information from the Reichsbank, for

[1] The data of the IMM are available under: http://som.yale.edu/imm-issues

the period 1890-1910, and the *Statistisches Jahrbuch für das Deutsche Reich*. English data are originally from *The Economist.*[2] The Consumer Price Indices were taken from Mitchell (2007, p.962). The exchange rates were taken from *Deutsches Geld und Bankwesen in Zahlen: 1876-1975* (1976).

## 2.3 The Banking Systems and the Sample

The Financial systems of England and Germany comprise not just the difference of universal banking in Germany, with services from commercial banking (deposit-taking, bill discounting, payments via current accounts, trade credit) and investment banking (underwriting and brokerage of securities) and specialized banks in England, but a different role of banks and financial institutions overall. In Germany financial institutions' assets grew faster in the late 19th century than in Britain. While in 1880 assets stood at 73% of GDP in Germany, British financial institutions held assets worth 95% of GDP. These figures grew to 114% and 93% in 1900 and 158% and 103% in 1913 respectively. The bank-based German system created institutions that, on the aggregate, became larger than the market-based English system.

But out of the overall assets of financial institutions the German joint stock banks made up just a part of the system with 25-30% of financial institutions' assets from 1880 to 1913. Other intermediaries held the dominant share of financial institutions' assets. In Britain, joint stock banks held 48-57% of financial institutions' assets in the same period. The more important role of joint stock banks mirrors the far smaller role of other banks: savings banks, mortgage banks, credit unions. These institutions had a stronger position in Germany than in Britain (Fohlin, 2001, pp.1–3).

The sample includes German banks with assets of about 13.1 billion RM out of 22.04 billion RM held by all joint stock banks (~60% of this group). Savings banks held 22.56 billion RM and mortgage banks another 20.75 billion RM in 1913 (Fohlin, 2007b, p.67). In the case of Germany, the sample covers banks with assets equivalent to 23% of German GDP in 1913. These values display the segmentation of the German banking system.

The sample's English banks had a sum of assets of 897.7 m £ out of 901.4 m £ held by all banks. That creates virtually full coverage of the English joint stock banks. Additionally 243.2 m £ were held by English savings banks (Sheppard, 1971, pp.118, 144, 146). The assets of English banks were equivalent to 35.7% of the UK's GDP in 1913[3] (Jones and Obstfeld, 2001).[4]

Table 2-3 reports the assets of English and German savings, and joint stock banks in total as well as the samples' banks for 1900 and 1913. From these numbers it becomes visible that the sample covers a larger share of the English banking system than the German banking system. Measured by

[2] Available online: http://www.nber.org/databases/macrohistory/contents/

[3] England is only a part of the UK, but by far the largest. The share only for England would be even higher.

[4] Data available at: http://www.nber.org/databases/jones-obstfeld/

assets German savings banks were an important part of the banking system while their English counterparts had just a minor role. The German joint stock banks had even smaller assets than the savings banks in 1900 and only later grew up to an amount slightly larger. Furthermore the German sample includes a lower share of all German joint stock banks than the English sample. The more centralized financial markets of England are the reason for this difference: The Berlin Stock Exchange had a less dominant role in the German financial system than the London Stock Exchange. As a result the share of joint stock banks listed in Berlin was lower than the share of English joint stock banks listed in London. Nearly all English joint stock banks were listed in London, and therefore can be included in the sample.

Again the two countries' different role of financial institutions becomes visible: while in 1900 both countries banks' assets were nearly equal in 1913 German banks held nearly twice as many assets as the English banks, as a result of their enormous growth.

Taking only deposits as indicator, German savings banks held 65% of them, while for the whole UK savings banks had a share of only 18.5% (Michie, 2003, p.48). English savings banks' assets amounted in 1913 to about 21% of total banks assets, slightly higher than their deposits' share. In contrast German savings banks held about 48% of total banks assets but a clearly higher share of deposits. The German situation was clearly the opposite with a higher share of deposits than assets held by savings banks. The importance of German savings banks deposits reflects their relative strength in deposit collection and the relative weakness of German joint stock banks in that field of business.

**Table 2-3: Assets in £ in current values.**

| | 1900 | | 1913 | |
|---|---|---|---|---|
| | **England** | **Germany** | **England** | **Germany** |
| Sample Banks | 604 m £ | 281 m £ | 897 m £ | 639 m £ |
| All Joint Stock Banks | 677 m £ | 341 m £ | 901 m £ | 1077 m £ |
| Savings Banks | 139 m £ | 463 m £ | 243 m £ | 1013 m £ |

Source: *Salings Börsenjahrbuch, The Economist* (Fohlin, 2007b, p.67; Sheppard, 1971, pp.118, 144, 146).

The use of share price information is limited in its scope for several reasons. First, the number of banks included in the sample is restricted to listed joint-stock companies. This excludes banks organized as partnerships or not listed on the stock exchanges of London or Berlin. Thereby, private banks and savings banks are excluded a priori from the sample. London merchant banks, such as Rothschild and Baring Brothers, are excluded for the same reasons. Furthermore, German mortgage banks are not included because their business model focused on mortgage lending and funding with long-term bonds. As England and Wales were set up as one zone, regarding banking and monetary issues, Wales will be included in the following even if not mentioned explicitly.

The comparison of two countries makes it necessary to check for systematic differences in the stock returns between English and German banks. These could be differences driven by macroeconomic, legal or other institutional factors that affect the whole economy and, by this, the risks banks are exposed to. Furthermore different rules that stock exchanges follow might affect the price building process, and stock returns too.

In the second step, bank-specific factors will be related to the banks' risk. Beyond the scope of the paper are relations of banks to particular industries. The descriptive statistics (Table 2-4) of the sample give an initial idea of its structure as a whole and the two subsamples of English and German banks. All values in Reichsmark have been recalculated in pound sterling to make the comparison easier.

The mean of German banks' shareholder returns is at 0.7% higher than the English banks' shareholder returns with just 0.39%. The volatility of total shareholder returns reveals a similar picture, with higher values for Germany than for England. Such a pattern has to be expected because higher returns are result of riskier projects that create a more volatile stream of income and as a result more volatile returns.

The mean of *assets* is considerably higher in the case of English banks, 11.88 mil £, compared to 6.44 mil £ for German banks. The relatively large English banks are a result of the ongoing concentration movement that led to larger banks that controlled ever larger assets and branch networks from their London head offices (Collins, 1991, p.37). While the English banking system of the mid-19$^{th}$ century consisted of a large number of small local joint stock banks in the early 20$^{th}$ century a few banks held an increasing share of the banking system and operated nationwide branch-networks. The largest English bank, the London, City and Midland Bank, reached assets of 110 mil £ in 1913. The largest German bank , Deutsche Bank, was of strikingly similar size with 105 mil £ (Collins and Baker, 2001b, pp.1–2).

**Table 2-4: Descriptive statistics.**

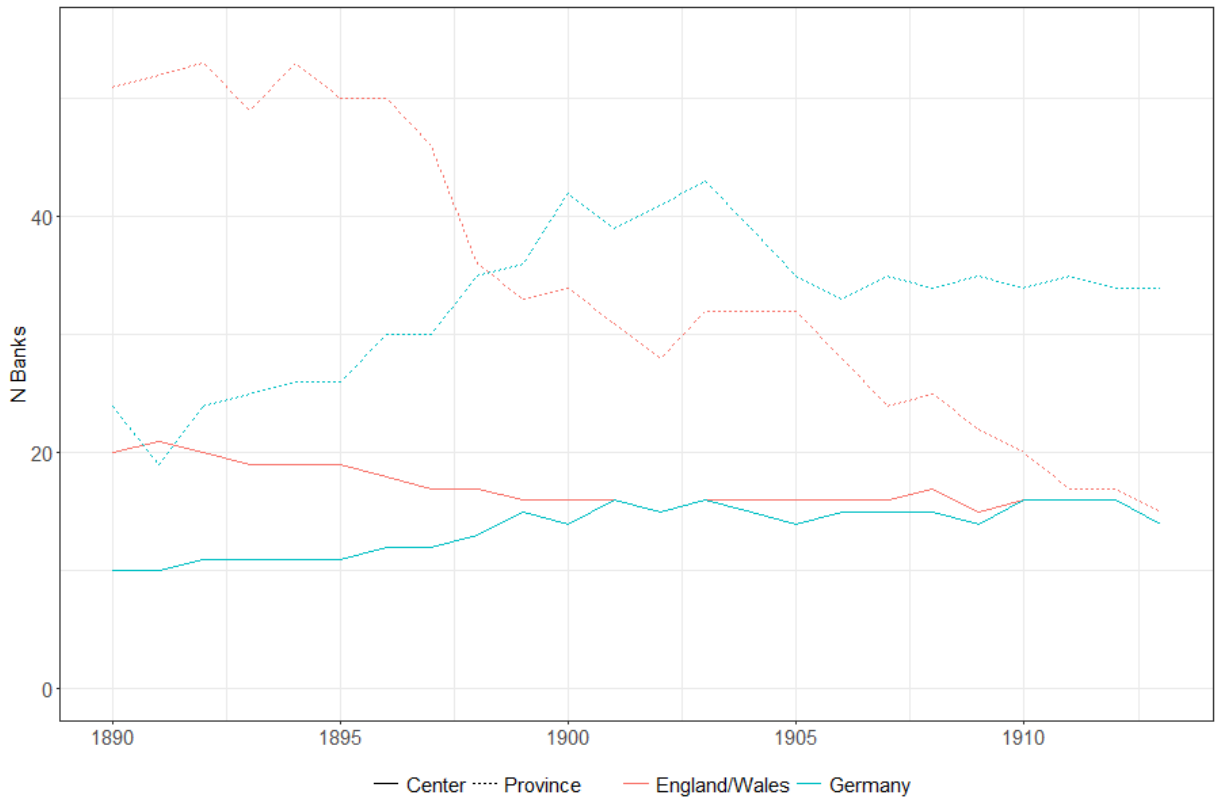
| | | All | England | Germany |
|---|---|---|---|---|
| **total monthly shareholder returns** | mean | 0.0054 | 0.0039 | 0.007 |
| | sd | 0.0302 | 0.0263 | 0.0334 |
| | min | -0.8972 | -0.8972 | -0.895 |
| | max | 1.0033 | 0.8696 | 1.0033 |
| **volatility of total monthly shareholder returns** | mean | 0.0212 | 0.0187 | 0.0241 |
| | sd | 0.0204 | 0.0176 | 0.0229 |
| | min | 0.0024 | 0.0024 | 0.0055 |
| | max | 0.4566 | 0.2967 | 0.4566 |
| **Assets in £** | mean | 9255385.7232 | 11881707.3336 | 6438147.9099 |
| | sd | 15163746.5961 | 16929052.7726 | 12410793.5834 |
| | min | 88715.0759 | 242608 | 88715.0759 |
| | max | 110349826.9043 | 104830193 | 110349826.9043 |
| **equity ratio** | mean | 0.2118 | 0.0957 | 0.3401 |
| | sd | 0.1528 | 0.0456 | 0.1244 |
| | min | 0.0111 | 0.0111 | 0.0285 |
| | max | 0.8295 | 0.4707 | 0.8295 |
| **no. of branches** | mean | 39.3873 | 69.847 | 7.4017 |
| | sd | 82.5435 | 105.892 | 14.1542 |
| | min | 0 | 0 | 0 |
| | max | 768 | 768 | 109 |
| **Foundation** | mean | 1852.5876 | 1835.8008 | 1871.301 |
| | sd | 28.5297 | 27.5177 | 14.5943 |
| | min | 1765 | 1765 | 1839 |
| | max | 1905 | 1896 | 1905 |
| **N total shareholder returns** | | 31926 | 15725 | 16201 |
| **N total shareholder returns per bank per year** | mean | | 11.1922 | 10.9614 |

Sources: Own calculations, Total shareholder returns: Neumanns Kurstabellen and IMM, sum of assets, equity ratio, no. of branches: Salings Börsenjahrbuch and Economist, foundation: Salings Börsenjahrbuch and Orbell and Turton (2001), competitors: Salings Börsenjahrbuch and IMM.

Both countries' banking systems underwent a concentration process that accelerated during the First World War. In 1890 26% of the English banks' assets were held by the largest 5 banks. In 1910 the share had increased to 43%. In Germany the equivalent top 5 banks' share increased from 17% to 31%, an increase by a similar ratio but on a lower level. Both banking systems experienced a steep

increase over the First World War up to a share of over 60% of the top 5 banks (Fohlin, 2002, p.248; Capie and Rodrik-Bali, 1982, p.287).

In Germany new banks enter the sample and further increase the number of Berlin- and provincial banks by listing at the Berlin Stock exchange until shortly after 1900. English provincial banks' number shows a very different dynamic by decreasing from about 1895 until the end of the period as illustrated by Figure 2-1.




Sources: same as Table 2-3.

**Figure 2-1: Number of banks per year, by country and head office location.**

While in Germany new banks enter the sample England experienced practically the whole time a decline, driven by the concentration movement that reduced in particular the number of provincial banks. A similar process becomes visible in Germany from 1902/03 onwards. The number of banks offers one perspective at the further advanced consolidation of the English banking system by a reduction of the number of competitors. On the other hand in Germany a number of small banks enter the market.

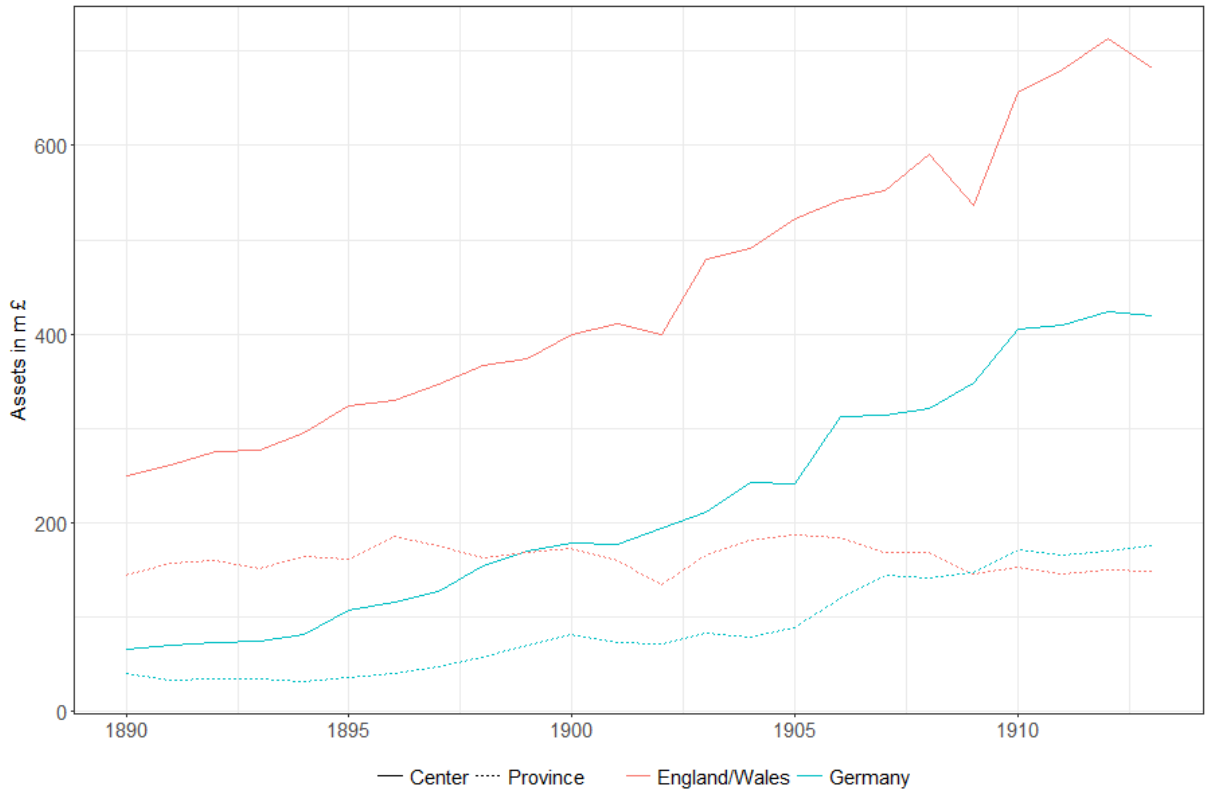
The ongoing concentration and expansion of both countries' banking systems led to a growing amount of assets managed from London and Berlin respectively (Figure 2-2). While German provincial banks experienced growing assets over the period 1890-1913, English provincial banks'

assets declined after a peak around 1900. The discussion about the impact of location of the head office on banks' risk-taking and investment decisions becomes more crucial due to this development.

The *number of branches* reveals an even larger variation of basically the same phenomenon: the average for England is 69.85 and the average for Germany is 7.4. Part of this large variation might be explained by differences in the size of banks and the structure of the sample. But the more important explanation is that German Kreditbanken developed deposit collection on a larger scale only after 1890. Deutsche Bank was an exemption in collecting deposits from the 1870s onwards. Their previous focus on large deposits and large corporations was widened by a new attention towards small deposits and small corporations. As a result, large branch networks were less important for German banks. Small savers were typically customers of savings banks and thereby created deposits twice the size of the Kreditbanken in 1913 (Fohlin, 2007b, p.85; Tilly, 1989, pp.190–191; Edwards and Ogilvie, 1996, p.432). English commercial banks collected deposits from a wide range of customers that used bank accounts for their payments by cheque. Therefore a large branch-network was important for their business model to be accessible to their customers (Fohlin, 2014, pp.60–62; Baker and Collins, 2003, pp.68–69; Weber, 1938, pp.115–116).

As a result a divergence in branch-networks emerged and becomes visible in the sample: in 1890 the largest English branch-network consisted of 172 branches, operated by the London and County Bank. In contrast the Schlesischer Bankverein operated the largest branch-network in Germany consisting of only 7 branches. In 1913 the largest English branch-network was operated by the London, City and Midland Bank and consisted of 867 branches, while the largest German bank, Deutsche Bank, had just 130 branches. German banks expanded their branch-networks significantly but they lagged far behind English banks' vast networks.

Another factor is the Reichsbank's strong position in the clearing and payment process. The large branch network of the Reichsbank comprised 487 branches in 1913. The number of branches puts it closer to the large English banks' branch-networks than the German ones. Universal banks even used the Reichsbank to transfer internal funds (Skinner, 1914, pp.437–438; Weber, 1938, p.58). In contrast the Bank of England operated only 10 branches in 1913 (The Economist, May 23rd 1914: p. 1204). The Reichsbank's strong position in the clearing system and wide branch-network and the savings banks as another competitor had a negative impact on the development of deposit taking and payments services of universal banks (Tilly, 1986, pp.144–145; Pohl, 1982, p.203, 1986, pp.62–63).




Sources: same as Table 2-3.

**Figure 2-2: Assets of banks per year, by country and head office location.**

Apart from these disparities in the operations of the Reichsbank and the Bank of England, both acted as a Lender of Last Resort (Goodhart, 1988, p.110; Ogden, 2003, p.309). A difference in the discounting policy of both banking systems is that while the Reichsbank freely discounted Bills presented by banks, the English banks were held back from rediscounting bills by convention (Pohl, 1982, pp.144–145; Baker and Collins, 2003, pp.67–68).

In the case of *equity ratio*, again the mean values show a gap between the two countries' subsamples with a mean of 34% for Germany and 9.57% for England. One reason might be that German banks needed a higher equity ratio because of their investment banking services. The related risks made it necessary to keep a higher share of illiquid liabilities. The equity ratio had an influence on banks assets: In the discussion of a foreign expansion of the London, City and Midland Bank, Edward Holden its President, stated that the equity ratio of the Midland was too low to afford investment in a foreign bank. That view displays a connection between the bank's equity ratio and their ability to invest and to bear the volatility of corporate shares. In contrast equity of German and French banks was much higher (Cassis, 1994, pp.146–147). The low capital base of English banks was apparent in comparison to other countries too. By capital the largest three companies in Germany, France, Belgium and Switzerland were banks, but not in Great Britain. The reason was the low capital base of English banks (Cassis, 1992, p.3). However, considering the importance of deposit collection and

branch banking for the English banks, low equity ratios can be seen as a result of the high proportions of deposits.

On the other hand German universal banks faced strong competition from savings-banks, which run a business a lot more based on deposits. As a consequence the acquisition of deposits was less attractive and more difficult for the German universal banks.

The German banks are also younger than English ones, in the sense that they were founded at a later date. The foundation of joint stock banks was gradually liberalized in England from 1825–1862 (Collins, 1994, p.274). Lloyds Bank is the oldest English bank of the sample, founded in 1765 as a private bank and later incorporated. But many of the large banks were founded in the early 1830's, for example the London, City and Midland Bank (1836), London and Westminster Bank (1833), London and County Bank (1836). In Germany, the first joint stock banks where founded under corporate charters in 1839 (Leipziger Bank) and 1848 (A. Schaaffhausenscher Bankverein), and after the liberalization of incorporation of joint stock companies in 1870 (Fohlin, 2007b, pp.18–21). After liberalization a wave of foundations followed, including Deutsche Bank (1870) and Dresdner Bank (1872). These different institutional developments become visible in the sample by the average year of foundation. England's sub-sample mean is a lot earlier with 1835 than Germany's sub-sample mean of 1871.

The number of observations of monthly shareholder returns is very close for the two countries samples. A bias, due to one countries larger sample should therefore be excluded. After introducing the sample the following part will explain the estimation of the bank specific risk.

## 2.4 Estimation of systematic and bank-specific risk

Total shareholder returns are the basis for the risk measurement of each bank. These are driven by systematic factors that influence the whole economy, such as macroeconomic developments, as well as institutional and legal settings. These factors differ between two countries and are beyond the influence of a bank´s management.[5] To estimate the bank's risk, a market model is used that decomposes the systematic and bank-specific risk of the bank's total risk. The basic version of a return-generating model is based on a market index to relate the bank's share returns to the market movements:

$$total\ shareholder\ return_{b,t} = \alpha + \beta_{c,t} market\ return_{c,t} + \hat{\epsilon}_{b,t}$$

[5] An alternative way would be cross listings of German banks listed in London or English banks listed in Berlin. This would avoid the impact of market liquidity.

While $\beta_{c,t}$ measures the bank's systematic component (market beta), $\epsilon_{b,t}$ measures the bank-specific component. The total risk of a bank consists of the systematic risk and the bank-specific component. To get a measurement of bank-specific risk the standard deviation of $\epsilon_{b,t}$ is calculated: $\sigma(\epsilon_{b,t})$.[6]

Another factor banks are exposed to is a change in interest rates (Flannery and James, 1984). These rates affect the business of banks, as one of their main functions is the transformation of claims with different maturity dates. Short-term liquid deposits are transformed into loans with a longer maturity. Shocks to the interest rates would affect banks' costs of funding and income. The market index might not capture these effects because other companies are less affected by interest rate shocks.

The market model used here follows the enriched version of Demsetz and Strahan (1997, p.303). The model is similar to the method of Stiroh (2006, p.1353), and Baele et al. (2007, p.2007), with the exception that due to a lack of information the additional variables are reduced to two measures of interest rates. The model will be estimated per bank per year.

$$total\ shareholder\ return_{b,t} = \alpha + \beta_1 market\ return_{c,t} + \beta_2 yield\ change_{c,t} + \beta_3 discount\ rate\ change_{c,t} + \epsilon_{b,t}$$

*Market return* represents each country's market index return. The index used for England (Horne and Smith, 1934) is an unweighted index consisting of 12 sectors[7] with a minimum of three stocks each. The German Index (Donner, 1934) consists of 16 sectors[8] and is weighted for the period under investigation. *Yield change* gives the change of the yield on sovereign bonds[9]. In the case of Germany, the yield change of 3.5% for Imperial bonds was taken. In the case of England, Consols with an interest payment of 2.75% until 1903 and later of 2.5% were taken. This switch to a lower interest rate happened because of a restructuring of British governments debt. These bonds represent the largest share of the government debt of England and Germany. The variable *discount rate change*[10] represents the changes of discount rates in the London and Berlin discount markets. Both are based on the discount rates on bank's bills. As a counterpart for government bonds, the obvious indicators for short-term interest rates would be treasury bills, and because of the lack of data these alternatives were used.

[6] So that $\alpha + \beta_{b,c,t} market\ return_{b,c,t}$ is the systematic component.

[7] Coal, iron, steel, engineering, electricals, textiles, food and drink, building, lighting and power, chemicals, stores, miscellaneous, and transport.

[8] Banks; mortgage banks; shipping; railway; iron-, steel and mining; electricals; utilities, machine building; chemicals; potash; textiles; paper; cement; construction; glass and breweries.

[9] $yield\ change = (bond\ yield_t - bond\ yield_{t-1})/bond\ yield_{t-1}$.

[10] $discount\ rate\ change = (discount\ rate_t - discount\ rate_{t-1})/discount\ rate_{t-1}$.

Table 2-5 shows the descriptive statistics of the three systematic factors on a monthly basis. While bond yield change and discount rate change are on a similar level the market index reveals some difference with a very small negative mean value for England (0.077%) and a very small positive mean value for Germany (0.002%).

**Table 2-5: descriptive statistics of systematic factors.**

| | | England | Germany |
|---|---|---|---|
| **market index return** | mean | -0.00077 | 0.00002 |
| | sd | 0.00844 | 0.01796 |
| | min | -0.03872 | -0.0569 |
| | max | 0.02599 | 0.053 |
| **bond yield change** | mean | 0.00079 | 0.00068 |
| | sd | 0.0121 | 0.00661 |
| | min | -0.08595 | -0.03427 |
| | max | 0.03657 | 0.01935 |
| **discount rate change** | mean | 0.01597 | 0.01433 |
| | sd | 0.22748 | 0.16889 |
| | min | -0.5474 | -0.39041 |
| | max | 0.90217 | 0.60256 |

Sources: own calculations, Market Index: Horne and Smith (1934) and Donner (1934), bond yield change: *IMM* and *Neumann's Kurstabellen*, discount rate change: NBER Macrohistory Database based on: *Economist* and Reichsbank.

The sample includes 88 English banks and 79 German banks, which creates a total of 167. A number of banks are excluded because of the lack of data on share prices in particular years. These banks' shares were traded sporadically, so prices exist only for some months in the year. For this reason, 309 bank-year observations are excluded. From the remaining sample, share prices and dividends were collected to calculate total shareholder returns. The volatility of total shareholder returns will then be used as a measurement for a bank's underlying riskiness. Following Grossmann and Imai (2013) and Esty (1998), banks with less than 11 data points per year are excluded from the final sample. In 25 cases, the months of dividend payments were not available, resulting in an inability to calculate total shareholder returns. These banks were excluded from the sample for these particular years. Finally, 2,452 bank-year observations of share price volatility remain.

**Table 2-6: Bank-specific risk $\sigma(\epsilon_{b,t})$.**

| | All | England | Germany |
|---|---|---|---|
| mean | 0.0175 | 0.016 | 0.0193 |
| sd | 0.0178 | 0.0162 | 0.0192 |
| min | 0.0015 | 0.0015 | 0.0039 |
| max | 0.3856 | 0.2585 | 0.3856 |

Sources: Own calculations

As can be seen from Table 2-6, the estimation of bank-specific risk based on the first step regression was lower in England than in Germany. The pattern of higher returns of German banks as the descriptive statistics of Table 2-4 already revealed continues in the bank-specific shareholder returns. In the second step, the bank-specific variables will be regressed on the estimated bank-specific risk. This is calculated on an annual basis. The dependent variable is calculated as the standard deviation of the residuals of the first step regression. The model is estimated in the following way:

$$\sigma(\epsilon_{b,t}) = \alpha + \beta_1 \log(assets)_{b,t-1} + \beta_2 country_{b,t} + \beta_3 center_{b,t} + \beta_4 equity\ ratio_{b,t-1} + \beta_5 branches_{b,t-1} + \beta_6 foundation_{b,t} + \beta_7 KG_{b,t} + \mu_{b,t}$$

In the following part, the independent variables will be explained and discussed in detail regarding how they are related to the banks' risk. Theoretical as well as historical arguments will be considered.

## 2.5 Discussion of bank-specific risk factors

The following chapter will explain and discuss the bank-specific variables, outlined above, and their relation to bank-specific risk. The sum of *assets* or balance sheet total is used as the most common measurement of a bank's size. Large banks, unlike to small ones, should be able to diversify their business risks on a large number of business relations. The diversification over a wider range of customers whose businesses are less correlated creates a higher degree of diversification. As a result, it should be expected that a bank's sum of assets is negatively related to its share volatility. The assets are deflated by the consumer price indices from Mitchell (2007, p.962).

The variable *country* is a dummy variable that has the value one for Germany and zero for England. According to the literature, there might be higher risk-taking by German banks due to their more active role in providing long-term credit and the underwriting and issuing of stocks and bonds. In contrast, the English commercial banks did not develop universal banking and specifically did not participate in IPOs that required long-term commitments.

The variable *centre* is created as a dummy variable for all banks that operated a head office in London or Berlin. A part of the literature argues that the London banks in particular operated with a risk-averse and conservative business model. Part of the explanation is the geographical distance between London and Industrial areas in Northern England. The financial markets in London provided other investments (Cottrell, 1979, p.238).

When comparing Berlin banks to German provincial banks, the literature states no clear hypothesis about their willingness to take risks. In comparison to English provincial banks, the interpretation of risk aversion is partly related to the London banks' higher ratio of liquid assets[11]. Specifically, cash and near cash[12], as very short-term assets, provide a reserve against cash withdrawals from depositors and can be seen as part of a conservative asset-liability structure. In the case of Germany, at least the Berlin-centred Great banks had higher ratios of liquid assets and cash in comparison to German provincial banks (Holtfrerich, 1981, p.18; Fohlin, 2007b, p.95; Baker and Collins, 2003).

This difference could simply be the result of location. Especially the London commercial banks used the opportunities of the Financial centre, and provided cash and credit on a very short-term basis for the finance of international trade (Baker and Collins, 2003, pp.67–68; De Cecco, 1974, p.86). Banks were not allowed to become a member of the London Stock Exchange, while the Berlin Stock Exchange enabled banks to become members (Michie, 1988b, p.60). Therefore, these loans are partly explained by the institutional setting. Berlin and London hosted each country's largest bill markets and, additionally, the main stock exchanges respectively. Additionally a central position in the clearing system could have demanded banks to keep cash as a reserve for transactions on a higher level.

Both cities, Berlin and London, became in the late 19th century more attractive locations for banks. As it was described in the *Journal of the Institute of Bankers*: "*that* there has been a real invasion of London-we London bankers, with old associations and traditions, have been invaded by a vast horde of country bankers." (1892: p. 345). While London was domestic and international financial centre from the early 19th century onwards, Berlin became the most important centre for banking in Germany after 1870. As a result, provincial banks began to move their head offices to Berlin (Pohl, 1982, pp.190–193; Cassis, 2016, p.296).

*Equity ratio* is calculated as the ratio of the book value of paid-up capital to the sum of all assets held by the bank. Because the funding of banks in this period was accomplished through equity or deposits, while bonds were very uncommon[13], by far, the major part of the liabilities consists of these

[11] The ratio of cash and near cash was also collected for a subsample. The variable was not significant. This could be the result of window dressing: English banks provided higher cash ratios for publication than normally.
[12] Near cash, also called money at call, are loans over a very short period to bill brokers and stock brokers, mostly in London.
[13] None of the banks in the sample issued bonds.

two balance sheet positions. Therefore, it can be assumed that a low equity ratio is the counterpart of a high deposit ratio. The equity of a bank gives a simple measure of its risk absorbing capacity. In the case of a loss, the bank's shareholders have to take the loss, on the other hand shareholders receive a share of the banks' profits. This argument leads to the assumption that a bank with a higher equity ratio has a higher risk-absorbing capacity and a lower risk of bankruptcy than a bank with a low equity ratio. From this perspective it could be argued that banks with high equity ratios are less risky. Therefore, their shares should be less volatile and a negative relation between equity ratio and risk should be expected.

Contrary to this idea, a higher risk-absorbing capacity might also create the basis for riskier and long-term investments. A higher share of equity funding also provides less liquid funding as a whole. In terms of the costs of capital, deposits provide a cheaper way of funding than equity, even without modern deposit insurance. Shareholders demand a higher compensation for their long-term liability and demand a higher return than depositors. A higher equity ratio thus makes it necessary for the bank to find investments with higher returns to satisfy the shareholders' demands (Baker and Collins, 2003, p.70). As described by Tilly, high demand for German banks´ shares, because of their high returns, lowered their costs for equity. Weber compares Universal banks to English Investment Trusts, because their shares offered in a similar way investment in a diversified portfolio. The investment via an intermediary was more attractive and added further to the demand for universal banks' shares (Weber, 1938, p.96). On the other hand, lower returns from English banks made their shares less attractive to investors. This reduced demand and raised costs of equity (Tilly, 1986, pp.140–142). Some empirical studies have found positive relations between the risk and equity ratios for later periods (Dahl and Shrieves, 1992; Altunbas et al., 2007; Berger, 1995).

The decision of funding by equity or deposits is not just a question of demand but also of supply and the accessibility of funds. If there is a lack of supply in deposits or strong competitors, this situation should also lead to a higher equity ratio (Fohlin, 2007b, p.84). The fragmentation of the market for deposits in Germany in comparison to a dominance of commercial banks in England also made it necessary for German banks to rely on equity. In this context, the term "clearing bank" has a particular explanatory power, as it puts the clearing process, based on bank accounts in the centre of the commercial banks business model.

The interpretation of Baker and Collins (2003, p.80) that a high share of deposit funding and a large share of liquid assets are a result of their arms-length oriented model of transaction banking, matches this consideration and puts it in the context of the banks' business model. Larger deposit funding might also be a result of an increased use of banks' payments services. To be able to use payments services of a bank instead of cash transactions, people need a bank account, and thus

create lower equity and higher deposit ratios (Holtfrerich, 1981, p.21). The stronger position of the Reichsbank and savings banks made it more difficult for German banks to collect deposits.

One difficulty could be that the activities of universal banks, like underwriting new securities, might demand a larger equity capital than purely commercial bank activities. Because of the difficulty to measure for this, no such variable is included.[14]

Another characteristic of banks is the *number of branches*. This indicator includes all branches that were operated by a bank, including the English sub-branches as well as the German banks' "Depositenkassen". Both did not provide the complete set of services offered by other branches. While sub-branches did not open every day, Depositenkassen did not provide investment banking services. By building new branches a bank can create a diversification effect by attracting new customers.

As long as new customers' risks are uncorrelated to the old, they provide a diversification of risks for a bank. New branches should make this possible. If a bank always attracts the same groups of customers, the diversification-effect is limited, too. Another question examines the geographical spread of the branch network. In both countries, banks operated multiple branches in large cities, especially in Berlin and London. For example, out of a total of 105 branches the Darmstädter Bank had 31 branches in Berlin (*Salings Börsenjahrbuch*, 1913: p. 558). Due to the approach, this problem cannot be solved.

*Foundation* represents the year of foundation of each bank. A newly founded bank has to take more risk to establish and develop new relations with its stakeholders, so that a bank founded at a later date should be riskier. Furthermore a new bank needs some time to develop the "right" rules for its business. The process might take some years (Riesser, 1912, pp.197–198). From the perspective of investors, a new banks' shares provide a shorter time series that contains less information than shares that have been traded for a longer period of time. Both concepts lead to the expectation of a positive relation between foundation and bank-specific risk. Different from the other variables, the year of *foundation* is not only dependent on business decisions, such as building a new branch or acquiring new customers. The year of *foundation* depends on the legal and general institutional setting of a country. The later liberalization of incorporation in Germany led to younger banks in Germany while the liberalization in England from 1826 onwards gave the foundation of joint stock banks a head start. The head start of England created more specialized institutions, compared to Germany. The different situation of Germany, visible in the later liberalisation, as a latecomer put banks on a different path to finance the catch up process (Collins, 1998, pp.17–18).

The German "Kommanditgesellschaft" (KG), more precisely the "Kommandigesellschaft auf Aktien," as a type of joint-stock company provided a mixture of managing partners with unlimited liability and

[14] Balance sheets do not provide information that clearly refers to income from investment banking.

limited liability shareholders (Fohlin, 2007b, p.230). Contrary to the purely limited liability of an Aktiengesellschaft (AG) or the English public limited company, this combination created a higher liability. To control for the possibly negative effect on risk-taking a dummy variable was used.

**Table 2-7: Summary of expected relations between variables and risk.**

| Variable | Expected relation to risk |
|---|---|
| **assets** | - |
| **country** | G: + ? |
| **centre** | E: - G: ? |
| **equity ratio** | + - ? |
| **no. of branches** | - |
| **foundation** | + |
| **KG** | - |

## 2.6 Regression results

**Table 2-8: Regression results.**

| **Sample** | **All** | **All** | **Germany** | **England** |
|---|---|---|---|---|
| | I | II | III | IV |
| log(Assets) | -0.001 | 0.001 | -0.001 | 0.001 |
| | (-0.0004) | (-0.001) | (-0.001) | (-0.001) |
| Germany | -0.002* | 0.06 | | |
| | (-0.001) | (-0.078) | | |
| Centre | 0.004*** | 0.002 | 0.005*** | 0.002 |
| | (-0.001) | (-0.001) | (-0.001) | (-0.001) |
| Equity Ratio | 0.012*** | 0.046*** | 0.007 | 0.046*** |
| | (-0.004) | (-0.015) | (-0.005) | (-0.015) |
| Founded | 0.00004*** | 0.00005*** | 0.00002 | 0.00005** |
| | (-0.00002) | (-0.00002) | (-0.00003) | (-0.00002) |
| Branch | -0.00001 | -0.00001 | -0.0001* | -0.00001 |
| | (-0.00001) | (-0.00001) | (-0.00004) | (-0.00001) |
| KG | -0.001 | -0.002 | -0.002 | |
| | (-0.002) | (-0.002) | (-0.002) | |
| log(Assets) x Germany | | -0.001 | | |
| | | -(0.001) | | |
| Germany x Centre | | 0.003 | | |
| | | (-0.002) | | |
| Germany x Equity Ratio | | -0.039** | | |
| | | (-0.015) | | |
| Germany x Founded | | -0.00002 | | |
| | | (-0.00004) | | |
| Germany x Branch | | -0.0001 | | |
| | | (-0.00005) | | |
| Constant | -0.061* | -0.083** | -0.023 | -0.083** |
| | (-0.031) | (-0.036) | (-0.067) | (-0.037) |
| Observations | 2,136 | 2,136 | 1,077 | 1,059 |
| R2 | 0.031 | 0.035 | 0.033 | 0.023 |
| Adjusted R2 | 0.028 | 0.03 | 0.027 | 0.018 |
| Residual Std. Error | 0.016 (df= 2128) | 0.016 (df= 2123) | 0.016 (df= 1070) | 0.017 (df= 1053) |
| F Statistic | 9.801*** (df= 7; 2128) | 6.506*** (df=12; 2123) | 6.067*** (df=6; 1070) | 4.978*** (df= 5; 1053) |
| Note: | | | *p<0.1; **p<0.05; ***p<0.01 | |

The variable *assets* is not significant in all regressions. *Germany* is significant and negative in Regression I, but not in the regression with interaction terms (II).

The variable *centre* is significantly related to bank-specific risk for Regressions I and III, but not in case of regressions II and IV. This result contradicts the assumptions about England that have been outlined above. Therefore, banks with a head office in London were not more risk-averse than banks in the province. This conclusion contradicts the traditional interpretation that London banks were particularly risk averse. On the other hand, the Berlin banks seem to have been more risk-loving than provincial German banks.

The *equity ratio* shows a significant positive relation to volatility for all regressions. The coefficient for German banks (III) is smaller than for English banks (IV). Regression II also shows that the difference between the two subsamples is significant, and implies that the relation between equity ratio and risk was stronger for English banks than for German ones. The idea of equity as a risk buffer, due to lower volatility, is not approved by this result. In contradiction to Grossman and Imai, the results show a positive relation between equity and risk. On the other hand, Grossman and Imai found a positive relation between the loan-to-assets ratio and the capital-to-assets ratio, which is equivalent to the equity ratio. They interpret the result in the same way: that more "opaque assets" made higher equity ratios necessary (2013, p.146). In this context, the positive relationship between equity ratio and volatility underpins the idea of higher equity ratios as a basis for more risk-taking.

The second interpretation considers the equity ratio as a result of banks' funding policy due to her business model. In this context, the interpretation of English commercial or clearing banks taking fewer risks would be supported, as both had lower equity ratios and were also less willing to take risks. However, the interpretation of Baker and Collins (2003) that uses the concept of transaction banking also matches these results. Different returns described by Tilly (1986, p.141) are matched by the estimated higher bank-specific volatility as a pay-off. Even without controlling for universal banking, the relation holds. Still, universal banking activities might be a driving force for the higher equity ratios of German banks that led to higher risk-taking (Tilly, 1986, p.140).

As expected, the year of *foundation* has a positive significant impact on risk-taking. However, this relation is not significant for German banks (III). As the variable is significant in the English subsample the higher "age" of these banks explains a part of the lower bank-specific risk compared to Germany. An explanation for the non-significant relationship of the German sub-sample could be the range of values.

The variable b*ranch* shows a negative and significant relation to bank-specific risk in the German subsample. This could be the result of a greater diversification of German banks achieved by the build-up of branch networks to expand the collection of deposits that took place from the late 1890s onwards. In contrast English banks had far larger retail banking branch-networks, which probably could not anymore diversify risks while German banks gained from their new branches, starting from a low level. The interaction term also shows a significant and negative sign. This means that when

compared to English banks, German banks reduced their bank-specific risk significantly more by adding a new branch.

The variable *KG* is significant and negatively related to bank-specific risk, as expected. This supports the assumption that higher liability leads to higher risk-aversion of the KG's in difference to other joint stock companies.

Interaction between Equity Ratio and Foundation might be the reason for part of this result as newly founded banks start with higher Equity Ratios and need time to collect deposits. An alternative regression with Equity Ratio and Age[15] of the banks as the interaction term shows significant and negative results for the English subsample (Appendix 2-1). In the case of England that means that over time the link between Equity Ratio and Bank-specific risk becomes more and more negative. Older banks lower equity lowers the volatility more than a younger banks'. This explains the stronger impact of equity ratio on volatility because of the earlier foundation of English banks, and underlines the importance of the institutional and legal framework.

The Regression was additionally run as a fixed effects model with firm-fixed effects and time fixed-effects Appendix 2-2. The firm-fixed effects cover geographical factors: the Country, and Centre variables. The KG variable is covered by a firm-fixed effect too. The advantage of a fixed effects regression is that particular continuities of single bank can be covered and controlled for.

The regression was run on the full sample and the Country-specific subsamples. In the first case only assets is significant and negative, which supports the previous regression. But all other variables are not significant. The two subsamples show negative significant relations of the equity ratio and the number of branches for the Germany-subsample. The England-subsample reveals no significant impact of any variable. The significant negative relationship of the number of branches supports the previous regression-results. But the negative significant relationship of equity ratio is a contradiction to the previously found positive relation. The result is in line with the idea of equity as a risk-buffer.

## 2.7 Conclusions

The empirical evidence provides no support for a higher risk-aversion at English commercial banks, compared to German universal banks. At first, the results of the paper show that the Institutional environment had an impact on banks´ risk-taking. A part of the disparities between the risk-taking of English and German banks can be explained by the earlier foundation and incorporation of English banks. On the other hand, the "younger" German banks have been more risk-loving. The results align into the image of a head start of England's development as Collins describes (1998), while Germany as a late comer experienced a catch up process. As this finding is dependent on the general

[15] Age is defined as Year of Observation- Year of Foundation.

Institutional and economic framework, it is not dependent on banks' decisions in respect to risk-taking.

Bank-specific differences explain a further part of the lower risk-taking of English banks, due to a different business model and different capital structure. The focus on collecting deposits and providing payments services lowered the risk-taking of English banks. Not only more liquid funding by deposits, but also lower capital costs on equity made it simply unnecessary to reach for high returns and the risks associated with them. The investment banking activities of German banks were in part off-balance-sheet so that the funding of banks is just a rough measurement. Because data on the income generated by investment banking are not available, it is not possible to measure the impact on a banks' risk more precisely.

The growing participation of English commercial banks in underwriting and issuing of securities and acceptance credit, the core businesses of merchant banks, is one interesting aspect that suffers from the difficulties to collect data on them (Cassis, 2005, pp.112–114). After English commercial banking consolidated they seem to converge towards mixed banking by expanding into investment banking and acquiring new sources of income. Compared to German universal banks that combined both businesses due to strong competition in commercial banking the development in England shows some similarities.

The interpretation of London banks as especially risk-averse in comparison to English provincial banks can be refused. It seems more reasonable to interpret their often-cited high ratios of liquid assets as a result of the particular setting that London provided as the major financial centre of the world. Furthermore the clearing process of the banking system was centred on both capitals and as the finance of trade by the Bill on London became more important investment opportunities were created that existed nowhere else (Michie and Mollan, 2012, p.558). Therefore the banks simply adapted to these possibilities that were created by the unique setting of London. The approach of this paper makes it difficult to analyse this aspect in greater detail.

The fragmentation of the German market for deposits and payments services might have made it more difficult for universal banks to compete for them, so they relied on equity. The question of causality, if risky projects made high equity ratios necessary or difficulties to attract deposits made it necessary to keep high equity ratios and thus risky projects, cannot be answered by this paper. German banks started their development from a position with a focus on investment banking (Fohlin, 2007b, p.88), so the first case should be more likely. Investment banking and hurdles to collect deposits let them keep high equity ratios and risky projects. In comparison, the English banks did not have to handle such a fragmentation and expanded inside commercial banking services (Collins, 1991, pp.35–37). Apart from the supply of investment banking services, the demand of firms for these services is a further issue. German Universal banks seem to have had the large customers that

demanded these services, while English banks focused much more on retail banking and smaller customers. But this issue has to be approached by including brokers, promoters and other institutions that provided services from the field of investment banking.

However, English commercial banks' business did not have to earn high returns for shareholders on a scale as German universal banks had to. In this context, institutional differences and path dependencies had a major impact. The negative impact of branches on risk-taking in the case of German banks might be also a result of this movement towards a stronger focus on commercial banking.

The sample includes only a part of the banking system, especially in case of Germany, so that the scope of the interpretation of the empirical results in a wider context is limited. The German savings banks operated on a model of commercial banking and should have been more risk-averse than universal banks (Guinnane, 2002, pp.85–88). On a wider scale, including this group of banking institutions, should lead to an overall lower riskiness of German banks.

## 2.8 Appendix

**Appendix 2-1: Equity and Age Interaction.**

| Sample | All | Germany | England |
|---|---|---|---|
| log(Assets) | -0.001* | -0.001* | 0.001 |
| | (-0.0005) | (-0.001) | (-0.001) |
| Germany | -0.002* | | |
| | (-0.001) | | |
| Center | 0.004*** | 0.005*** | 0.002 |
| | (-0.001) | (-0.001) | (-0.001) |
| Equity Ratio | 0.016*** | 0.014 | 0.101*** |
| | (-0.006) | (-0.009) | (-0.023) |
| Age | -0.00004 | 0.00004 | 0.0001 |
| | (-0.00002) | (-0.0001) | (-0.00004) |
| Branch | -0.00001 | -0.0001 | -0.00001 |
| | (-0.00001) | (-0.00005) | (-0.00001) |
| KG | -0.002 | -0.002 | |
| | (-0.002) | (-0.002) | |
| Equity Ratio x Age | -0.0001 | -0.0002 | -0.001*** |
| | (-0.0001) | (-0.0003) | (-0.0004) |
| Constant | 0.025*** | 0.025*** | 0.004 |
| | (-0.005) | (-0.007) | (-0.01) |
| Observations | 2,048 | 989 | 1,059 |
| $R^2$ | 0.036 | 0.041 | 0.035 |
| Adjusted $R^2$ | 0.032 | 0.034 | 0.029 |
| Residual Std. Error | 0.017 (df = 2039) | 0.016 (df = 981) | 0.017 (df = 1052) |
| F Statistic | 9.484*** (df = 8; 2039) | 5.918*** (df = 7; 981) | 6.332*** (df = 6; 1052) |
| *Note:* | | | *p<0.1; **p<0.05; ***p<0.01 |

**Appendix 2-2: Regression with Bank-fixed effects.**

| Sample | All | Germany | England |
|---|---|---|---|
| log(Assets) | -0.003** | -0.002 | -0.005 |
| | (-0.002) | (-0.002) | (-0.005) |
| Equity Ratio | -0.012 | -0.016* | 0.048 |
| | (-0.009) | (-0.009) | (-0.041) |
| Branch | -0.00001 | -0.0001** | -0.00001 |
| | (-0.00001) | (-0.0001) | (-0.00002) |
| Observations | 2,147 | 1,038 | 1,109 |
| $R^2$ | 0.003 | 0.008 | 0.009 |
| Adjusted $R^2$ | 0.002 | 0.008 | 0.008 |
| F Statistic | 1.720 (df = 3; 1959) | 2.627** (df = 3; 935) | 3.107** (df = 3; 999) |
| *Note:* | | | *p<0.1; **p<0.05; ***p<0.01 |

# 3. From local lender to Edwardian Behemoth: The Midland Bank in comparative perspective from 1881 to 1913

## 3.1 Introduction

In the decades before WWI, Britain experienced a relative economic decline, particularly in contrast to the new rising economic powers of the United States and Germany. GDP grew slower over the last few decades before WWI: while GDP grew 15.3% from 1881-1890 and 12.0% from 1891-1900, it declined to just 2.6% from 1901-1910 (The Maddison-Project, 2013).[16] One explanation is the failure of the banking system, which did not offer the necessary services and support to foster growth and innovation. German banks operated as universal or mixed banks and provided investment banking and commercial banking services to their customers by offering credit and issuing services for corporate securities, and thereby acted more entrepreneurial and supportive. However, English commercial banks maintained their long-established business model of lending short term, facilitating payments and collecting deposits. Furthermore, commercial banks increasingly emphasised liquidity and the safety of their assets (Foxwell, 1917, pp.504–506; Capie and Collins, 1992, pp.34–43; Collins, 1998, p.5).

These characteristics lead to the following question: did the commercial banks cause economic stagnation by an increasing conservatism? Banks might have focused on safety and liquidity and therefore held large cash reserves or a large amount of safe securities, such as government bonds, instead of credit. As a consequence, credit, for companies' investment, was available only by a reduced amount and limited their prospects for growth and innovation.

A strong emphasis on safety seems to have led to high ratios of cash and short-term loans to the financial sector and declining ratios of the riskier credit to private non-financial corporations. London-based banks held a central position in this debate with very high shares of liquid assets. Their proximity to the financial markets of the capital seems to have made them less inclined to the domestic economy outside of London. This aspect gained importance because an ever-larger share of the banking system was managed from London (Baker and Collins, 2003, pp.74–75, 124–127; Capie and Collins, 1992, p.36; Best and Humphries, 1986, pp.227–228; Cain and Hopkins, 2002, pp.174–177).

Until the mid-19th century, the small provincial banks were in close touch with the local economy. The business contacts were largely built on personal relationships between bankers and

[16] http://www.ggdc.net/maddison/maddison-project/home.htm, 2013 Version.

industrialists. However, these close connections led to the risk of overexposure to the local economy. The bankruptcy of the City of Glasgow Bank in December 1878 resulted from this risk and was a decisive event that induced commercial banks' to increasingly avoid risky and concentrated lending. English and Welsh bank's lost 10% of public liabilities from June to December 1878, and the circulation of Bank of England notes increased. The Barings crisis had a similar effect on banks' assets: liquidity increased and credit declined (Best and Humphries, 1986, pp.227–228; Collins and Baker, 2001a, p.180; Baker and Collins, 1999, pp.429–431, 440–441). The Bank of England acted as Lender of Last Resort only within restrictions due to its private for-profit character. Therefore, English banks had to keep sufficient liquid assets to cover possible strains on reserves (Guinnane, 2002, pp.83–84).

The process of centralization of English commercial banks redirected an ever-larger share under the control of London-based Head Offices. This did not occur without major consequences for local industry loans. Decisions became more centralized and reduced the independence of branches, including decisions on lending to local industry. Information acquired by local bankers became less important as head offices limited lending by general regulations (Best and Humphries, 1986, p.228; Cottrell, 1979, p.198). When lending was standardized, previously existing regional financial networks were destroyed (Newton, 1996).

These arguments, concentration and standardisation as well as a reduction of credit are discussed as reasons for a neglect of industry, which was largely based in central and northern England, by London banks and an insufficient credit provision. Because the share of the banking system managed by head offices in London increased, the impact became more relevant (Collins, 1991, pp.38–39; Cottrell, 1979, pp.194-198,237-238; Newton, 2000, pp.192–196).

Baker and Collins (Collins and Baker, 2001b; Baker and Collins, 2003) differentiated banks by the location of head office and branch network. They used the common differentiation between three groups of banks in England and Wales: London banks with branches only in London, Provincial banks with branches only outside London, and London and Provincial banks that cover both areas.[17] The three groups have their roots in the liberalization of incorporation. Outside of London, after 1826, incorporation was legalized in 1836, followed a liberalisation for London. The concentration led to a dominance of the last group. According to *The Bankers Magazine*, in 1900, London and Provincial Banks held 60.9% of English banks' assets, while Provincial banks held 25.7% and pure London banks 13.4%.

London banks' high liquidity and declining share of credit are major aspects of this discussion that revolves around the question of a neglect of the domestic economy by the banking and financial

[17] The tri-partition was used by The Bankers' Magazine to structure published accounting data. Contemporary authors subdivided English banks in the same way (Jaffé, 1910; Weber, 1915).

system. The emphasis on liquidity and a safe assets structure is explained by a lack of willingness for risk taking by banks and their management, which thereby restricted lending and investments. A strong emphasis on safety led to high ratios of liquid assets and low ratios of more risky credit to private non-financial corporations (Baker and Collins, 2003, pp.74–75, 124–127; Capie and Collins, 1992, p.36; Best and Humphries, 1986, pp.227–228; Cain and Hopkins, 2002, pp.174–177).

The strong international orientation and foreign investment of the financial institutions centred on the City of London provides another perspective on the relationship between banks and the domestic economy (Cassis, 1994, pp.139–141; Edelstein, 1982b, pp.47–49). London had become the most important financial centre of the world. Government bond issues and the finance of trade, originally cornerstones of merchant banks' business, attracted commercial banks and foreign banks to participate (Chapman, 1984), but commercial banks did not offer long-term loans to industry and did not offer the underwriting services for corporations to issue securities at the stock exchange. Commercial banks began to participate in corporate issues only as distributors of securities offerings from the 1890s onwards. The increased demand to fund long-term investments suffered from these restrictions (Kennedy, 1987, pp.122–125; Cottrell, 1979, p.241). The lack of engagement with domestic corporations to issue securities further adds to the impression of the importance of safe business and a neglect of the domestic economy.

Cain and Hopkins offer the widest perspective on the debate, by the concept of "Gentlemanly Capitalism" with a central role of the service sector, and in particular finance, in the dominant role of the economic and political system. The predominantly northern Industrialists played only a minor role and could not develop the influence as the gentlemanly capitalists of the south (2002, 1987).

However, the increasingly important group of the London and Provincial Banks was more heterogeneous, as treated by *The Bankers Magazine*. Jaffé distinguished two subgroups: One developed out of Provincial Banks, as the London, City and Midland Bank, as well as Lloyds Bank, Williams Deacons Bank and National Provincial Bank. The other group emerged from pure London banks or "old" London banks: The London and County Bank, the Union Bank of London and the London Joint Stock Bank belong to this group (Jaffé, 1910, pp.55–56). Cassis distinguished by the origin of a bank as well, but included the National Provincial Bank in the latter group (Cassis, 1987, pp.4–5). In particular, the banks with London roots had a high share of merchants and merchant bankers as members of the board of directors. However, the Midland Bank had a low share of "City men" as directors, but a high share of industrialists and ship owners (61%) from outside London. Lloyds bank was similar in this way (Cassis, 1985, pp.303–304).

However, it remains unresolved whether banks reduced lending as a result of a relocation of the head office from the Province to London. In addition to the perspective on assets and liabilities, the supposed conservatism of banks should reflect on realised returns. A more conservative

management might keep the share of credit stable but accept lower returns due to a more conservative selection of borrowers. By using a wide set of banks, many studies excluded returns at all or used only the return of the entire bank.

This paper will use the archive documents of the London, City and Midland Bank, which reveal detailed assets and liabilities as well as the components of profit and loss accounts.

Published accounts of English banks have two major drawbacks: A lack of detail due to highly aggregated balance sheet positions. Second, the reported data were distorted to provide a more favourable image of the bank. In particular, very liquid assets were distorted by window dressing to publish more favourable balance sheets. The same problem affects published profits. Usually published as a single position of net profits, these were smoothed over time and do not report the actual returns.

Baker and Collins (1999; 2001a; b; 2003) have taken a very wide set of banks into account and nearly cover the complete English banking system from 1860 to 1913. A downside of this approach is the lack of detailed information on this level of aggregation, and in particular, the problem of window dressing must be circumvented by merging cash with near cash.

Goodhart (1972) is an early study in this field and used the more detailed archive documents in regards to assets and liabilities as well as some components of profit and loss accounts, but he covers only the years from 1891 to 1914.

Cassis (1987) is the only study based entirely on the profitability of a group of 6 English banks and six foreign banks. The commercial banks' return was comparatively high and stable and offer evidence against the argument of risk aversion of English commercial banks.

Holmes and Green (1986) provide a business history of the Midland, but they did not address the issue of conservatism in English banking.

A central role in the concentration process from the 1880s to WWI and the relocation of the head office to London made the Midland Bank an excellent example for the major developments of the English banking system. To put the Midland into context, two other banks will be introduced: the National Provincial Bank of England and the Union Bank of London.

An increasing risk aversion should have materialized in a declining ratio of credit or an increase of cash and other liquid assets. If indeed the relocation of the head office had an impact on lending, there should be a negative impact. Liquid assets have to be handled with caution because banks ran up the very liquid assets to create more favourable accounts for the half-yearly publication dates. To uncover the impact of window dressing, weekly accounts will be used to circumvent the immediate impact of publication dates.

The return on advances will be a second measure for risk. A loan to a risky project should reward the higher risk with a higher return. A declining return of the entire bank or a particular asset could be a sign of a more selective process that avoids risky projects.

Furthermore, balance sheets are arranged by the positions' maturity. A high ratio of liquid assets creates the impression of risk aversion. Profit and loss accounts add the perspective of return. The breakdown of returns per asset position, same as interest paid on liabilities, could reveal a more nuanced view. A small spread between credit's return and liquid assets' return creates low opportunity costs for avoiding the risk of credit.

Subchapter 3.2 provides an introductory overview of the history of Midland and the two other sample banks. Subchapter 3.3 describes the sources upon which the paper is based. Subchapter 3.4 provides an overview and interpretation of assets and liabilities from 1881-1913 and provides a detailed view on the distortions of window dressing. Subchapter 3.5 will cover the profit and loss accounts and thereby complete the analysis of the Midland. Conclusions follow in Subchapter 3.6.

## 3.2 The Historical Background of the sample's banks

The Midland Bank was established in 1836 in Birmingham as "Birmingham & Midland Banking Co". In 1851 and 1862, the first two branches were opened by acquiring formerly independent banks. *The Economist* started to publish banks' balances in 1877. However, no information from the Midland was available until 1879. Assets of 2,750,160£ spread over 3 branches made it the 21st largest bank in England and Wales. Until the late 1880s Midland expanded only in the Birmingham area. After 1883, a series of takeovers of other banks contributed to Midland's growth. An important extension was the takeover of the Central Bank of London in 1890. By the Central Bank's membership in the London Clearing House, the Midland had access to the central clearing facility of cheques and bills. The head office was moved to London, and the name of the bank was modified to "London and Midland Bank" (Holmes and Green, 1986, pp.84–85; Orbell and Turton, 2001, p.373). According to *The Economist*, the Midland was in 1891 the 13th largest bank in England and Wales, measured by total assets of 9,526,797£ and 49 branches.[18]

Subsequent acquisitions fostered growth of the branch network throughout England. The acquisition of the City Bank in 1898 expanded the business in London. The name of the bank was changed again to "London, City and Midland Bank". A goal was the practical need for a larger head office and a rebalancing of the banks business towards London (Holmes and Green, 1986, pp.97–99; Crick and Wadsworth, 1936, p.316). Measured by total assets, Midland was now the 4th largest bank in England

[18] The statement of bank accounts was published half-yearly in May and October and reported the previous half-year's accounts.

with 38,997,482£. The City Bank added a strong international business to the Midland as an agent of approximately 40 foreign correspondent banks that grew to 127 in 1912 (Palgrave, 1912, pp.169–170). Due to this development, in 1902, a "Foreign Banks Department" was created, and in 1905, a "Foreign Exchange Department" (Orbell and Turton, 2001, p.374). By December 1913, Midland had grown to be the largest bank in England and Wales, operating 867 branches with assets of 108,584,213£.

The history of Midland reflects the major developments of the English banking system: a concentration that led to the emergence of very large banks with nation-wide branch networks in contrast to a previously large number of small local banks. The management of these large banks was then conducted from London based head offices.

The National Provincial Bank and the Union Bank of London provide similarities and differences in their development. Therefore, they are useful examples to place Midland into a wider context. Both banks belonged to the largest banks in England and Wales over the late 19th and early 20th century, which makes them relevant simply by size. Another aspect is the banks' location: While the National Provincial Bank of England included London as well as provincial business, the Union Bank of London operated only in London until 1902. Both provide some idea of their business history by only considering their respective names and how they changed over time.

The National Provincial Bank of England was originally the only bank founded to include London and provincial areas in its business. Founded in 1833 in London, after two years, 20 new branches were already established in provincial areas (Orbell and Turton, 2001, p.403). The first time *The Economist* published banks' accounts in 1877, National Provincial had 144 branches and assets of 30,659,604£, which made it the largest bank in England and Wales apart from the Bank of England. The bank continued to expand by acquisitions and newly opened branches. In 1891, it was still the largest bank, with assets amounting to 45,419,989£ and 166 branches. By 1913, the National Provincial bank was surpassed by competitors but with assets of 73,798,648£ and 324 branches, it was still the fourth largest bank.

The Union of London & Smiths Bank was founded in 1839 as "Union Bank of London" in the City of London. Different from the Midland Bank and National Provincial Bank, the number of new branches and acquisitions was quite low over the subsequent years. Another important difference is that the expansion occurred only in London (Orbell and Turton, 2001, p.513). In 1877, the Union Bank of London was the fourth largest bank in England and Wales, with assets amounting to 18,638,732£, but it operated just 4 branches. By 1891, the number of branches grew to 10, but its assets decreased to 18,394,338£, which made it the fifth largest bank. By its merger with Smith, Payne and Smiths in 1902, the bank expanded past the London boundaries into provincial areas and joined the other big

banks in their growth dynamic. By 1913, it grew to become the seventh largest bank with 52,185,019£ in assets and 113 branches.

These three banks exemplify three types of banks: Provincial joint stock banks (Midland until 1890), London joint stock bank (Union Bank of London until 1902), and the London and Provincial bank (Midland after 1891, Union Bank of London after 1902, and National Provincial Bank). By 1913, the Group of London and Provincial shrank to 13 banks, of which Midland held 10%, the National Provincial 6.8% and The Union Bank of London 4.8% of the English banking systems assets (*The Bankers Magazine*, 1914, p. 568-571).

## 3.3 Sources

The centrepiece of the paper is the Midland Bank, which provides extensive archive material.[19] The main sources are the so-called "Black Books"[20], which provide half-yearly reports of assets and liabilities as well as profit and loss accounts for the time from 1881 to 1913. The Black Books report on the branch level as well as aggregated values for the total Midland. The reported accounts make it possible to distinguish between components, which were otherwise only published as aggregated data. One major example is current and deposit accounts, which were published in *The Economist* only as aggregates, but not as single components.

Another series of documents used are the "summary abstract books" or "weekly summary of abstracts", which provide information on assets and liabilities as well as interest received and paid on a weekly basis. The information was reported for sections and for the entire bank. These documents cover the time from August 26, 1893 to December 1, 1898[21]; another series provides very similar information for November 14, 1907-December 31, 1913.[22] The time in between is not covered.

As complementary sources, the documents of the National Provincial and the Union of London & Smiths Bank were collected. The documents of the Union Bank of London include half-yearly profit and loss accounts and balance sheets on a similar level to the Black Books.[23] The data of the National Provincial Bank were taken from the weekly statements of assets and liabilities, they do not cover the years 1909-1913.[24] Data for the larger English banking system's assets and liabilities were taken from the Appendix of Baker and Collins (2003, pp.269–271).

To calculate the costs of capital stock prices of the Midland and Union of London Bank, data were obtained from the Investors Monthly Manual, which are available online from the Yale School of

[19] Thanks to the staff of HSBC Group Archives, particularly Trudy Zimmerman and Georgina Orgill for their help.
[20] HSBC UK 0532.
[21] HSBC UK AA 0004: 1893-1896 and HSBC UK AA 0005: 1896-1898.
[22] HSBC UK 0535. The series continues after 1913.
[23] RBS UNI 5/507-511.
[24] NAP/9118 and NAP/9119

Management.[25] As a market index, the index compiled by Smith and Horne was used (Smith and Horne, 1934). As the risk-free interest rate, the open market discount rate from the NBER Macrohistory Database was used.[26] Data on the Bank of England's banks' account were taken from the Bank of England's weekly balance sheet data set (Huang and Thomas, 2016).

## 3.4 Assets and Liabilities

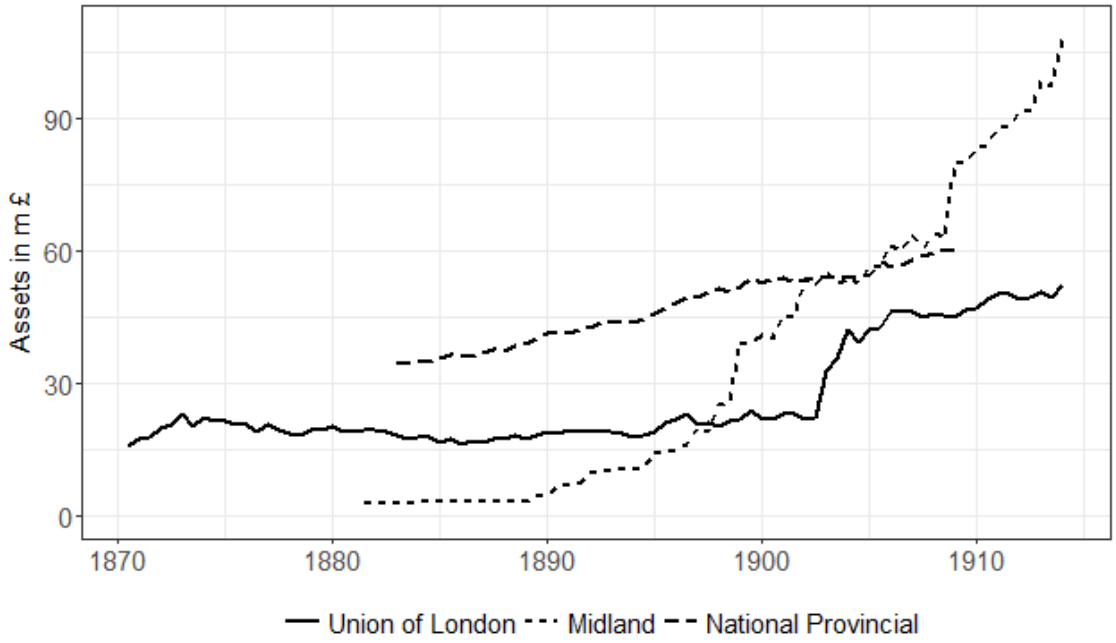
The following chapter gives an overview of the major balance sheet positions and their development from 1881-1913. Beyond the particular development of Midland, it is of interest how much this case represents typical aspects of English commercial banks. The data collected by Baker and Collins (2003) include a wide range of banks and provide the necessary scope. The three sample banks reflect the growth of some large banks to varying degrees. The growth of assets provides a simple measurement for the risk a bank is willing to take by expanding its branch network, by opening new branches, or by acquiring other banks (Grossman and Imai, 2013, p.143).

Figure 3-1 gives an impression on the growth of Midland compared to the National Provincial Bank of England, and the Union Bank of London, so far as data are available from the major sources. Midland experienced outstanding growth from 1890-1913. Mergers and takeovers in the late 1880s broadened the basis of the bank's business by adding branches in new areas. The value of the bank's assets grew from 2.56 m £ on December 31, 1881 to 108.58 m £ on December 31, 1913.

In particular, the takeover of the City Bank in 1898 and the North and South Wales Bank in 1908 led to a leap in assets. Different from Midland, National Provincial grew quite modestly and steadily, but at a high level. During the 1880s, National Provincial's assets were a multiple of Midland's assets and approximately twice the amount of the Union Bank of London.

[25] http://som.yale.edu/imm-issues

[26] http://www.nber.org/databases/macrohistory/contents/




Sources: Midland: Bank Black Books, Union Bank of London: Profit and Loss Accounts, National Provincial Bank: Approximate Weekly Statement of Liabilities and Assets

**Figure 3-1: Total assets of Midland, Union Bank of London and National Provincial Bank.**

The Union Bank of London provides a distinct image of stagnation until its merger with Smith, Payne and Smiths in 1902 and modest growth afterwards. The graph reveals how much its outstanding growth set the Midland Bank apart from the other banks. Due to their growth, all three banks comprise a significant, growing share of the English banking system. Before we start the discussion of assets and liabilities, an overview will provide some explanation to the major balance sheet components and their characteristics.

| Liabilities | **Assets** |
|---|---|
| Capital | **Cash** |
| Reserves | **Near cash** |
| Deposit Account | **Investments** |
| Current Account | **Bills** |
| | **Advances** |

**Figure 3-2: Major Components of Assets and Liabilities ordered as in the Black Books.**

The most liquid asset of a banks' balance sheet is cash. It was subdivided into subgroups: "Cash on Hand" comprising coins and banknotes held at the bank's offices; additionally clearing accounts at the London Clearing House, as well as cheques and bullion. The London Clearing House was the central institution for the clearing of cheques and bills between banks to settle their claims. The

second component, called “Cash at the Bank of England”, comprised accounts held at the Bank of England. No interest was paid on these accounts (Aldrich, 1910, p.19). The Bank of England Account was used for the final settlement of payments as part of the clearing process (Goodhart, 1972, pp.95–97, 113).

Near cash is the second most liquid asset category. In the period before WWI, it was commonly published as an aggregate of cash and near cash. *The Economist* and *The Bankers Magazine* published half-yearly accounts this way.

Near cash is often labelled as money at call and short notice, but because it is also the term for the major subcategory, the name near cash will be used. Money at call and at short notice comprise loans to bill brokers (Money at call) and stock brokers (Money at short notice) who invested in the London discount market or the stock exchange, respectively. Both subcategories were summarized as one asset class in the Black Books, and at some points, labelled brokers’ loans. In both cases, brokers are an intermediary between the bank and market. Midland lent money at call to London discount houses from 1871 onwards. Stock brokers’ loans were made for the first time in 1881 (Holmes and Green, 1986, p.81). According to the Black Books, the majority of these loans were held in London, with smaller amounts in Manchester, Birmingham and other cities. A third subcategory of near cash was cash held at other banks, commonly reported as “cash with agents”. After the Midland opened a foreign exchange department in 1905, foreign exchange entered Midland’s balance as part of near cash.

As the last subcategory, country clearing and cheques were sorted into near cash. Different with the similar subcategory, included in cash, the provincial transactions were regarded as less liquid than the London positions. From 1907 onwards, the new Metropolitan clearing was also sorted in this category together with cheques in transit (Matthews, 1921, p.64). The logic behind the separation seems to have been the higher value of more readily available funds for inter-bank transactions in London.

Investments comprised chiefly Consols or other British government bonds. The Black Books reported British government bonds, bonds guaranteed by the British government, including Indian government and railway bonds, colonial and foreign government bonds, British railway and corporation bonds, and sundry investments. Equity shares were not included (Collins et al., 2009). These subcategories are in contrast to the published sources that include only for some banks a subcategory of British government bonds. Particularly in earlier years, investments were seen as a reserve, as bills were viewed as a risky asset and held in larger share, and investments and in particular Consols created a safe asset as reserve (Goodhart, 1972, p.127; Baker and Collins, 2003, p.63; Collins, Baker and Eadsforth, 2009, p.865).

These three asset components of cash, near cash and investments were called “Available Assets”. The category was not used in the Black Books, but it was reported in the weekly accounts. Available assets seem to have included assets that were liquid and could be sold quickly. While cash and near cash were of short-term nature, investments were not, and therefore, available assets diverge from a category of short-term assets.

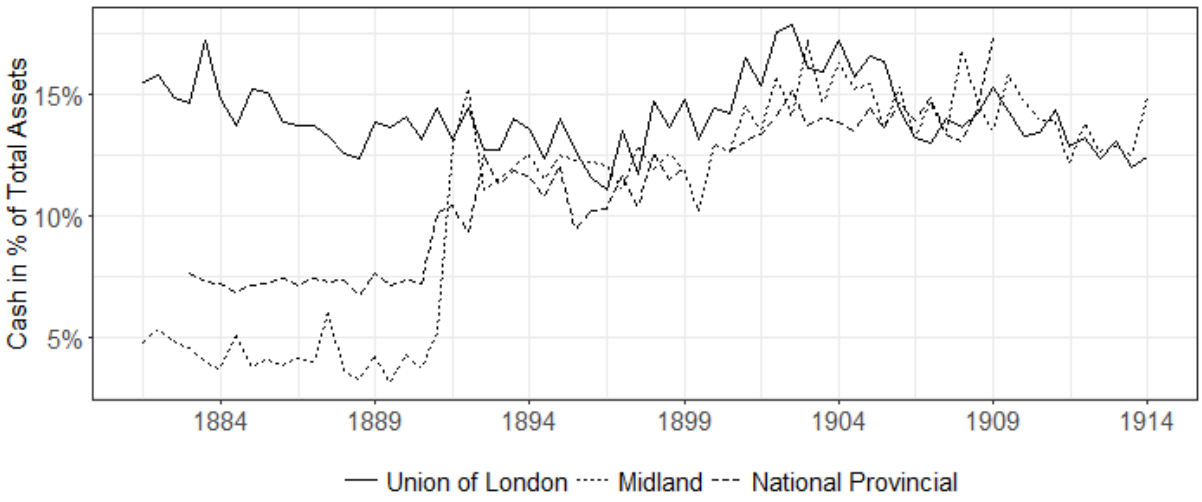
Bills have a dual function as credit instrument and for payments. As bills became less important as an instrument to facilitate short-term commercial credit, this function was provided by Loans on current accounts. Payments were processed increasingly by cheque (Nishimura, 1971, p.10; Baker and Collins, 2003, p.77). Only in the early 20th century did they become important for the finance of international trade.

London banks held bills until due, because re-discounting would have been interpreted by the public as a sign of trouble for the bank. This made bills a usually illiquid asset (King, 1936, pp.271–272; Baker and Collins, 2003, pp.67–68). However, provincial banks re-discounted bills with their London agents as a source of liquidity (Nishimura, 1971, pp.56–57). Due to the different ways of handling bills, the funding liquidity of bills for provincial banks was larger than for London banks.

Advances are the most illiquid and largest part of Midland’s assets. The two main ways in which advances were provided are overdrafts and Loans on collateral. Overdrafts were arranged to a maximum amount and could be used by the customer as necessary. Loans on collateral were arranged for a fixed sum and a specified period. Overdrafts were more common in the Province while Loans on collateral were common in London (Goodhart, 1972, p.153; Aldrich, 1910, p.78). Advances were usually of short maturity, up to 12 months, but they were commonly rolled over creating in fact mid- or long-term credit (Baker and Collins, 2003, pp.194–200). To make the data comparable, the components of assets and liabilities will be calculated as a ratio of total assets or liabilities.

### 3.4.1 Assets

The following chapter will discuss the assets of Midland between 1881 and 1913. To place Midland’s development into a wider context, data from Baker and Collins will be added, which cover the major part of the English banking system. Because these data include only the major balance components as aggregated values, the National Provincial Bank and the Union Bank of London will be included as further examples to provide some comparison for the Midland’s data.




Sources: Midland: Black Books, Union of London: Profit and Loss Accounts, National Provincial Bank: Approximate Weekly Statement of Liabilities and Assets

**Figure 3-3: Cash in % of total assets of Midland, Union of London and National Provincial Bank.**

Cash is of particular interest in the context of risk taking because it generates no income, while however, it is the safest asset and is essential for covering deposit withdrawals. Figure 3-3 shows the development of cash of the three sample banks. Midland's cash stayed at a low level of approximately 4-5% of assets until a surge in 1891 to a higher level of approximately 12-13% during the 1890s. After 1900, another small surge followed. The National Provincial Bank provides a quite similar image, with a step up from approximately 7% to 10% around 1890 and a slow increase afterwards to 13-15%. The Union Bank of London held quite similar cash ratios after 1890 but had even higher ratios of 12- 15% previously.

One explanation for the surge in 1890/91 could be the relocation of Midland's head office to London. However, that would not explain National Provincial's surge in cash. The more likely explanation for the increase and convergence of cash is the emergence of a common target. The Baring Crisis in 1890 put pressure on London-based banks to keep higher cash ratios and to publish accounts monthly.[27] A change in perception of banks' reserves and closer observation could explain a general adaptation of common cash reserves. Over the succeeding decades, a public debate developed. The major concern was an insufficient reserve to cover for commercial banks deposits. The on-going debate led to the emergence of a commonly accepted appropriate cash reserve (Pressnell, 1968, p.168; Wadsworth, 1968, p.234; Goschen, 1905, p.128; Goodhart, 1972, pp.101, 113–114). The convergence towards a common cash ratio, as displayed in Figure 3-3 is in line with the results of Goodhart. He used the

[27] Baker and Collins found an increase in investments and a continuous increase in cash and near cash over the years following the Baring Crisis, but no immediate increase of cash and near cash (2001a, pp.181–182), but because they use the aggregate of cash and near cash, we cannot exclude that cash rose as a reaction to the crisis.

monthly accounts published in *The Economist*. While from 1891-1900, the accounts show some variation, after 1900, 15% of total deposits seems to have become generally accepted as a proper ratio for the public (Goodhart, 1972, pp.114–115; Withers, 1930, p.99).

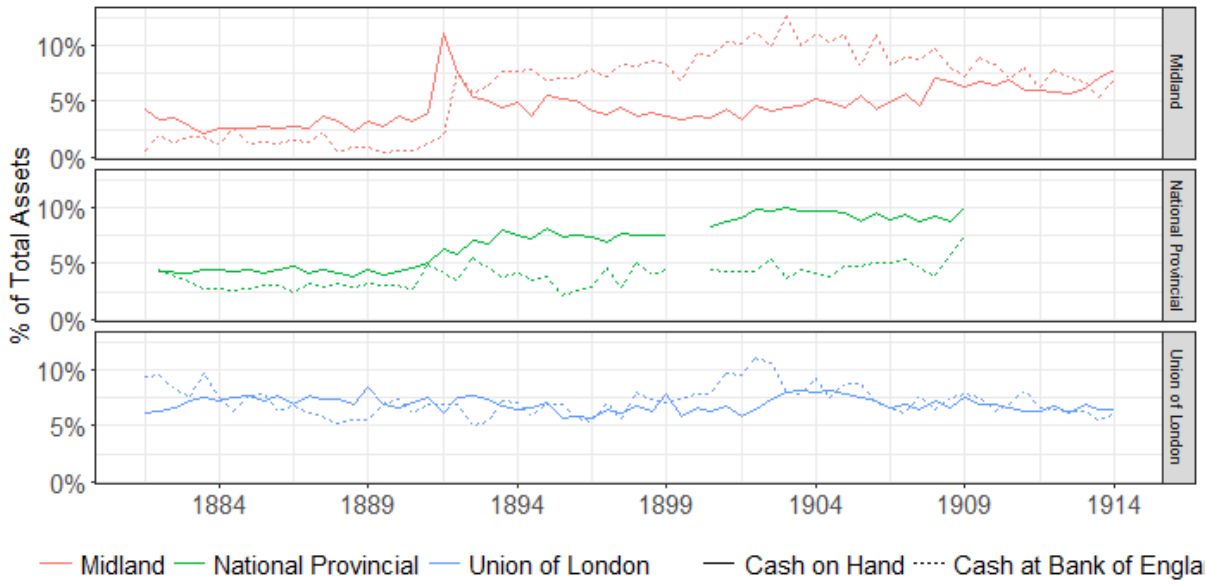
Two letters, published in *The Economist,* criticise that some of the London joint stock banks had too low cash reserves and seemed to rely on the Bank of England in an emergency. The suggested cash ratio was 17% of public liabilities, which is close to the ratios published after 1891 (*The Economist*, November 29, 1890, p.1507, February 21, 1891, p.246). Unaffected by the critique were the provincial banks. The Governor of the Bank of England demanded higher reserves from commercial banks in his inaugural address in 1899 (*The Economist*, November 4, 1899, p. 1559). The Chancellor of the Exchequer provides another example of an official in support of high cash ratios. He also demanded banks to publish accounts on a weekly instead of monthly basis (*The Times*, June 21, 1906, p.10). A higher frequency of publications would have provided closer monitoring by the public. However, banks would have been constrained in their practise to window dress their accounts for publication and keep cash ratios permanently higher. Chapter 3.4.3 will explain window dressing in more detail.

The contemporary debate clearly affected banks' decisions on cash ratios and probably kept them higher than necessary to cover for withdrawals. The Midland Bank provides the most striking example. However, in light of the debate, the step up in cash is not a result of the expansion to London and a sudden surge in risk aversion but an adaptation to create a favourable image for the public.

Disaggregation of cash reveals disparities between the sample banks, which were unobserved by the public. Figure 3-4 illustrates the two components: Cash on Hand and cash at the Bank of England. The Union Bank of London held both ratios at 6-8% over the entire period. A surge around 1902 could have been the result of the merger with Smith, Payne and Smith. The National Provincial and Midland Bank reveal some similarity in their increase of cash on hand. Midland's peak in 1890/91 is probably connected to the merger with the Central Bank of London. Otherwise, cash on hand increased from the pre-1890 level of approximately 2.5% to 6.5%-7% after 1890, with a low around 1900.[28] The National Provincial held a higher level of cash on hand. Starting from close to under 5%, the cash ratio increased after 1890 to 10% in 1900 and stayed quite constant afterwards. National Provincial's cash at the Bank of England was slowly increasing and seems to have followed a similar path as Midland's cash on hand. The probably most remarkable development was that Midland's cash at the Bank of England surged in 1890/91 from 2% to 7%, followed by an increase to 12% in 1903 and a later decline to 6-7%.

[28] One particular part of Cash on Hand is bullion, which was reported from 1900 onwards and only for the London head office. Gold's share of assets rose from 0.474% in December 1900 to 3.193%, an equivalent of 40% of Cash on Hand, in December 1913.

The banks seem to have followed two different strategies to create a surge in cash in 1890/91. While Midland increased cash by raising cash at the Bank of England by a multiple, National Provincial realized a smaller and slower transition by increasing cash on hand from 4% to 7%-8% in 1890-93 and again around 1902.



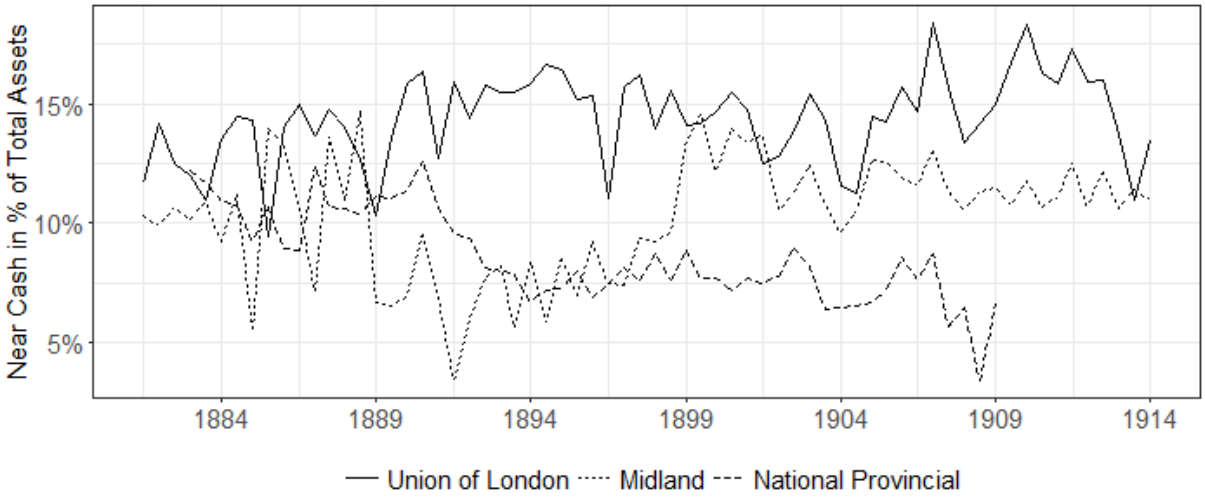

Sources: Midland: Black Books, Union of London: Profit and Loss Accounts, National Provincial Bank: Approximate Weekly Statement of Liabilities and Assets

**Figure 3-4: Cash on and (solid line) and cash at the Bank of England (dotted line). Midland, Union Bank of London and National Provincial Bank compared.**

Midland's near cash (Figure 3-5) was relatively stable over the entire period at approximately 10-12%, with larger fluctuations in the 1880s and a low level between 1889 and 1898 of approximately 5-8%. After 1900, a slight decline followed until 1913. National Provincial decreased near cash over time from 10% in the 1880's to approximately 7-8% around 1908. However, Union of London held a higher level of approximately 15%, with some fluctuations. Different from cash, no common level emerged. The major components of Midland's near cash changed over time. Loans to brokers, money at call and short notice, rose strongly from 48% to 77% of near cash.

Cash with agents comprised cash held with London or provincial banks and declined as a result of Midland's expansion from nearly 37% to 16% of near cash. Foreign exchange became part of assets only in 1906 and finally in 1913 reached 9.5%.[29] This led to an increase in income, generating assets in the category of near cash.

[29] Some 9.5% of near cash are an equivalent of 1.045% of assets.



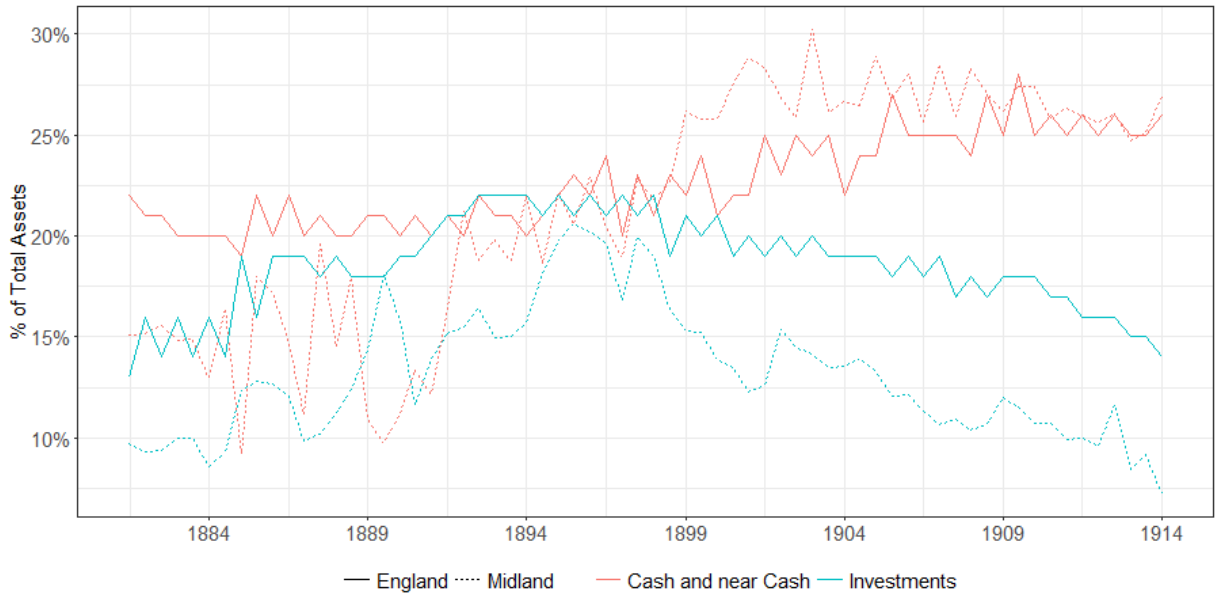

Sources: Midland: Black Books, Union of London: Profit and Loss Accounts, National Provincial Bank: Approximate Weekly Statement of Liabilities and Assets

**Figure 3-5: Near cash as share of total assets. Midland Bank, Union Bank of London and National Provincial Bank.**

Midland seems to have substituted at least a part of the decline in investments and bills by money at call and short notice that was in fact an investment in both markets through the intermediation of brokers. Another feature is the rising share of the various transaction positions included in cash and near cash, as a result of an increasing use of cheques for payments. They included clearing accounts and cheques in transit. While in 1881 they were not reported at all, these positions grew to approximately 7% of cash and 2.7 % of near cash in 1913.[30]

Compared to the English banking system, cash and near cash of Midland (Figure 3-6) started from a lower level in the 1880s to movement nearly in tandem after 1890 with an increase from approximately 20% to 25-27% after 1905. The aggregated data for the English banking system show a slow increase from 20% to 25%. The lower level and large fluctuations of Midland before 1890 could have been the result of its location outside London. Baker and Collins found ratios of approximately 15-17% at provincial banks in the 1880s, which is quite similar to Midland. London and Provincial Banks increased cash and near cash from ca. 22% in 1890 to 25% in 1913, which resembles the entire banking system as well as Midland. The easier access to London's financial markets after 1891 is an obvious explanation for the changing pattern.

[30] The importance of London as the central place for the bank is underlined by the classification of metropolitan clearing into Cash, while country clearing was part of near cash. Both the weekly abstracts as well as the Black Books follow this arrangement. Clearing accounts were reported by the Black Books from 1881, cheques from 1893, country and agents' cheques from 1900, and metropolitan clearing after its new foundation in 1907.




Source: Midland: Black Books, England: Baker and Collins (2003)

**Figure 3-6: Liquid assets (cash and near cash & Investments) as share of total assets. Midland Bank and English Banks.**

Investments' share (Figure 3-6) rose until the mid-1890s and then declined to their original level of approximately 10% of assets. At least in part, investments seem to have filled the gap of near cash and bills. The bell-shaped increase and decline is a common feature of Midland and the wider banking system, but compared to the latter, Midland held a lower share of investments over the entire period. Only in the mid-1890's did it come close to the banking system's share of above 20%.

A large and increasing share of Midland's investments comprised British government securities. Their share increased from 20% in the early 1880s to over 40% of investments from 1900 onwards. The remaining part was made up by bonds of Foreign and Colonial governments as well as Railways. According to the Chairman of Midland, Edward Holden, the equity ratio of the bank was too low to invest in equity shares (Cassis, 1994, pp.146–147). Overall the composition of investments was in line with other English commercial banks (Collins, Baker and Eadsforth, 2009).

Credit was the remaining asset, which comprised bills and advances (Figure 3-7). Bills were the second largest position in 1881 of approximately 25%; they declined steadily until 1895 and stayed quite constant at approximately 10%. The last years up to 1913 show again a small rise. The move to London in 1890 seems not to have affected the steady downward trend. The data from Baker and Collins show a development that is nearly identical with Midland's decline until around 1900 and a quite stable period afterwards. However, over the entire period, Midland reported a lower ratio of bills and reached its base level in the mid-1890s some years earlier. Both time series reflect the decline of the bill as a domestic credit and payment instrument. One reason for the decline was the growing use of cheques and overdrafts as payment and credit instruments. Furthermore,

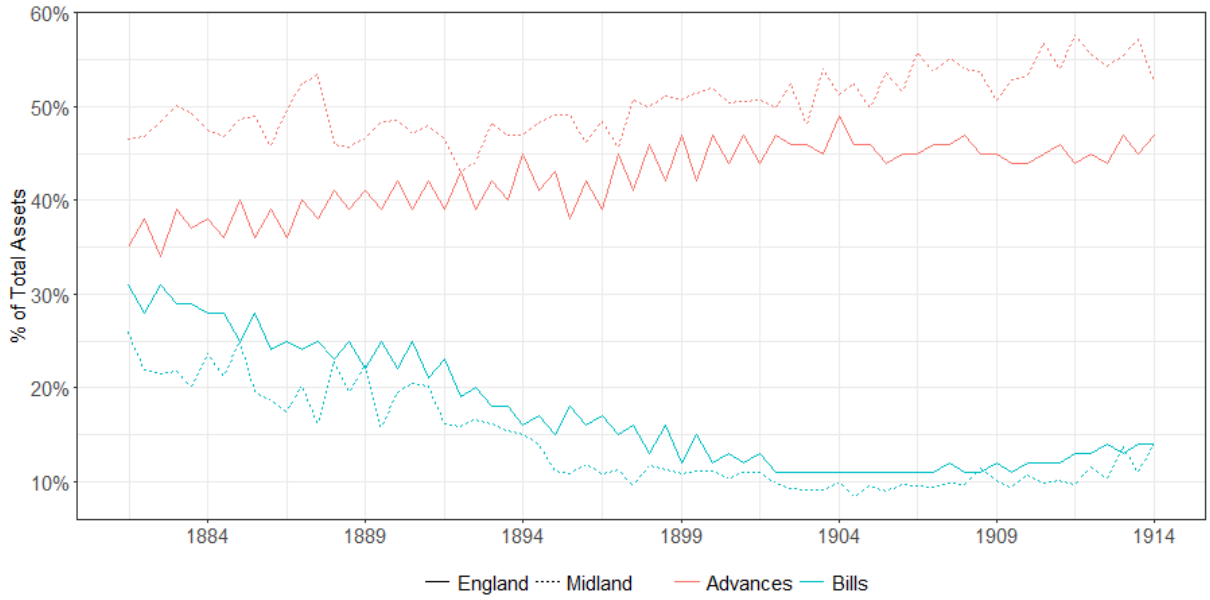
improvements in trade due to faster transport and warehouse organization reduced the demand for funding. Another factor seems to have been the ever-larger branch networks that eased access to banks. The availability of banks' offices made bank accounts more attractive for payments and lowered transaction costs. Furthermore, the expansion in branch networks created larger internal markets (Nishimura, 1971, p.64; King, 1936, pp.273–275; Jaffé, 1910, pp.176–177).[31]

Another factor is that from the 1870s onwards deposits grew faster than credit. As a consequence, re-discounting lost in importance because banks became more liquid with deposits and used overdrafts instead of bills (Cottrell, 1979, p.195).

The crucial influence was an interaction of customers' changing demand and available alternatives from banks. Midland seems to have replaced bills, at least in part, by investments. Therefore, the decline of bills is not a result of risk aversion, which might have driven banks to reduce their ratio of credit to total assets.

The most important asset, advances, fluctuated at approximately 45-50% until the early 1890s and then rose slowly to approximately 55%. Compared to the data of Baker and Collins (2003, p.88), Midland had a larger share over the entire period by a margin of 5-10%. The subdivision of English banks offers some further insights: Provincial banks held the highest share of advances (at and above 50%) compared to London (30-35%) and London and Provincial banks (increase from ca. 30 to ca. 45% from the mid-1880s to ca. 1900) (Baker and Collins, 2003, pp.126–128). Therefore, Midland's rate in the 1880s was at a quite common level for a Provincial bank, but in contrast to cash and near cash, advances did not adapt to the new group's average and declined. Instead, it increased even further. The increase of the riskiest asset is in stark contrast to a supposed risk aversion. Furthermore, the amount of credit was increased by the Midland Bank even after the head office was relocated from the industrial city of Birmingham to the more distant London.

[31] Bills remained attractive in some areas. Particularly in regions with a strong textile industry, they remained more common (Sayers, 1976, pp.21–22).




Source: Midland: Black Books, England: Baker and Collins (2003)

**Figure 3-7: Advances and Bills of Midland and English banks, as share of total assets.**

Table 3-1 displays the ratios of advances and bills of two groups of banks that grew to be nation-wide lenders. The "old" London banks: Union Bank of London and National Provincial Bank, as well as Midland Bank and Lloyds Bank, both with provincial origins. Lloyds Bank displays very similar values of advances and bills as described for Midland. The former ones held much lower shares of advances; they increased but never came close to Midland's and Lloyds'. Bills followed the general trend and declined to similar levels at all banks in 1901 and 1911. The decomposition of credit reveals the striking difference between "old" and "new" London banks. While the "old" London banks started with lower credit ratios, they converged towards the "new" ones by increasing advances; they still reported lower credit ratios that were as aggregate of bills and advances relatively stable over time.

The increase in advances for Midland was based largely on the growing foreign credit accounts. For the first time, foreign credit was reported in 1894. Until the acquisition of City Bank, their amount was extremely low and reached 4% of assets in Dec. 1900, 6.9% in Dec. 1905, and 4.7% in Dec. 1910. The largest share of assets was reported in Dec. 1911: 7.33%. Foreign credit accounts provide some uncertainty for interpretation, because they are not mentioned in the literature or dictionaries. The Black Books' summaries classified them into one group with advances. By following the term and time of appearance, the most likely explanation is that they constitute credit to foreign customers, who demanded banking services in pound sterling. Lending to foreign instead of domestic customers could be seen as a further example of the international orientation of the City's institutions.[32]

[32] I asked the Archivists of HSBC Group Archive about the meaning of the foreign credit accounts. They were not sure but inclined to agree with my interpretation of the term.

**Table 3-1: Advances and Bills share of total assets in %, of selected banks, 1881-1911.**

| | | 1881 | 1891 | 1901 | 1911 |
|---|---|---|---|---|---|
| Midland | Advances | 46.9% | 43.1% | 49.9% | 52.8% |
| | Bills | 21.9% | 15.8% | 9.8% | 13.9% |
| Lloyds | Advances | 44.8% | 44.4% | 44.5% | 47.4% |
| | Bills | 21.5% | 10.9% | 11.8% | 11.1% |
| Union Bank of | Advances | 12.8% | 21.7% | 24.7% | 33.4% |
| London | Bills | 28.6% | 16.2% | 12.1% | 9.5% |
| National | Advances | 29.3% | 29.6% | 35.6% | 52.4% |
| Provincial Bank | Bills | 21.9% | 22.1% | 12.8% | |

Sources: Midland: Black Books, Lloyds: *The Economist*, Union Bank of London: Profit and Loss, National Provincial Bank: Weekly accounts of assets and liabilities, for 1911 *The Economist*

However, the funds could have very well been employed in Britain and therefore added to the domestic economy, which attracted foreign companies. Another observation in support of this view was the geographic distribution of foreign companies in England, which mirrored very closely the distribution of foreign credit. In Dec. 1913, approximately 80% of foreign credit was reported in London and Liverpool by the branch-level accounts of the Black Books. Scott (1998, p.491) provides a sample of foreign companies' subsidiaries in Britain and reports for 1900-09, 57.14% of multinationals in London, and 15.71% in Liverpool and North Western England.

From this overview, it became clear that a decline in the private sector credit was created by a reduction in bills, while advances had a very steady and after 1900 even increasing share of assets. The decline in bills followed a general pattern of changing habits in credit and payment services. Therefore, the declining share is explained by the customers' replacement of bills and not risk aversion. Advances provide an even more interesting example. At first, Midland's share was in line with its peer group, the Provincial Joint stock banks, but the growing bank did not merge into the pattern of its new peer group after 1890, the London and Provincial banks, which could have been expected in light of the new setting. The advances ratio did not just remain stable but even increased from 1900 onwards. In comparison to the "old" London banks and Lloyds, the origin of the bank became more critical for the asset structure and its continuity. The critics of English banks alleged a "foreign bias" to the entire financial system, which indeed handled international transactions on a large scale. However, the foreign credit accounts seem to be a testimonial of the attractiveness of England and Wales to foreign companies to create subsidiaries.

The expansion to London did not to have a negative effect on advances but made a new type of customer available. However, particularly cash, but also near cash, experienced a structural break in 1890 and increased strikingly.

### 3.4.2 Liabilities

To round out the discussion about Midland's Balance sheet, liabilities have to be included in the analysis as well. Banks' liabilities comprise two major groups: public liabilities, including current and deposit accounts, and capital as the reciprocal, including equity and reserves (Figure 3-8).

| **Liabilities** | Assets |
|---|---|
| **Capital** | Cash |
| **Reserves** | Near cash |
| **Deposit Account** | Investments |
| **Current Account** | Bills |
| | Advances |

**Figure 3-8: Major Components of Assets and Liabilities ordered as in the Black Books.**

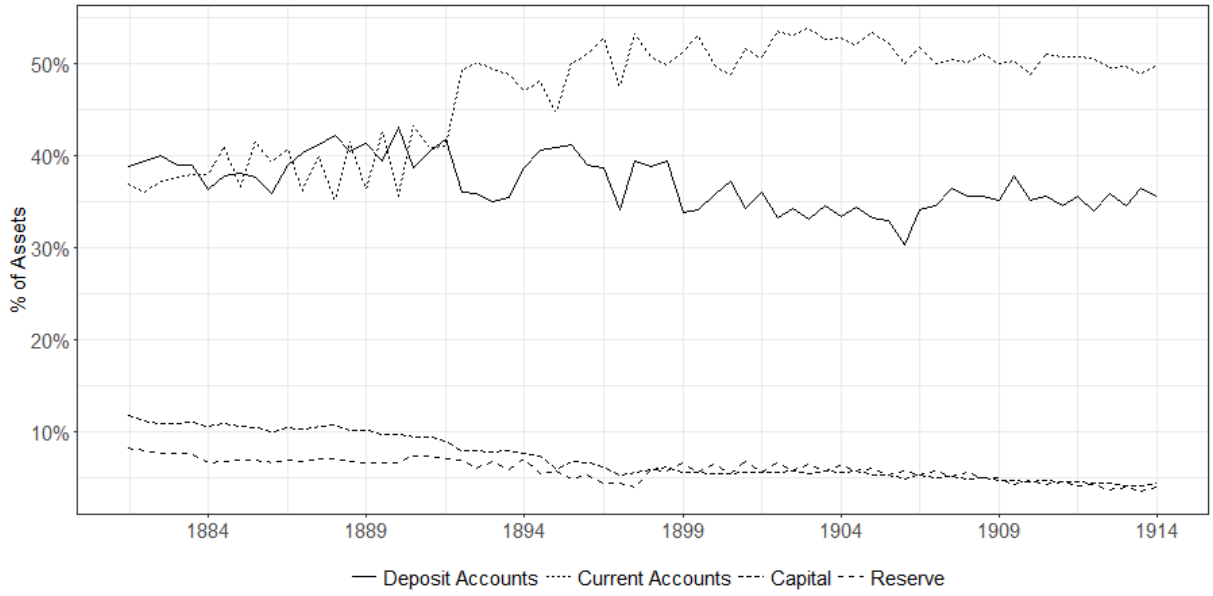
Equity and reserves represent the safest Liabilities, with a theoretically unlimited time to maturity. Equity was held in the form of shares by investors. Reserves were accumulated over time from profits as a buffer against losses. Usually, they were invested in safe securities (Baker and Collins, 2003, p.60). In aggregate, equity and reserves constitute proprietors' liabilities.

Current accounts and deposit accounts were the bulk of banks' liabilities. They were used by private and corporate customers to store cash, to process payments and as saving accounts. As a joint group, they represent public liabilities. Current accounts were used for transactions by cheque, but only a very low rate of interest was paid on them. Deposit accounts were used for savings and provided a higher interest payment to customers (Goodhart, 1972, p.171). The common period of notice for the withdrawal from deposit accounts seems to have been at approximately seven days, but it looks like enforcement was not very strict (Aldrich, 1910, p.64; Goodhart, 1972, p.171; Jaffé, 1910, p.185). However, current accounts were used for immediate withdrawal by cheque. In terms of time to maturity, that makes them the riskiest of Liabilities. Midland's published accounts did not differentiate between the two types of accounts.

Even if the distinction between both types of accounts was well known and explained, published sources provide only information on aggregated data (Aldrich, 1910, p.63; Jaffé, 1910, pp.185–186). The only bank that published both types separately seems to have been the Union Bank of London (Aldrich, 1910, p.36).

A high degree of deposit funding as a characteristic of English banks is observable in Midland's liabilities. The Midland reported a share of approximately 75% in the early 1880s and an increase to 85% from the 1890s onwards. A negative trend in capital ratios was observable in England from the

mid-19th century onwards (Collins, 1984, pp.47–49). An increase in deposits was in line with the growth of deposits from the 1870's onwards (Nishimura, 1971, pp.61–62; Cottrell, 1979, p.195). A trend in declining equity ratios and increasing deposit ratios was observable in other countries, such as Germany and France, as well. The decline is explained by a number of reasons: Financial systems reached higher states of development. In parallel, a higher degree of professionalization was developed over time. Furthermore, the use of bank accounts for payments spread through the population. The use of bank accounts was positively related to the increasing level of income that made more savings available, which led to an increase in deposits (Hatton, O'Rourke and Taylor, 2007, pp.144–145; Nishimura, 1971, pp.10, 64). More developed financial systems seem to lead to higher stakes for participants and higher professionalization. This is documented for England as well (Collins and Baker, 2001a, pp.176–177).




Source: Black Books

**Figure 3-9: Midland's major liabilities as share of total liabilities, 1881-1913.**

Figure 3-9 shows the development of the most important parts of Liabilities: capital, reserves, and current and deposit accounts. Capital and reserves declined slowly over the entire period from 1881-1913, with a more pronounced phase during the 1890s. Current accounts rose particularly after the takeover of the Central Bank in 1890 and stayed at approximately 50%. An explanation could be very cheap funding, because London banks paid no interest on current accounts (Aldrich, 1910, pp.44, 74; Cottrell, 1979, p.200; Crick and Wadsworth, 1936, pp.290–291, 299). Deposits' share varied between 35% and 40% until 1900 and after that at approximately 35%. Fluctuations in Midland's data can be explained in part by mergers with other banks that led to abrupt changes.

The steady decline in the share of capital and reserves and the complementary rise of deposit and current accounts led to more liquid and risky funding. This holds in particular after regarding the growing share of advances. The decline of the equity ratio should be explained in part by Midland's growth. The data from Baker and Collins (2003) report a quite steady decline in the ratio of proprietors' capital (Equity and Reserves) for English banks from approximately 15% in the early 1880s to 10% in 1913. According to these figures, Midland was in line with the general development.

Figure 3-10 shows the decomposition of total deposits into current and deposit accounts of the three sample banks. The share of public liabilities shows a very stable development, in particular in the case of the Union Bank of London and the National Provincial Bank. While the Union Bank of London slowly increased public liabilities from approximately 75% to 80%, National Provincial held a nearly stable share of public liabilities at approximately 90%.

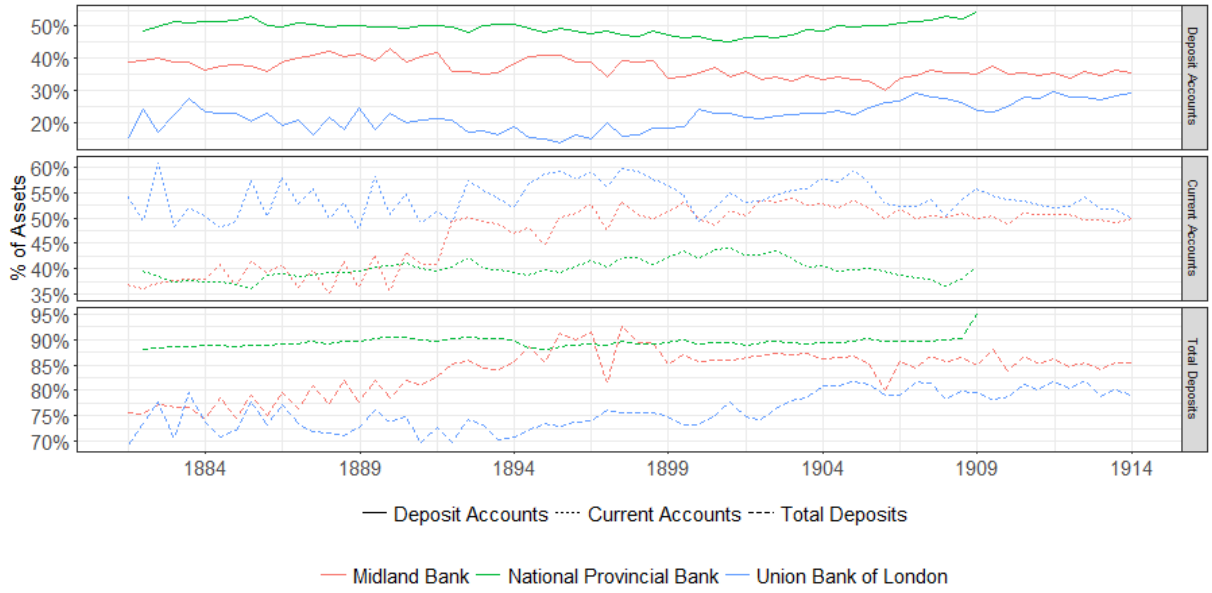
The separation of current and deposit accounts reveals large variations. The Union Bank of London held a share of deposit accounts that decreased from approximately 25% in the early 1880s to 15% of total assets in 1900. Afterwards, deposits' share increased to 25-30%. Midland's share was comparatively stable at 35-40%, with a slightly negative tendency. The National Provincial Bank reported the highest share of deposits, 50%. The current accounts of the National Provincial Bank and the Union Bank of London were quite stable at 50-60% and approximately 40%, respectively.

Overall, the banks seem to have balanced a high share of current accounts with a higher share of proprietors' liabilities, as did the Union Bank of London, or a high share of the less liquid deposit accounts, as did the National Provincial Bank. The comparatively high share of deposit accounts of the National Provincial Bank could have been a countermeasure to the very low share of equity and reserves, while, however, the Union Bank of London had a high share of equity and reserves. As a consequence, it was able to keep deposits low. Current accounts show overall quite stable shares; only the Midland's current accounts reported a leap in 1891.

Another likely explanation for different liabilities' structures is variations in the use of payments through current accounts, due to different income levels. Income in London and the South East of England had been over a third higher than the average in Britain between 1871 and 1911 (Crafts, 2005, p.59). Access to bank branches and the ability to overcome costs associated with payments through current accounts were more likely stronger in high-income areas. This could explain the high level at the Union Bank of London. The variations between the three sample banks offer further evidence for the cautiousness for generalizations on the wider banking system (Collins, 1984, pp.45–46; Cottrell, 1979, p.200).

In addition to deposit and current accounts, the Black Books report another small category, "Other Accounts". These other accounts include accounts from other banks, at first labelled "Country Banks", later as "Agents". These inter-bank accounts were mirrored on the asset side by cash with

agents. In particular, country banks used these inter-bank-accounts for payments with their London agents (Goodhart, 1972, pp.29–31). The overall importance of the inter-bank accounts was quite limited. The maximum share of liabilities reported was 3.37% in June 1911. Despite the small share of total liabilities, they reflect the shifting position in the English payment system. After Midland became a member of the London Clearing House, it moved into the centre of the clearing process.




Sources: Midland: Black Books, Union Bank of London: Profit and Loss, National Provincial Bank: Weekly accounts of assets and liabilities

**Figure 3-10: Decomposition of total deposits as share of total assets. From top to bottom: Deposit Accounts, Current Accounts and Total Deposits. Midland Bank, Union Bank of London, and National Provincial Bank, 1881-1913.**

The acquisition of the City Bank further added international correspondent relationships to Midland's customers. These Correspondent bank relationships usually included a combination of a minimum deposit and a maximum overdraft granted by the London bank (Michie and Mollan, 2012, p.26). Before 1898, the share of liabilities of these accounts fluctuated largely between 0.5% and 1%. Afterwards, it grew to 1.5%-2% around 1908 and then increased and stayed at approximately 2.5%-3%.

Liabilities show the only larger break in 1890, with an increase in current accounts while deposit accounts declined slightly. Midland reduced the share of loss absorbing proprietors' capital and increased public liabilities. The two other banks, covered by the previous discussion, operated on similar levels, but only one decreased in a similar way for proprietors' capital share like Midland. Overall, the decline seems to be more reasonably explained by the growth in assets, which is usually negatively linked with capital, than an active strategy. However, an expansion in total deposits is in line with the spread of more widely used bank accounts and larger branch-networks.

The decline in Midland's proprietors' capital becomes more interesting in light of the increasing share of advances. The increased cash and near cash ratio could have contained the related risks.

### 3.4.3 Window Dressing

The distorting impact of window dressing on the published accounts of English banks is a well-known problem of English banks' balances (Goodhart, 1972, p.33; Collins and Baker, 2001a, p.173). Goodhart illustrated the phenomenon as a half-yearly event to deviate accounts for publication (1972, p.33). The weekly data for 1893-1898 and 1907-1913 make it possible to follow accounts with a higher frequency and trace the effects of half-yearly publication dates on balance sheets. Information on cash and near cash was reported for the later period only from April 21, 1910 onwards.[33] *The Economist* covered a part of the London banks by publishing accounts monthly.

Due to the higher frequency of the archive accounts, it is possible to identify which position was affected and how much the procedure created a deviation from the "normal" values. Studies have found evidence for window dressing in the US for the 19th as well as the later 20th century, too (Allen and Saunders, 1992; Hoag, 2016).

As a first overview, Table 3-2 provides the mean and standard deviation for the major assets in relation to total deposits (current accounts and deposit accounts). Because total assets are not continuously available from the weekly accounts, total deposits were chosen as the denominator. The data are sub-divided into weekly and respective half-yearly values. Naturally, the asset most affected by window dressing is cash. Most striking is the top-up during the 1890s by approximately 100%.[34] After 1910, it declined to approximately 15%. While the weekly average was, in the 1890s, 7.3%, after 1910, it increased to 14.7%. In particular, during the 1890s, the published cash ratio was much higher, at 14.8%. After 1910, it was slightly higher, at 17%.

The National Provincial Bank provides a surprisingly different picture. While the half-yearly cash ratio was just slightly lower (12.5%) than Midland's, the gap between weekly and half-yearly, the impact of window dressing, was only approximately 5%. Near cash deviated in the opposite direction. The gap was approximately -30% in the 1890s, but after 1910, close to zero. For both assets, the standard deviation is higher for periods with a larger gap (1893-1898), reflecting a larger amplitude of window dressing. The ratio of bills reported weekly is quasi-identical in both periods and is approximately 12-13% higher in half-yearly reports. Investments and advances show negligible deviations.

[33] HSBC UK AA 0004: 1893-1896 and HSBC UK AA 0005: 1896-1898. HSBC UK 0535: 1910-1913.
[34] Calculated as the mean of half-yearly data to the mean of weekly data.

**Table 3-2: Descriptive statistics of weekly and half-yearly assets of the Midland Bank and National Provincial Bank in % of total deposits.**

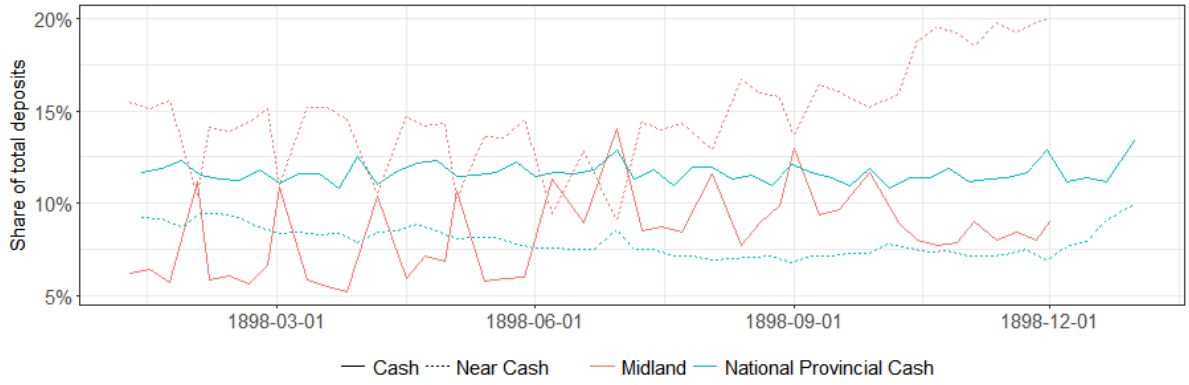
| | | Weekly 1893-1898 | Half-yearly Dec. 1893-Dec 1898 | Weekly 1910-1913 | Half-yearly Jun 1910-Dec. 1913 |
|---|---|---|---|---|---|
| Cash | mean | 7.306 | 14.8 | 14.755 | 17.035 |
| | sd | 2.582 | 0.632 | 1.502 | 1.023 |
| Near cash | mean | 12.757 | 9.866 | 13.211 | 13.214 |
| | sd | 2.778 | 2.365 | 1.182 | 0.78 |
| Bills | mean | 11.785 | 13.23 | 11.759 | 13.168 |
| | sd | 2.916 | 1.986 | 1.857 | 2.115 |
| Investments | mean | 20.806 | 20.742 | 11.243 | 11.206 |
| | sd | 2.019 | 1.808 | 1.233 | 1.532 |
| Advances | mean | 55.356 | 54.694 | 56.319 | 57.714 |
| | sd | 1.593 | 1.895 | 1.438 | 1.527 |
| National Provincial cash | mean | 11.854 | 12.411 | | |
| | sd | 2.416 | 1.074 | | |

Sources: summary abstract books (weekly data), Black Books (half-yearly data). National Provincial: Approximate Weekly Statement of Liabilities and Assets

Figure 3-11 gives an impression of how cash and near cash evolved in 1898. Until mid-1898, Midland's cash and near cash moved up and down in a countercyclical pattern that broke up in July 1898. After 1898, no data are available to trace further developments. The aggregate stayed quite constant over this period. Thus, the use of aggregated cash and near cash, as Baker and Collins (2003) did, avoids this pattern. However, window dressing seems to have been monthly and not half-yearly. In contrast to Midland, the National Provincial Bank's cash ratios (dotted line) show only very small upward movements towards half-yearly publication dates. The striking disparity in the amplitude of window dressing should be attributed to the more conservative behaviour, visible in lower growth in assets (Figure 3-1). Figure 3-4 reveals how much Midland and National Provincial differed in raising cash around 1890: Midland used cash at the Bank of England and the National Provincial Bank cash on hand. Cash at the Bank of England seems to be the better vehicle for the necessary transactions to operate window dressing, due to lower transaction costs for bookings between accounts instead of transfers in coin and notes. It seems highly likely that the brokers' loans were run up and down by transactions through accounts instead of payments in notes and coins. The half-yearly accounts show the bulk of Bank of England accounts in London. The same holds for

money at call.[35] Switching between Bank of England accounts and brokers in London (near cash) should have been the cheapest way for this procedure. London probably provided the only place with a counter-position of the necessary size. Provincial banks did not have this access and should have been in a difficult position to operate window dressing on a larger scale. An interesting finding is that Midland's "bottom-line" of cash stayed in the 1890s at 5-7% of current and deposit accounts, roughly the same level as before 1890. This makes it more likely that, from the banks point of view, there was no necessity to keep the cash ratio permanently higher than before 1890.

Therefore, Midland with larger accounts at the Bank of England had an advantage to perform the procedure. Possibly both examples are not representative for the whole of English banks. But Midland could be seen as representative for banks more oriented towards expansion (Midland) and National Provincial as another with a stronger element of continuity.



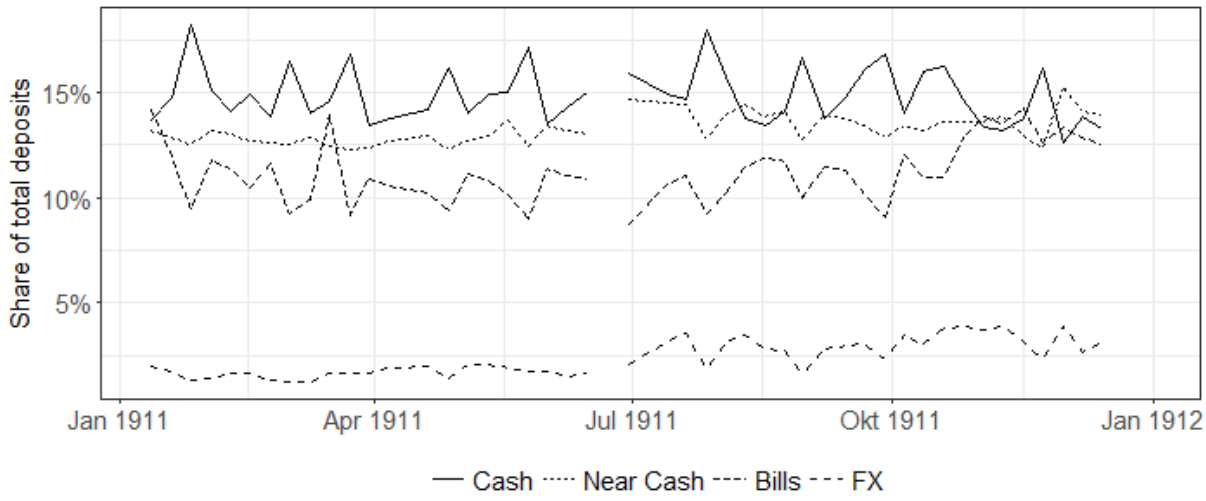

Sources: summary abstract books

**Figure 3-11: Window dressing in 1898. Cash and near cash as share of total deposits. Midland: red, National Provincial Bank: turquois.**

A part of the fluctuations might be the result of transactions occurring on particular dates. Monthly Consol and Stock Exchange Settling days every two weeks created high transaction volumes (Matthews, 1921, pp.80–81), but this would not explain the parallel countercyclical movement of near cash. *The Economist* and *The Bankers Magazine* began to publish monthly accounts, including "Cash on Hand and Bank of England", of London banks from 1891 onwards. The frequency of window dressing fits these publications very well. Weekly publications, as the Chancellor of the Exchequer demanded in 1906, would have made window dressing impossible, and thus, it received no support from bankers (*The Times* June 21, 1906, p. 10).

[35]The Black Books reported cash at the Bank of England by the Bank of England's branches: Dec. 1897: 1,978,006 £ in London out of 2,067,760 £ held at the Bank of England in total. Dec. 1910: 5,953,936 £ in London and 6,686,155£ in total. Money at call in London: Dec. 1897 1,183,116 £, Dec. 1910 6,313,397 £; entire Midland Bank: Dec. 1897 1,679,938 £, Dec. 1910 7,035,289 £.

While the 1890s showed a close countercyclical movement of cash and near cash, in the later period, a wider spectrum of assets, including bills and foreign exchange, was used for window dressing as well. Figure 3-12 illustrates how cash, near cash, bills and foreign exchange fluctuated during 1911. The cash ratio had monthly peaks very similar to 1898, but two discrepancies can be found. The cash ratio was higher at the publication dates as well as in between, and the amplitude between publication and non-publication dates was much lower. Furthermore, the countercyclical movement of near cash was no longer visible. Instead of near cash, bills moved up and down and seem to have been the major instrument to operate window dressing. Foreign exchange provided a supportive role as well. Particularly in the second half of the year, foreign exchange showed larger fluctuations that were in tandem with the cash ratio. In addition to the window dressing, seasonal factors could have increased foreign exchange and might have fostered the role of this quite new balance position in window dressing.




Source: summary abstract books

**Figure 3-12: Window dressing in 1911. Midland's weekly cash, near cash, bills and foreign exchange as % of total deposits.**

The correlation between cash and bills, on the one hand, and cash and near cash, on the other hand, is very similar at -0.45 and -0.4, respectively. The respective correlation coefficients for the 1890s were 0.021 and -0.503. These two values reflect the singular role near cash had during the earlier years, while bills did not matter. Bills created by credit to customers were not a useful instrument for window dressing because of the dependency on customers' demand. However, bills bought from bill brokers became more readily available for the procedure. In an interview by the National Monetary Commission, Felix Schuster, Governor of the Union of London Bank, explained that London banks used surplus funds to buy bills through bill brokers (Aldrich, 1910, p.42; Goodhart, 1972, pp.125, 130–133, 143–146). In the case of window dressing, the broker's bills had to be bought according to

their date of maturity. If bills reached their date of maturity at the monthly and half-yearly publication dates, they were repaid, and cash was automatically built up.

This describes the changing function of bills. The distorting impact on bills creates a downside for the use of aggregated cash and near cash data because it no longer completely avoids window dressing (Baker and Collins, 2003, p.63). Overall, it becomes clear that Midland ran up cash reserves for publication dates to keep the image of high cash reserves while operating on a lower cash ratio over most of the time between these dates. During the 1890s, the degree to which the procedure of window dressing distorted accounts was far larger than in around 1910.

High cash ratios as a basis for safe deposits shown to the public give a general explanation for window dressing, but it does not explain the changing degree of the procedure. Part of the explanation is probably a low level of interest rates after the Baring Crisis during the 1890s that led to a more aggressive procedure. To create income, near cash was increased and cash reduced, as much as possible, but a rise in interest rates from 1896 onwards seems to have at least not immediately affected the pattern that changed only in mid-1898 (mean 1895: 0.81%, 1896: 1.5%, 1897: 1.82%, 1898: 2.62%).[36] The acquisition of the Central Bank in 1890 seems to have not been very profitable, as opposed to the City-bank-merger (Holmes and Green, 1986, pp.93, 96).[37] This adds to the difficulties of low interest rates in the 1890s. The merger could explain a temporary increase in cash in 1898 to execute the transaction, but because no weekly accounts are available for 1898-1907, it remains speculation whether the pattern broke up permanently in mid-1898 or whether the break up was only temporary as result of the merger.

Growing market power provides another explanation for the lower amplitude of window dressing. The acquisition of the City Bank should have increased the market power of Midland by a larger market share of deposits and transactions at the London Clearing House (Capie, 1995, p.59). The Clearing House membership alone should not have been decisive, because membership was already acquired in 1890 by the acquisition of the Central Bank. However, Midland's share of total payments through the Clearinghouse rose from 1.956% in 1894 to 10.741% in 1913.[38] Banks' accounts at the Bank of England were the main vehicle of the clearing process (reported as cash at the Bank of

[36] Yearly average calculated based on monthly data, published in *the Economist* and available at the Macrohistory Database.

[37] Returns generated by advances in London by the former Central Bank were relatively low, compared to the entire Midland. Mean for former Central Bank 1893-1898: 1.88%, Midland Bank 1893-1898: 2.32% (weekly accounts UK AA 0004, UK AA 0005).

[38] Calculated as the ratio of payments of bills and current accounts to Clearing House returns for the entire year. The payout was obtained from the weekly abstracts UK AA 0004 (1894) and UK 0535 (1910). Clearing House returns were published weekly by *the Economist*.

England previously). Midland's share of all accounts held by bankers at the Bank of England rose from 0.5% in 1890 to 17.2% in 1910.[39]

The increased share of transactions, processed by Midland should have created higher income. A further aspect of the banking system's domestic and international payment system are inter-bank accounts that grew due to a growing number of international correspondent bank relationships. By the arrangements, the correspondents from around the world were able to invest short-term funds in the London money market, as did Midland and other London banks (Michie and Mollan, 2012, pp.26–28). In 1912, Midland was agent for 122 banks. The Union Bank of London was similarly active with agencies for 131 banks, while National Provincial had only 17 agencies (Banking Almanac 1912, p. 169-170, 232-233, 200).

The inter-bank accounts, domestic and international, might have made permanently high cash reserves necessary due to their high liquidity and large transaction volumes. Therefore, the more central role in the domestic and international payment and banking system could have forced Midland to keep higher cash ratios on a permanent basis.

A minor example for the benefits at the centre of the financial system is how bankers' charges were booked in the profit and loss accounts. Until June 1891, the position was included in expenditures, but after acquiring membership in the London Clearing House, the position became part of income, by charging other banks to process their payments. From the perspective of industrial organization, market power rose because of the concentration; banks lost the competitive incentive to take the risk of providing loans (Moore, Dwarkasing and Braggion, 2011, p.30). From the perspective of monetary policy, co-operation between commercial banks and Bank of England became easier (Pressnell, 1968, p.219), but there was also collusion between the commercial banks in favour of their own business interests. Setting interest rates for deposits seems to have been a highly collusive process, too (Aldrich, 1910, p.45).

The National Provincial Bank reveals a very different behaviour in comparison to the Midland Bank and shows how much Banks might have differed in operating window dressing. Therefore, a generalization is difficult to make, but it seems likely that other strongly expanding banks conducted window dressing similar to the Midland Bank. Lloyds is a very likely candidate for similar behaviour because both banks expanded only a few years before to London and shared their origin in Birmingham. Furthermore, the use of bills and a declining level of window dressing as a result of concentration in the banking and clearing system are likely features for other banks.

Midland's assets display long-term developments similar to the wider banking system. The most striking structural break is the adaptation to publish higher cash ratios after 1890. While cash levels

[39] Midland's cash at the Bank of England: Black Books, Bank of England's bank accounts: Huang and Thomas (2016). Available online: http://www.bankofengland.co.uk/research/Pages/datasets/default.aspx

between publication dates were nearly identical to the previous years, the jump in cash in 1891 was entirely operated by window dressing to publish high and favourable values to the public. A mixture of new customers and increased market power at least fostered a decline in the level of window dressing and pushed "real", unpublished cash ratios up until 1907.

However, advances, the most risky and most debated position, was held very stable and even increased. This finding contradicts the hypothesis of increasingly restrictive lending. The credit components of Lloyds Bank reveal great similarities between these two "new" London banks with provincial roots. However, the "old" London Banks held lower levels of credit. The comparison to other "old" and "new" London banks makes it likely that the subgroups followed a path dependency in regard to lending and window dressing.

Liabilities reveal continuity in the decline of equity and reserves. Current accounts increased after the Midland Bank entered the large urban area of London, but the dominant impression is the continuity of all major components. Equity of all banks broadly followed a similar negative trend, while current and deposit accounts reveal more peculiar patterns at each of the sample banks.

## 3.5 Profit and Loss Accounts

After previous section analysed the composition of assets and liabilities, in the following, profit and loss accounts provide the basis for further information on changing risk attitudes. Midland's profit and loss accounts were reported in the Black Books together with the balance sheets. While assets and liabilities are arranged by the time to maturity, profit and loss accounts provide the basis for calculating returns of the major components. The basic logic that connects risk and return is that a more risky project has to generate a higher return to compensate for the risk.

An asset might have been stable over time but a changing return could be the result of a different selection of projects with lower risk. The asset ratio would not display such a development. English banks published only net profits without any subcategories. Additionally, published values were smoothed out over time to cover fluctuations. The values used were revised according to Cassis (1994, pp.193–196) and Holmes and Green (1986, pp.332–333), who included the contingent fund in net profits to calculate undistorted returns. Some positions can be directly related to assets or liabilities, for example interest received from advances or interest payments on deposit accounts. They provide the necessary information to calculate gross returns on assets and costs of liabilities. While net profits were published, the subdivisions of profit and loss accounts were not reported to the public. Therefore, it can be assumed that they are unaffected by any bias.

Figure 3-13 gives a schematic overview of the balance sheet and the related positions of profit and loss accounts, which were labelled as Credit on the income side and Debit on the side of

expenditures. On the asset side, interest received from advances, discount income from bills, interest received from investments and brokers' loans was reported. On the liabilities' side of the balance sheet, interest payments on deposit accounts and current accounts were reported as well as dividend payments. Other positions that cannot be clearly related to balance sheet items, for example commission and general charges, are not included.

| **Credit** | Assets | Liabilities | **Debit** |
|---|---|---|---|
| **Interest** | Advances | Current account | **Interest on current account** |
| **Discount** | Bills | Deposit account | **Interest on deposit account** |
| **Interest on investments** | Investments | Reserves | |
| **Interest on brokers' loans** | Near cash | Capital | **Dividend** |
| | Cash | | |

**Figure 3-13: Assets and liabilities and their respective income and expenditure.**

The profitability of Midland as the entire bank can be calculated by two measurements: Return on Assets (ROA) and Return on Equity (ROE). The former measures the return in relation to the total assets, while the latter one is based only on equity as the denominator. ROA declined from approximately 1% to 0.5% with more variation in the late 1880s/early 1890s. The ROE shows (Figure 3-14) much larger fluctuations at the same time; otherwise, there was a slightly positive trend. Under these conditions, the aggressive window dressing of the 1890s appears to have been a strategy to increase income in less profitable times. The increase in the ROE and the decline in the ROE's standard deviation, more stable and higher returns, could have been the result of growing market power. The declining standard deviation of returns (both ROA and ROE) is in line with a positive relationship between equity ratio and stock return volatility as was found in Subchapter 2.6.


Source: Black Books

**Figure 3-14: Return on Equity Midland Bank, 1881-1913.**

**Table 3-3: Gross returns and costs on major assets and liabilities of the Midland Bank.**

| | | 1881-1913 | 1881-1890 | 1891-1900 | 1901-1913 |
|---|---|---|---|---|---|
| Return on advances | mean | 2.641 | - | 2.365 | 2.282 |
| | sd | 0.555 | - | 0.175 | 0.205 |
| Return on Bills | mean | 1.765 | 1.439 | 1.835 | 1.961 |
| | sd | 0.551 | 0.79 | 0.295 | 0.349 |
| Return on Investments | mean | 1.428 | - | 1.252 | 1.455 |
| | sd | 0.277 | - | 0.493 | 0.575 |
| Return on advances and investments | mean | 2.302 | 2.727 | 2.085 | 2.142 |
| | sd | 0.357 | 0.295 | 0.197 | 0.165 |
| Return on call money | mean | 1.336 | 1.504 | 1.54 | 1.051 |
| | sd | 1.093 | 1.275 | 1.49 | 0.208 |
| Interest on deposit accounts | mean | 1.222 | 1.286 | 1.152 | 1.227 |
| | sd | 0.142 | 0.13 | 0.135 | 0.135 |
| Interest on current accounts | mean | 0.671 | 0.76 | 0.571 | 0.681 |
| | sd | 0.292 | 0.498 | 0.112 | 0.1 |
| ROA (Return on Assets) | mean | 0.667 | 0.882 | 0.64 | 0.522 |
| | sd | 0.209 | 0.245 | 0.086 | 0.058 |
| ROE (Return on Equity) | mean | 9.726 | 8.436 | 9.972 | 10.528 |
| | sd | 2.025 | 2.346 | 2.068 | 1.085 |

Source: Black Books

The major asset component's returns can be calculated by the reported profits. The Black Books report interest received from advances and investments separately only from 1891 onwards. For reasons of comparison, the combined series will be continued.

Interest on advances and investments declined in the earliest years and then stayed between 2.5% and 3% until 1890. After a drop, returns fluctuated close to above 2% and experienced a drop in 1909, with a slow recovery afterwards. The return on advances, as single asset, followed this development on a less than 0.5% higher rate while returns on investment experienced a very similar pattern with more than 0.5% lower values. Both rates seem to have converged slowly towards the

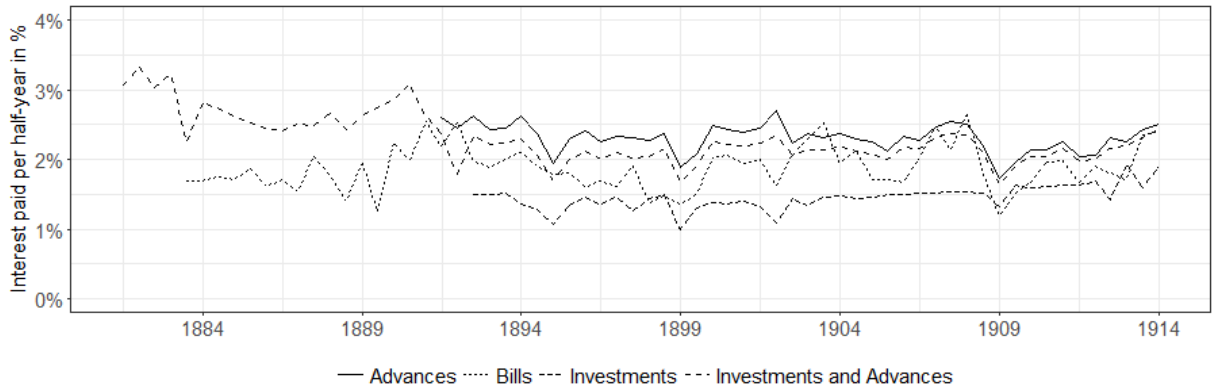
aggregate until 1913. The return on advances displays a slightly negative trend, while the return on investment increased, as seen in Figure 3-15. The average values for the 1890s and after 1900 reflect the same development and an increase in the standard deviation in Table 3-3. The gross returns experienced drops in 1898 and 1908 with a slow increase until 1913. Before interest was reported as an aggregate, advances' return was very likely higher and investments' return lower than the aggregate. The most striking feature was the slump in 1890. It seems to have been the result of the expansion into more competitive low-return areas. The London-section reported half-yearly lower returns on advances than Midland in total.[40] In parallel to the higher returns of bad debt, advances that were only partially or not at all repaid followed a similar path to returns. The share of bad debt before 1891 was quite high and fluctuated and declined to a lower more stable level.[41] The development could have been the result of a standardization process of lending. However, it could have been a result of the on-going growth and diversification. While in the 1880s, Midland operated only in the Midland, it became a nationwide bank during the 1890s and continued the process afterwards.

The very slow decline in advances' returns could be explained by less risky and therefore low-return generating advances but the standard deviation between the 1890s and 1900 increased slightly and points to the opposite direction. Furthermore, the fluctuations at particular dates (for example, 1898 and 1908) were by far higher than the overall downward trend, which could have been driven by the obviously wider impact of the downturn after 1908.

Investments report a quite steady return of ca. 1.5% with a slight increase towards the end of the period. The composition of investments was very similar, with a majority of British government bonds (Consols: 1885: ca. 40%, 1895: ca. 40%). Without a change in the investment portfolio, the return on investments was probably very similar to the values reported after 1890. Therefore, the higher value of the combined series must have solely been the result of higher returns on advances.

[40] Mean former Central Bank 1893-1898: 1.88%, Midland Bank 1893-1898: 2.32% (weekly accounts UK AA 0004, UK AA 0005).

[41] The average ratio of bad debt to advances and standard deviation is in parenthesis for 1881-1913: 0.099% (0.131), 1881-1890: 0.129% (0.227), 1891-1900: 0.119% (0.057), 1901-1913: 0.059% (0.014).



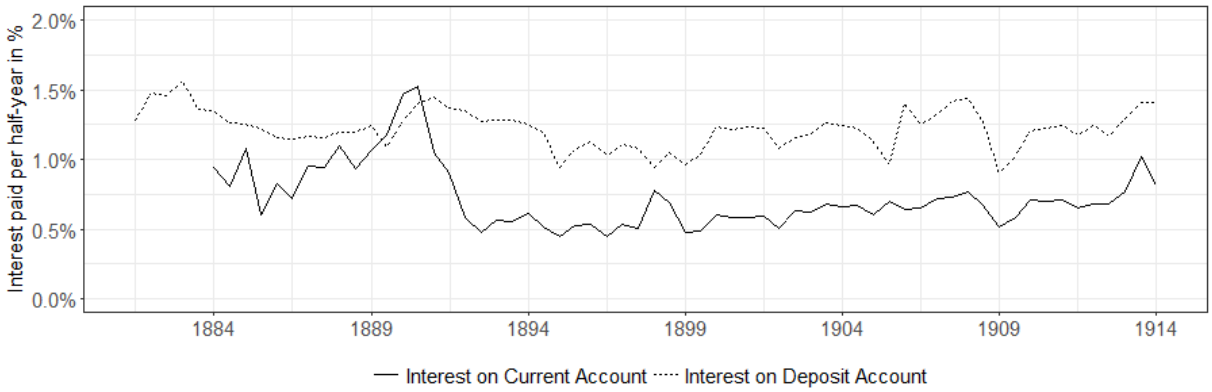

Source: Black Books

**Figure 3-15: Half-yearly gross returns of Midland's major asset components, 1881-1913.**

Bills' return fluctuated in a similar pattern as advances, with a peak around 1890, but overall they had a slightly positive trend. Another quite remarkable drop occurred in 1908 after a small rise, but this pattern was very similar to advances and should have been the result of general circumstances. The interest of advances and bills was dependent on the bank rate (Jaffé, 1910, pp.223–225). The financial crisis of 1907 had only a limited impact on England, but it could explain the rise and fall of nearly all rates, including the entire bank's return (Baker and Collins, 2003, p.80; Michie, 2016, p.70). The higher average return on bills might have been the result of a more selective use of bills and the growing importance in international trade, which widened demand of international customers.

Money at call's gross return was possibly lower in the 1890s than the value in Table 3-3 because the half-yearly balances underestimate the amount held due to window dressing (Table 3-2). Because the weekly accounts do not report call money separately from near cash, interest based on more reliable data cannot be calculated.

Foreign exchange was a quite new and profitable business. Due to window dressing, half-yearly accounts report lower amounts than weekly accounts. Half-yearly data provide a mean return on foreign exchange of 3.789%. Based on average weekly accounts, returns were 2.279%. In both cases, returns were higher than for call money and close or even higher than returns on advances. Foreign exchange had a very small share of assets, but the high return provides a contrast to the assets' high liquidity.




Source: Black Books

**Figure 3-16: Half-yearly interest payments on Midland's Current and Deposit Accounts 1881-1913.**

Returns reported a structural break 1890 and some co-movement afterwards. Liabilities display some similarity. While interest on deposit accounts were quite stable, interest on current accounts experienced an upwards movement and breakdown around 1890 and then followed a very slowly increasing trend to the old level of approximately 1%, as seen in Figure 3-16. The lower interest rate should have been the result of the expansion to London. From 1870s onwards, London banks paid no interest on current accounts (Aldrich, 1910, pp.44, 74; Cottrell, 1979, p.200), but the interest paid on current account does not fit this description. It seems to be more likely that interest was paid only above a fixed amount. This fixed amount had to stay at the bank's disposal (Jaffé, 1910, pp.184–185). The drop was a result of the continuously very low interest payments in London (Dec. 1895: London 0.056%, Total 0.69%, Dec. 1910: London: 0.25%, Total: 0.76%).[42] Interest paid on deposit accounts showed no structural break and fluctuated continuously between 1 and 1.5%. It seems to have been unaffected by the banks expansion into different areas. Similar to the other rates, there was a peak in around 1890 and again in 1908, with a low in 1909.

The most striking change was the drop in advances' returns and interest paid on current accounts in 1890/91. Both seem to have been closely related to the acquisition of the Central Bank of London. The relation was twofold: An advance mirrors a current account in the way that it is paid out on the customers' current accounts. Furthermore, because of the lower costs of funding, the bank can allow interest on advances to be lower and still generate a sufficient interest margin. The ROE fell to a low in the late 1880s/ early 1890s but rose again to an even higher level afterwards. Peaks were reached in 1889, 1898, 1907 and 1913. The low point was a result of the Baring Crisis and low interest rates, and was observable at other banks, as well (Cassis, 1987, p.9, 1994, pp.186–187; Crick and Wadsworth, 1936, p.316). Thus, the profitability of Midland was not negatively affected in 1891. The drop in return and interest paid was very likely the result of the expansion into the low interest area

[42] Calculations were based on the weekly accounts of Midland (UK AA 0004) that provide data by section, a management level under the head office, which makes the geographical distinction possible.

of London. The co-movement did not result in a loss of profitability of the entire bank, because of a stable margin, but the costs of equity are still not included and might have been affected.

The slightly increasing ROE and lower fluctuations could have been signs of greater market power. An increase in market power should have led to higher credit rates and lower deposit rates, because the bank acted under less competitive pressure. The increase in the permanent ratio of cash and decrease in the amplitude of window dressing as well as the increasing share of payment volume of Midland are further evidence.

However, credit and deposit rates did not change as supposed. A reason could be that Midland's market power increased not in the credit and deposit markets, but only in other areas. The clearing process, arranged by the 12 members of the London Clearinghouse, was one area with a low level of competition (Capie, 1995, p.59). The increasing return on bills provides evidence for another field that could be characterized by more limited competition. The international importance of the bills denominated in pound sterling limited the competition for the British banks.

As a result of the acquisition of the membership in the London Clearinghouse, the Black Books report the position of Bankers switched from the Debit to the Credit side in December 1891 and contributed to the income. As a source of income, Bankers' charges remained a small position, only surpassing 10,000£ in 1913, while Foreign exchange generated 32,077£, and interest from advances dwarfed both sources with 1,439,417£, but the new and increasing range of income materializes very clearly in this position.

Two other developments of Midland could explain the declining fluctuations of the ROE: the growth of Midland from a regional to a nationwide bank created greater opportunities to diversify risk over a larger geographical area and a larger set of customers. A smaller bank might have been more locally involved with less opportunities to diversify and therefore have had to pay higher interest rates on deposits to compensate depositors for the higher risk (Collins and Baker, 2001b, p.2), but the increase in interest on current accounts runs contrary to this argument and makes it less important.

Second, the equity ratio of English and German banks of the same time was positively related to the volatility of banks' share returns. Therefore, a lower equity ratio led to a lower volatility of stock returns. A lower equity ratio means a bank has a higher share of deposits. Because a constant interest rate is paid on deposits, a less volatile stream of income is preferable (p. 36). Both effects are interrelated because large banks usually hold lower equity ratios since they can diversify more easily.

### 3.5.1 Cost of Capital

The interest paid on deposits constitutes one part of the costs of capital Midland had to pay for funding. The second part is the cost of equity that has to be included to measure the weighted average costs of capital. In contrast to deposits, equity carries the risk of being a complete loss to

shareholders in case of a bankruptcy. The weighted average cost of capital (WACC) then includes both components weighted by their share of total capital. The WACC will be calculated for the Midland Bank and the Union Bank of London. The WACC is calculated as

$$WACC_t = CoE_t \frac{E_t}{E_t+D_t} + CoD_t \frac{D_t}{E_t+D_t}$$

$E_t$ is the market value of equity, $D_t$ the amount of debt, $CoE_t$ the costs of equity and $CoD_t$ the costs of debt. Debt comprises current accounts and deposit accounts. Costs of debt were calculated by the interest rate paid out on deposit and current accounts. The costs of equity were calculated based on the CAPM. According to the CAPM, a single asset's return can be explained as a linear function of a market portfolio (Lintner, 1965; Mossin, 1966; Sharpe, 1964). The following formula was used:

$$CoE_t = R_{f,t} + \beta_t(R_{m,t} - R_{f,t})$$

$R_{f,t}$ is the risk-free rate of return, $R_{m,t}$ the market return, and $\beta_t$ is the bank's equity beta, which describes the relationship between the market risk premium $(R_{m,t} - R_{f,t})$ and the bank's equity risk. As the risk-free rate, London's open market discount rate was used. The stock index of Smith and Horne (1934) was used to calculate the market return. The Interest rates were selected from the Black Books for the Midland Bank and from the Profit and Loss Accounts from the Union Bank of London.

To calculate the beta, the Kalman filtering approach will be used. The CAPM will be formulated in a state-space framework. The asset's exposure to the market is assumed to be an unobserved state variable that follows an underlying stochastic process. Changes in the beta are only expected if new information is available. Taking into account the following state-space framework, which can be estimated by using maximum likelihood and a Kalman filter:

$$\left(R_{i,t} - R_{f,t}\right) = \alpha_{i,t} + \beta_{i,t}\left(R_{m,t} - R_{f,t}\right) + \varepsilon_{i,t}$$

$$\alpha_{i,t} = \alpha_{i,t-1} + \vartheta_{i,t}$$

$$\beta_{i,t} = \beta_{i,t-1} + \mathfrak{y}_{i,t}$$

It is assumed that the three error terms are independent, homoscedastic, and serially uncorrelated.

$$\varepsilon_{i,t} \sim MVN(0,P), \vartheta_{i,t} \sim MVN(0,Q), \mathfrak{y}_{i,t} \sim MVN(0,K)$$

P, Q and K are covariance matrices. The Kalman provides recursive conditional estimates of the state variables α and β for each time t. Based on these monthly data, yearly averages can be calculated that make it possible to match the costs of equity with the costs of debt. Then, the WACC can be calculated according to the formula:

$$WACC_t = CoE_t \frac{E_t}{E_t + D_t} + \frac{Interest_t}{D_t} \quad \frac{D_t}{E_t + D_t}$$

Table 3-4 reports the mean and standard deviation of monthly stock returns of the Midland Bank and the Union Bank of London, and the return of the market index. The documents of the Union of London provide the necessary interest information in contrast to the National Provincial, therefore the comparison is limited to two examples. Two differences between the banks become visible: the average monthly stock return of the Union Bank was negative while Midland's was positive. Second, the spread between current and deposit accounts was far larger at the Union Bank, which paid 0.29% on current accounts and 2.188% on deposit accounts. Table 3-5 reports the results of the beta calculation and the calculation of the WACC for each of the banks, with the subdivision of 1881-1890 and 1891-1913.

**Table 3-4: Descriptive statistics of monthly stock returns and interest paid on current and deposit accounts, 1881-1913.**

| | | Midland | Union of London | Market |
|---|---|---|---|---|
| Stock return | mean | 0.11 | -0.041 | -0.0324 |
| | sd | 2.128 | 2.666 | 0.817 |
| Interest current account | mean | 0.671 | 0.292 | - |
| | sd | 0.292 | 0.162 | - |
| Interest deposit account | mean | 1.222 | 2.188 | - |
| | sd | 0.142 | 0.452 | - |

Sources: Black Books (Midland), Profit and Loss Accounts (Union Bank of London), Investors Monthly Manual (Banks' stock returns and market return)

**Table 3-5: Descriptive statistics, yearly Beta and WACC, Midland and Union Bank of London, 1881-1913.**

Beta

| | | Midland | Union Bank of London |
|---|---|---|---|
| 1881-1913 | mean | 0.0508 | 0.5377 |
| | sd | 0.3318 | 0.234 |
| 1881-1890 | mean | -0.361 | 0.1394 |
| | sd | 0.1206 | NA |
| 1891-1913 | mean | 0.2299 | 0.4104 |
| | sd | 0.2086 | 0.1256 |

WACC

| | | Midland | Union Bank of London |
|---|---|---|---|
| 1881-1913 | mean | 0.0187 | 0.0153 |
| | sd | 0.0044 | 0.0047 |
| 1881-1890 | mean | 0.0241 | 0.0134 |
| | sd | 0.0037 | 0.0053 |
| 1891-1913 | mean | 0.0164 | 0.0162 |
| | sd | 0.0019 | 0.0042 |

The development of Midland's WACC (Figure 3-17, dotted line) can be subdivided into two parts: before and after 1891. Before 1891, it fluctuated between 2% and 2.5% and then increased to 3%. After that, it fluctuated much less at approximately 1.5% with lows in the late 1890s and in around 1909. The Union Bank of London had a lower level than the Midland until 1891 and then a grossly similar level but larger fluctuations. An exception were the early 1880s, which showed a rise from a very low level of less than 0.5% to approximately 1.5%. A declining trend led to a low in the late

1890s, followed by a jump in 1900 and a slightly increasing trend from the early 1900s to 1913. Midland's higher costs in the early years should be attributed to the bank's structure as a purely provincial bank with limited diversification. Lower interest payments on deposit and current accounts in London lowered the costs of capital. The WACC changed very similarly to the interest on current accounts. The Union Bank of London (Figure 3-17, solid line), as a pure London bank until 1902, operated under these conditions. Other banks should have benefited from the lower costs of capital by expansion into London in a similar way.

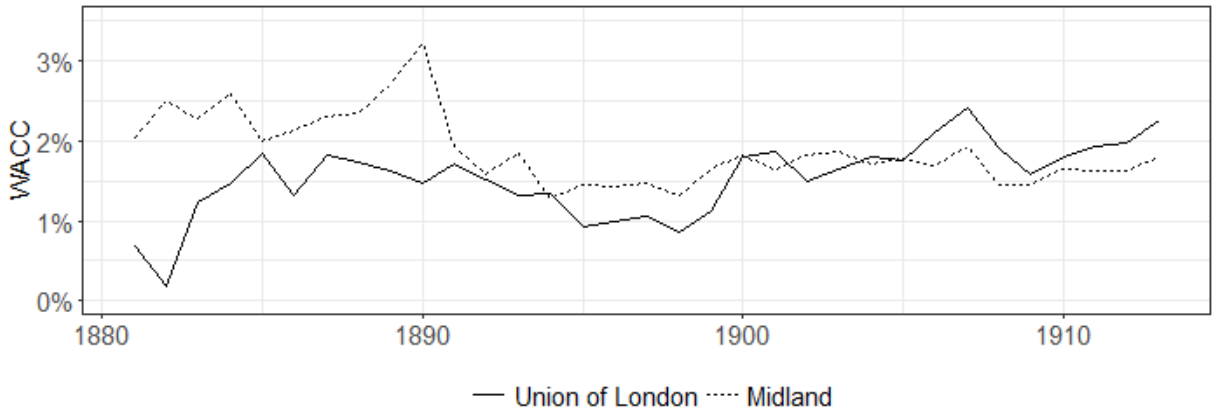



**Figure 3-17: WACC of Midland and Union Bank of London.**

Lower costs of capital could have weakened the incentive to seek high-return generating risky advances, because the benchmark for refunding is lower. Cheap funding could have two effects on assets and income: a lower share of risky assets (advances), and a selection of advances that led to safe and therefore low-return generating advances. The very low interest paid on a large share of liabilities might be an explanation for the London banks' low share of advances (30-35%) compared to provincial banks (50-55%). This effect would explain the more liquid asset structure of London banks and the supposedly more restrictive lending. The major factors behind Midland's development seem to have been the co-movement of the interest rates of advances and current accounts. The advances' returns experienced a drop at the same time the WACC dropped, too. Both time series moved in tandem.

However, as outlined in chapter 3.4.1, Midland's advances' share of total assets was quite stable after the acquisition of the cheaper London accounts and even increased by adding foreign credit. That rules the negative effect on the amount of advances out. An effect on bills is unlikely because the ratio of bills declined continuously without any correlation with the WACC. Neither advances nor any other of the asset components' returns displayed a downward trend that could have been caused by increasing risk aversion. The lower return of advances in London shifted the entire bank's average downward, while the same occurred to interest paid on current accounts.

The continuity of advances' returns is evidence that not only the amount but also the conditions of lending and selection of borrowers did not change. By acquiring the Central Bank in 1891, a bank with different setting and probably different customers was acquired and shifted Midland on the aggregate. It is likely that Midland continued to operate a different regime in London and did this in collusion with a large number of competitors (Aldrich, 1910, p.45). However, the detailed geographic variations on the continuous gap between London and Provincial interest inside Midland cannot be included in this paper.

Another asset that could have been related to the change in funding costs was cash. High published cash reserves might have reassured customers to accept low interest on their accounts. Midland's level of cash and WACC changed at the same time while the Union Bank of London's cash and WACC levels were roughly constant, but the Union Bank's cash ratios' fluctuations seem not to have been mirrored by the WACC, yet the small empirical basis and distortions of window dressing make this very difficult to disentangle.

## 3.6 Conclusion

In context of the English banking system, the Midland Bank was one of the more aggressive and "expansionary" banks. The provincial origin seems to have had a lasting impact that was also visible at Lloyds Bank. Midland followed the overall trends of assets and liabilities, but advances, the most important and most risky asset, was held on a quite high and stable level even after the expansion to London. Credit was even expanded in this period from the 1890s onwards. Therefore, the main critique of reduced lending can be refuted. Credit was not reduced over time, and the relocation of the head office to London had no negative impact. In this respect, Midland, and in a similar way, Lloyds Bank, pursued its asset structure from the period as a provincial bank to a time when it had a nation-wide branch network, managed from London-based head offices. The higher share of advances provides a contrast between "old" London banks and other London and Provincial Banks with stronger roots outside the Metropolis. The example of Midland counters the supposed uniform restrictive impact on lending by banks, under control of London-based head offices. On the other hand the "old" London banks show continuity in their credit ratios too. Both groups reveal a path-dependency from their respective origin. The only declining credit position was that of bills, as a result of their decline as a domestic credit instrument.

At the other end of the liquidity spectrum, Midland clearly emulated the habit of London banks and published cash ratios on a common high level with the National Provincial Bank and Union Bank of London and common to other London-based banks (Goodhart, 1972). While during the 1890s, the new high level was maintained only by aggressive window dressing at publication dates, after 1910,

these deviating effects were reduced. The cash reserves seem to have been the result of a mixture of business requirements and the wish for a favourable public image. Different from advances, cash and other very liquid assets exhibited the changing situation of the bank and closer proximity to London's financial markets. Liabilities followed the general trend of declining equity ratios and increasing deposits. In particular, current accounts rose and made liabilities more liquid and thereby reduced the risk buffer of equity.

Similar to assets and liabilities, some components of income and expenditure experienced a structural break after the expansion to London in 1891. The major income component, gross returns on advances, experienced a retreat. The same occurred to the average weighted costs of capital, due to nearly non-existent interest payments on current accounts in London. By expanding to London, Midland seems to have opened a new area with low interest rates that created the observed drop, but despite the retreat, the stability of rates supports the argument for predominantly continuity in lending. Therefore, Midland did not restrict lending in the amount or by demanding higher interest rates. While credit, one of the centrepieces of the debate, clearly provides evidence against increasing risk aversion, cash was adapted to the commonly held high ratio of all London-based banks.

While Midland and Lloyds proceeded with quite high ratios of credit, the "old" London banks followed a path of lower credit ratios. These two subcategories show that the development of nationwide operating banks did not lead to a uniform structure of assets and liabilities.

## 3.7 Appendix

**Appendix 3-1: Share of Assets 1881-1913. Midland Bank and aggregated data of the English Banking system from Baker and Collins.**

| | | 1881-1913 Midland | 1881-1913 Baker/ Collins | 1881-1890 Midland | 1881-1890 Baker/ Collins | 1891-1900 Midland | 1891-1900 Baker/ Collins | 1901-1913 Midland | 1901-1913 Baker/ Collins |
|---|---|---|---|---|---|---|---|---|---|
| Cash and near cash | mean | 21.565 | 22.697 | 14.219 | 20.55 | 22.089 | 21.75 | 26.813 | 25.077 |
| | sd | 5.828 | 2.273 | 2.884 | 0.826 | 3.314 | 1.209 | 1.274 | 1.23 |
| Invest-ments | mean | 13.131 | 18.576 | 11.676 | 17.2 | 16.667 | 21.1 | 11.53 | 17.692 |
| | sd | 3.248 | 2.334 | 2.456 | 2.142 | 2.466 | 0.968 | 1.963 | 1.594 |
| Bills | mean | 14.064 | 17.379 | 20.616 | 25.9 | 12.579 | 16.05 | 10.167 | 11.846 |
| | sd | 4.923 | 6.365 | 2.597 | 2.936 | 2.366 | 2.874 | 1.314 | 1.084 |
| Advances | mean | 50.146 | 42.485 | 48.261 | 38.45 | 48.481 | 42.6 | 53.347 | 45.5 |
| | sd | 3.505 | 3.626 | 2.062 | 2.259 | 2.507 | 2.873 | 2.39 | 1.241 |
| Equity | mean | 7.118 | | 10.429 | | 6.586 | | 4.98 | |
| | sd | 2.425 | | 0.61 | | 1.142 | | 0.522 | |
| Reserves | mean | 5.507 | | 7.096 | | 4.922 | | 4.735 | |
| | sd | 1.398 | | 0.474 | | 1.336 | | 0.802 | |
| Deposit accounts | mean | 36.841 | | 39.354 | | 37.465 | | 34.429 | |
| | sd | 2.948 | | 1.815 | | 2.63 | | 1.848 | |
| Current accounts | mean | 46.668 | | 38.659 | | 49.359 | | 50.758 | |
| | sd | 5.892 | | 2.506 | | 2.89 | | 2.152 | |
| Public liabilities | mean | 83.707 | 86.652 | 78.013 | 84.05 | 86.824 | 86.6 | 85.69 | 88.692 |
| | sd | 4.465 | 2.201 | 2.54 | 0.686 | 2.988 | 1.353 | 1.535 | 1.05 |

Source: Black Books, Collins and Baker, 2001, pp.189–191, 2003, pp.270–271.

**Appendix 3-2: Available assets in % of total assets, Midlland Bank 1881-1913.**

| | | 1881-1913 | 1881-1890 | 1891-1900 | 1901-1913 |
|---|---|---|---|---|---|
| Cash and near cash | mean | 21.565 | 14.219 | 22.089 | 26.813 |
| | sd | 5.828 | 2.884 | 3.314 | 1.274 |
| Cash | mean | 11.304 | 4.284 | 13.07 | 15.346 |
| | sd | 4.872 | 0.753 | 1.136 | 1.177 |
| Cash on Hand | mean | 5.192 | 3.022 | 4.825 | 5.598 |
| | sd | 1.914 | 0.578 | 1.76 | 1.11 |
| Cash at Bank of England | mean | 6.112 | 1.262 | 7.487 | 8.786 |
| | sd | 3.589 | 0.621 | 1.679 | 1.81 |
| Cheques in transit | mean | 0.554 | - | 0.758 | 0.823 |
| | sd | 0.459 | - | 0.471 | 0.16 |
| Metropolitan clearing | mean | 0.055 | - | - | 0.139 |
| | sd | 0.111 | - | - | 0.141 |
| Near cash | mean | 10.261 | 9.935 | 9.019 | 11.467 |
| | sd | 2.509 | 2.688 | 3.07 | 0.942 |
| Money at call and at short notice | mean | 6.931 | 4.849 | 6.447 | 8.903 |
| | sd | 2.78 | 2.368 | 3.086 | 0.942 |
| Clearing accounts | mean | 0.214 | 0.069 | 0.179 | 0.351 |
| | sd | 0.175 | 0.088 | 0.182 | 0.106 |
| Country and agents cheques | mean | 0.251 | - | 0.057 | 0.615 |
| | sd | 0.309 | - | 0.174 | 0.088 |
| Cash with agents | mean | 1.536 | 3.065 | 0.906 | 1.436 |
| | sd | 1.342 | 1.541 | 0.329 | 0.61 |
| Foreign exchange | mean | 0.591 | - | - | 0.591 |
| | sd | 0.599 | - | - | 0.599 |
| Investments | mean | 13.131 | 11.676 | 16.667 | 11.53 |
| | sd | 3.248 | 2.456 | 2.466 | 1.963 |

Source: Black Books

# 4. The Midland Bank as Metropolitan and Provincial Bank in Pre-WWI England

## 4.1 Introduction

The second industrial revolution brought new technologies and large enterprises to Europe and North America. While the United Kingdom was the leading country in the first industrial revolution, it lagged behind the United States of America (the U.S.) and Germany in the second industrial revolution of the late 19th and early 20th century. One explanation for the relative decline of Britain was the risk-aversion of the financial system, in particular the banking system. The English banking system during the pre-World War I (WWI) period provoked criticism owing to a supposed neglect of the domestic economy, in particular the industry. While many industrial areas were located outside London, the banking system was increasingly being controlled by banks managed from London-based head offices. The separation of commercial banking and investment banking in England was one aspect that was criticised as universal or mixed banks were expected to acquire more information and lead to better conditions for companies. The continuity to remain inside the traditional boundaries of commercial banking was interpreted as a result of an increasing conservatism. The lack of involvement with the industry by granting only short-term credit, and a strong emphasis on the role of liquidity and safety of assets were other aspects that added to the image of conservative management that avoided the risk to get involved with industrial companies. The distance between banks and the domestic economy was further underlined by the strong international role of Britain's financial centre, the City of London. The proximity to the financial markets appear to have made the finance of trade and investments in foreign government bonds more attractive in comparison to lending to the domestic economy (Elbaum and Lazonick, 1986, p.5; Best and Humphries, 1986, pp.223–224; Cassis, 1990; Capie and Collins, 1992, pp.38–43; Collins and Baker, 2001a, p.172; Collins, 1998, p.19; Kennedy, 1987, pp.120–125).

In contrast to the situation of the late-19th century, until the mid-19th century commercial banks were considered as largely supportive to the industry. The banking system was dominated by a large number of small banks with relatively few branches. Financial crises in 1866, 1878, and 1890 appear to have fostered concentration of the banking system and the relevance of liquidity to withstand cash withdrawals from the public (Collins and Hudson, 1979; Cottrell, 1979, pp.195–200).

The bankruptcy of the City of Glasgow Bank in 1878 was caused by lending to a small number of clients who went into financial difficulties. As a result of not diversifying lending, the City of Glasgow Bank finally went bankrupt. While the crisis emerged from a Scottish bank, the impact was observed in England and Wales, and led to an increase of cash reserves (Best and Humphries, 1986, p.228;

Baker and Collins, 2003, pp.91–94). The Bank of England acted as a lender of last resort only within restrictions as it was a privately held profit oriented bank. Therefore, English banks had to maintain sufficient liquid assets to cover the possible strains on reserves (Guinnane, 2002, pp.83–84).

The period was also characterised by a concentration in commercial banking. Until the third quarter of the 19th century, a large number of relatively small joint stock banks existed, and were managed from head offices in provinces. The concentration movement led to larger banks, managed from London-based head offices. Owing to their geographic spread, they were labelled as London and Provincial Bank. As a result, the formerly independent banks became part of the large concerns. This development continued until the early 1920s and led to an oligopoly of five large banks: Barclays, Lloyds, Midland, National Provincial, and Westminster (Capie and Rodrik-Bali, 1982; Capie, 1988, pp.74–79; Baker and Collins, 2003, pp.107–110).

Provincial banks operated with a close relationship to the local industry, while London-based banks' business models were more distanced and formalised (Jaffé, 1910, pp.58–59). Newton studied the examples of manufacturing industry and banks in Sheffield from 1850 to 1885. The network consisted of close connections of bank directors' holdings in local manufacturing companies' shares or interlocking directorships. However, the close connection created risks due to the dependency on a local group of customers (Newton, 1996).

As a result of the then existent concentration movement, the local bank-industry networks, based on personal relations, were disrupted. The new large banks introduced more centralised guidelines for credit applicants, which made local branches less flexible. To gather information, banks had to develop new approaches to acquire and process information on customers appropriate for the new large banks. Decision making became more centralised in the London head office, which was more distanced and less connected to regionally specific needs and demands of credit (Newton, 2000, pp.182–183; Best and Humphries, 1986, p.227; Holmes and Green, 1986, p.113; Collins and Hudson, 1979). However, on an aggregate, purely provincial banks held a larger share of assets in the form of credit in comparison to London-based banks (Baker and Collins, 2003, p.126; Cottrell, 1979, p.201).

After the takeovers of provincial banks by London banks, the new bank typically had a lower share of private sector credit and more liquidity than the previously independent provincial bank. Takeovers between provincial banks had the same impact, of higher liquidity and lower credit, but to a lesser degree. The move away from credit towards liquidity under the influence of the large London-based banks supports the critics' argument on bank lending (Keeton, 1996; Collins and Baker, 2001b, pp.16–19).

The current finance literature discusses the impact of bank size on lending, in particular to small borrowers. Generally, small banks lend on the basis of relationships between the bank and the borrower, and rely on soft information to provide credit. Large banks prefer formal information from

customers, and therefore have a comparative advantage in lending to large customers (Berger et al., 2005; Petersen and Rajan, 2002; Berger et al., 1998).

The strong international orientation of financial institutions centred in the City of London provides another perspective on the relation between banks and the domestic economy (Cassis, 1994, pp.139–141; Edelstein, 1982b, pp.47–49). The finance of international trade and large bond issues, particularly from governments and railways, were the services provided by merchant banks and foreign banks. Both the groups had strong international connections and dominated these fields of business. By the late 19th century, commercial banks began to compete in these fields of business. However, they continued to not participate in industrial underwriting (Cottrell, 1979, pp.239–242; Chapman, 1984).

The lack of engagement in supporting domestic corporations to issue securities at the London Stock Exchange further added to the impression of the emphasis on safe business and a neglect of the domestic economy by commercial banks.

English banks were traditionally subdivided by their location as provincial banks, operating only in provincial areas outside London, London banks with branches only in London, and the others were termed London and Provincial Bank. The last group included banks with operations in London and outside the metropolis. They became the dominant group, while in particular purely London banks nearly disappeared until WWI. *The Bankers Magazine* published the yearly balances of the three groups. In 1913, the total assets of Banks in England and Wales were reported as £1116.5m, of which £898.7m (80.5%) were held by London and Provincial banks, while provincial banks held £149.8m (13.4%) and London banks only held £67.9m (6.1%). The growing importance of London-based banks had an increasing impact on the entire English banking system (Collins and Baker, 2001b, p.19).

Jaffé distinguished two groups inside the London and Provincial Banks: one developed out of provincial banks, such as the Midland Bank (Midland), as well as Lloyds Bank and Williams Deacons Bank; and the other group emerged from purely London banks, such as the London and County Bank and the London Joint Stock Bank (Jaffé, 1910, pp.55–56). In particular, the second group had a high share of merchants and merchant bankers as members of the board of directors. On the other hand, Midland had merely a few 'City men' as directors, but a high share of industrialists and ship-owners (61%) from outside London, such as Lord Pirrie, chairman of the shipyard Harland & Wolff in Belfast and Dudley Docker, chairman of Metropolitan Carriage, Wagon & Finance Co. of Birmingham. Lloyds bank was similar (Cassis, 1985, pp.303–304). Furthermore, Midland held continuously the stable and high share of advances as maintained while it was a Provincial Bank. The expansion to London did not alter the major credit position towards the lower level of the "old" London banks, but even increased from the 1890s onwards (p. 59). The conventional use of the three main categories of English banks neglected the heterogeneity inside the major group.

If the nationwide banks indeed neglected provincial areas, such a bias should show in these areas through a reduction in credit. This paper will provide new evidence by analysing archive documents of Midland that display accounting information on credit and deposits on a divisional level. Midland underwent the concentration process as one of the most active banks, and emerged from a provincial bank to a London and Provincial Bank and finally as the largest of the country in 1913. Therefore, it experienced all major developments of the period, expansion as well as the relocation of the head office to London.

Officially called the 'Birmingham and Midland Bank', the bank was founded in 1836 in Birmingham. Until the 1880's, it expanded only in the Birmingham area. In 1851 and 1862, two branches were formed by the acquisition of two formerly independent banks. A series of takeovers followed in the 1880's, and finally expanded to London owing to the takeover of the Central Bank of London in 1890 and by gaining membership to the London Clearing House. This changed Midland from a provincial to a London and Provincial Bank and led to a new name, 'London and Midland Bank' (Holmes and Green, 1986, pp.84–85; Orbell and Turton, 2001, p.373).

Through further acquisitions, the branch-network expanded further throughout England and Wales. Subsequent to 1890, the head office was officially based in London. However, owing to the importance of Birmingham, the half yearly meeting of stockholders were held by alternating between Birmingham and London. The takeover of the City Bank in 1898 changed the balance towards London, and again the bank's name changed to 'London, City and Midland Bank'. In particular, the international connections of City Bank added new businesses to Midland and this strengthened its position in London. In 1902, a 'Foreign Banks Department' was created and in 1905, a 'Foreign Exchange Department' followed. Until the outbreak of WWI, the bank further expanded. Midland became the largest English bank in 1913 with assets of £108.58m (10% of the total joint stock of banks) and deposits of £93.83m (10.6%), based on data published by *The Economist* (May 23rd 1914, p. 1205). Therefore, Midland's share of the total banking system increased, in addition to the impact of its business (Orbell and Turton, 2001, p.374).

While Baker and Collins used bank-level data to compare pre- and post-merger asset-structures, it remains unknown how lending changed inside banks during expansion (Collins and Baker, 2001b, pp.15–19). Midland provides accounts on regional lending that uncovers variations of credit and deposit collection between London and provincial areas inside one bank. The supposed bias against provincial lending should then be reported by lower or declining credit outside of London (Collins and Baker, 2001b).

The remaining archive documents of Midland include weekly accounts for the divisions of the bank called 'sections'. The sections were an intermediate level of management created from the branches in a region or an acquired bank. Goodhart (1972) used a part of the sectional accounts of 1896–1898

to show large variations between sections, but did not approach the issue of a supposed neglect of provincial areas. As documents are available for 1893–1898 and 1907–1913, changing patterns can be uncovered over an extended period. The accounts make it possible to cover a period of 20 years. The period before the expansion to London in 1890 is not covered by the documents; as such, the possible changes of this structural break cannot be traced.

This paper is structured in the following manner: Subchapter 4.2 outlines the accounting positions and explains the used sources. Subchapter 4.3 first compares London and provincial areas and then takes a step further to the sectional level that makes sectional disparities visible. Subchapter 4.4 comprises of the econometric analysis that attempts to capture the driving forces behind the lending of Midland and to complete the discussion of Subchapter 4.3. Subchapter 4.5 concludes the paper.

## 4.2 Introduction to components and sources of assets and liabilities

| Liabilities | Assets |
|---|---|
| Capital | **Cash** |
| Reserves | Near cash |
| **Deposit account** | Investments |
| **Current account** | **Bills** |
| | **Advances** |

**Figure 4-1: Major components of assets and liabilities as ordered in the Black Books.**

Not all components of assets and liabilities are used in the analysis. Near cash and investments are excluded as they were heavily concentrated in London due to their dependence on financial markets. Therefore, they do not provide any information on a specific business in one of the sections. In a similar manner, capital and reserves were booked only at the head office.

The most liquid asset of a banks' balance sheet is cash. It was subdivided into the following subgroups: 'Cash on Hand' consisting of coins and banknotes held at the bank's offices and clearing accounts at the London Clearing House, as well as cheques and bullion. The London Clearing House was the central institution for the clearing of cheques and bills between banks. The second component called 'Cash at the Bank of England' consisted of accounts held at the Bank of England. The Bank of England Account was used for the final settlement of payments as part of the clearing process (Goodhart, 1972, pp.95–97, 113).

Bills have a dual function as instruments for credit and payments. As bills became less important as instruments to facilitate short-term commercial credit, this function was provided by loans and

overdrafts on current accounts. Payments were increasingly processed by cheques. Only in the early 20th century, they became important for the finance of international trade (Nishimura, 1971, p.10; Baker and Collins, 2003, p.77).

London banks held bills until due. Re-discounting would have been interpreted by the public as a sign of trouble for the bank. This made bills to be generally considered as an illiquid asset (King, 1936, pp.271–272; Baker and Collins, 2003, pp.67–68). On the other hand, provincial banks re-discounted bills with their London agents as a source of liquidity (Nishimura, 1971, pp.56–57). Due to the different approaches of handling bills, the funding liquidity of bills for provincial banks was larger than in the case of London banks.

Advances were the most illiquid and largest part of Midland's assets. The two main methods that advances were provided were overdrafts and loans on collateral. Overdrafts were arranged to a maximum amount and could be used by the customer as necessary. Loans on collateral were arranged for a fixed sum and a specified period. Overdrafts were more common in the provinces, while loans on collateral were common in London (Goodhart, 1972, p.153; Aldrich, 1910, p.78).

Another category of credit reported in internally used documents of the Midland is foreign credit accounts or merely foreign credit. Following the name, it is highly likely that these accounts reported a subcategory of advances to foreign customers. The spread of foreign companies throughout England very closely mirrors the spread of foreign credit (p. 60).

Equity and reserves represent the safest liabilities with a theoretically unlimited time to maturity. Equity was held in the form of shares by investors. Reserves were accumulated over time from profits as a buffer against losses. They were generally invested in safe securities (Baker and Collins, 2003, p.60). As they constituted a centrally booked position for the entire bank, they are not included in the analysis.

Current accounts and deposit accounts were the bulk of banks' liabilities. They were used by private and corporate customers to store cash, process payments, and as saving accounts. Current accounts were used for transactions by cheque, though only a very low rate of interest was paid on them. Deposit accounts were used for savings and provided a higher interest payment to customers (Goodhart, 1972, p.171). Cheques were originally used for larger transactions by a limited number of companies and private persons in part owing to minimum amounts, which were lowered over time down to 5 shillings in London and 1 shilling in provincial areas. Therefore, cheques were increasingly and widely used (Jaffé, 1910, pp.165–170). The common period of notice for the withdrawal from deposit accounts appears to have been approximately 7 days. However, it appears that the enforcement was not very strict (Aldrich, 1910, p.64; Goodhart, 1972, p.171; Jaffé, 1910, p.185). However, current accounts were used for immediate withdrawals by cheque. In terms of time to

maturity, this makes them the most risky liabilities. Midland's published accounts did not differentiate between the two types of accounts.[43]

Investments, cash, and near cash were reported only for the years 1893–1898 and not by the later accounts. Investments and near cash were excluded from the analysis as both were held highly centralised in London with some minor positions in other cities. A financial market that allowed trading in investments and the very close relation of near cash to financial markets limited the geographical spread of both the positions.

The major sources of information are 'summary abstract books' or 'weekly summary of abstracts' that provide information on assets and liabilities on a weekly basis for the intermediate management level of sections of the entire Midland. They report the number of accounts, and turnover on deposit and current accounts respectively, as well as payments of interest on advances. These documents cover the time from 26 August 1893 to 1 December 1898[44] and 14 November 1907 to 31 December 1913.[45]

Information on cash and near cash is reported only for the period in the 1890s based on sections, and for the entire Midland from 21 April 1910 onwards. These balances include information on cash on hand, cash at the Bank of England, cheques, bullion, transmission items, bill brokers loans, stock exchange loans, foreign exchange, and other transmission items.

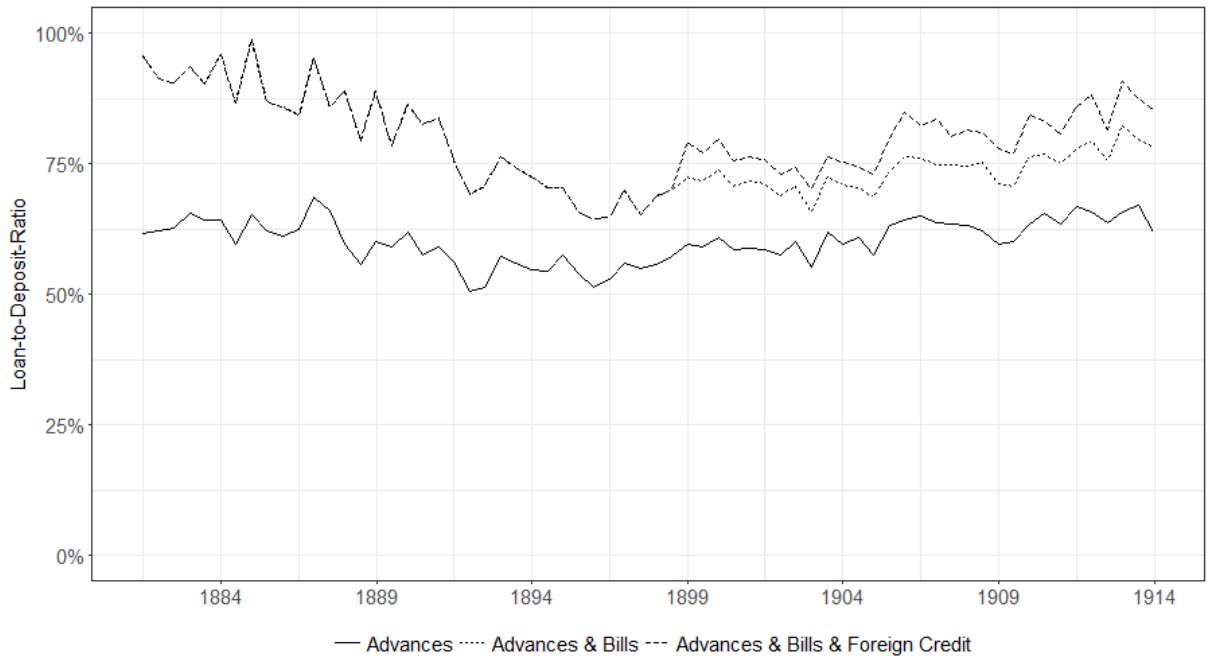
Another source is the so-called 'Black Books'.[46] They report balance sheets, and profit and loss accounts on a half-yearly basis. The accounts are reported for the entire bank and on a branch-level. The branches are partly grouped by sections, but not continuously grouped. Foreign credit was collected from the Black Books as weekly accounts did not include this position. The data on interest payments were also crosschecked with accounts from the Black Books to exclude internal payments.

## 4.3 Gap between London and the Province?

This section will provide an overview of regional differences in lending on the basis of sectional data reported weekly by the Midland Bank.[47] Previous research found higher ratios of credit at provincial banks in comparison to London banks. The argument of more restrictive lending by London banks is supported by this finding (Baker and Collins, 2003, p.126; Cottrell, 1979, p.201). As one bank, the Midland did not reduce lending over the late 19th and early 20th century. Advances were held on a stable level and even increased by the introduction of foreign credit. A special mention can be made in the case of bills, which lost ground over the previous decades until the 1890s, but remained the

[43] For example, the Union of London at all times reported.
[44] HSBC UK AA 0004: 1893–1896 and HSBC UK AA 0005: 1896–1898.
[45] HSBC UK 0535. The series continues after 1913.
[46] HSBC UK 0532.
[47] HSBC UK AA 0004, UK AA 0005, and UK 0535.

preferred form of credit in some areas. The Midland held bills' share of total asset on a very stable level after a continuous cutback was completed in the mid-1890's (p. 57). The decline is reflected in the decline of the ratio of advances and bills to total deposits in Figure 4-2. Furthermore, the ratio of advances to deposits declined in the late 1880's and early 1890's, but regained this loss by 1904–05.




Sources: Black Books.

**Figure 4-2: Loan to Deposit ratios of Midland Bank, 1881–1913.**

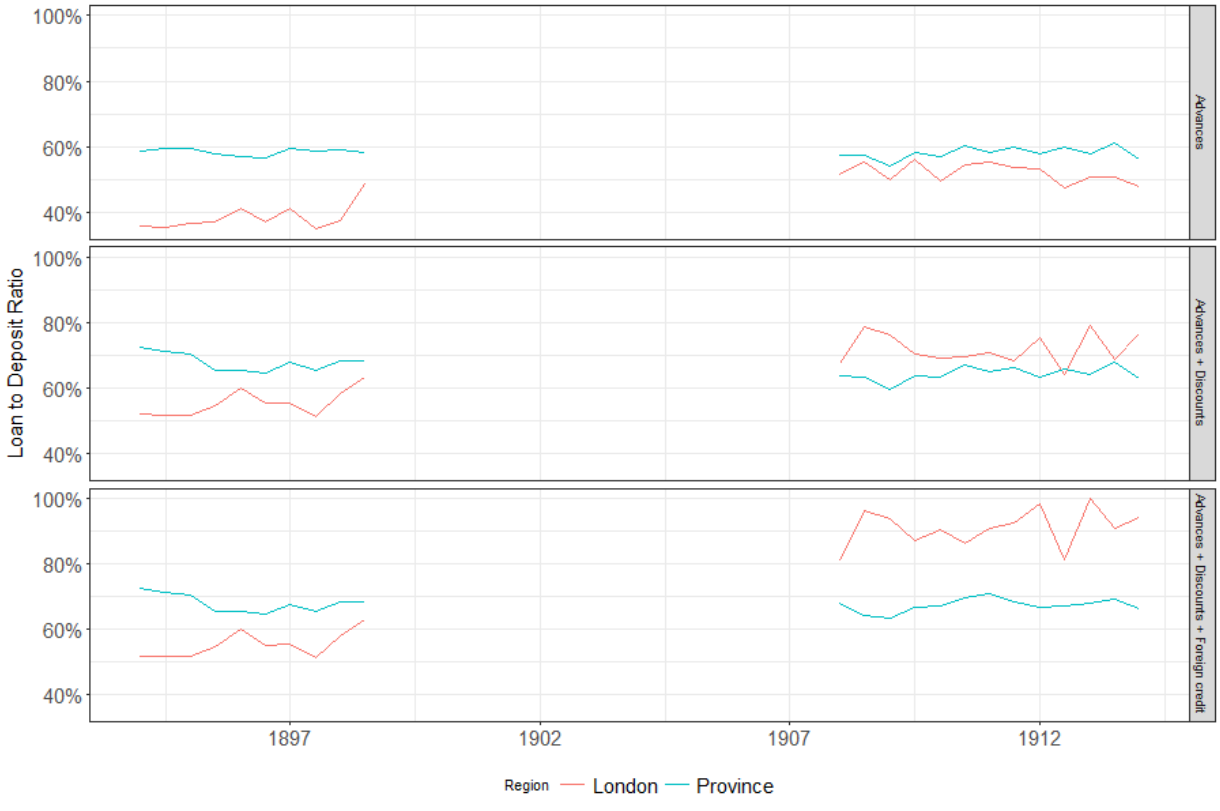
The introduction of foreign credit increased the loan to deposit ratio significantly from 1898 onwards. Some regions or industries may have continued to prefer bills over other types of credit. A uniform reduction of bills could then restrain the demand for credit in a similar manner as limitations on loans. Goodhart has shown that the Midland had large variations in lending through advances and bills in the years 1896–1898. However, he emphasised on the finding only as pooling of resources between areas with surplus deposits and surplus credit without considering the issue of a provincial neglect (Goodhart, 1972, pp.158–159). In addition, it continues to be unknown how the emerging nationwide banks lent on regional levels in comparison to independent banks. A lower ratio of loans to deposits in provincial areas could be a sign of a bias against these areas.

In the following paragraphs, at first the simple subdivision between London and provincial areas will be made to uncover the disparities between the two areas. An overview of the sections follows to show in particular the variations of provincial sections.

### 4.3.1 London-Province

Provincial areas held a larger share of Midland's business in comparison to London. Measured by the share of total deposits, London's share increased from 21.5% in December 1893 to 26.5% in December 1913; as such, the weight of business moved towards London.

The cash to deposit ratio offers one measure for the risk-aversion of a bank. A higher ratio makes deposits safer, but it can be a result of customers' transactions and other characteristics. To avoid the impact of the monthly pattern of window dressing on the cash ratios from each half-year, the 20$^{th}$ week is selected (Subchapter 3.4.3) The comparison shows a strikingly lower cash ratio in the provincial areas at 3.6% on an average, while London held 19.9% on an average during the second half of 1893 to the second half of 1898. The first half of 1897 and second half of 1898 reported cash ratios of 43% and 39.3%, respectively. These two ratios are very likely to be disturbed by window dressing. Subsequent to excluding these, the mean for London was 15.2%, which was significantly higher than those of provincial areas. Significantly higher cash ratio in London provides an extreme example for higher liquidity ratios held by London banks. A likely explanation is the central position of London in the clearing process with close proximity to the Bank of England, the London Clearing House, as well as the London Stock Exchange and a significant share of large customers. Furthermore, Midland probably pooled cash reserves for the entire concern at the head office in London, and thereby increased cash reserves above the immediately necessary rate.



Source: Weekly abstracts of accounts.

**Figure 4-3: Loan to Deposit ratios of sections aggregated to London and the provincial areas.**

Figure 4-3 contrasts the aggregated London area with the aggregated provincial sections for the two sub-periods. The loan to deposit ratio (LDR) provides a measure to capture credit against total deposits. As deposits were collected and reported in all sections as the major basis for funding, it is available for all the sections. The pooling effect of a bank that provides a single section with a buffer needs to be considered. From top to bottom the first image in Table 4-3 includes only advances in the LDR, the second includes advances and bills (also called discounts), and the third adds foreign credit. Considering this differentiation, disparities of the three types of credit are visible and will be used.

In all the three cases, an increase in LDR in London over time is clearly visible. The provincial sections remained rather stable, while only the bills declined (from 9.6% to 6.2%). As a new position, foreign credit became relevant only for the second subset. The first image in Table 4-3 reports a far lower LDR for London in comparison to the provincial sections. This is in line with a higher share of advances at provincial banks in comparison to London banks (Collins and Baker, 2001b, p.15). However, Midland appears to have maintained its 'provincial standards' in its London areas by increasing advances from 38.5% to 52% of the total deposits. The *Journal of the Institute of Bankers* described this in the following words: '*[…]* we London bankers, with old associations and traditions, have been invaded by a vast horde of country bankers' (1892: p. 345). The increase of advances in London underpins the observation that provincial banks changed the situation for London banks.

One explanation could be the higher limits on lending introduced by Midland. In the case of City Bank, standards were loosened by their integration into Midland after 1898 and this could explain a rise in LDR. The limit for loans to be handled by branch managers was £2000 at Midland, while it was above £500, and after the mid-1890's it was above £1000 at City Bank, which had to be approved by the head office (Holmes and Green, 1986, p.113). The last two published accounts of the independent City Bank reported a LDR including only advances of 63.6% (31 December 1897) and 63.4% (30 June 1898), but a ratio of 73.9% (31 December 1907) and 82.3% (30 June 1908) as a section of Midland. Even if the immediate impact of the acquisition is unknown, lending increased clearly afterwards. However, even when the advances increased, the provincial sections' LDR continued to be higher than that of London.

Besides the adjustment, Midland held a higher share of bills in London than in provincial areas. The higher rate of bills held by London banks is in line with the higher bill ratios at independent London banks (Collins and Baker, 2001b, p.11). The ratio of bills to total deposits increased in London as well from 16.8% to 19.9%.

The aggregate of advances and bills can be compared to values collected by Nishimura, who reported independent banks by regions. Purely London banks reported on average a ratio of advances plus bills to total deposits of 59.7% for 1893–98, while Midland's ratio was on average marginally lower at 55.4%. During 1907–13, the situation reversed with 62.2% at London banks and 71.8% at Midland (Nishimura, 1971, p.111). Lending increased from being close under the peer group's average to above the peer group.

The third graphic in Table 4-3 shows LDR, including foreign credit. As foreign credit became relevant only after 1898, the impact was nearly invisible previously. The enormous increase due to foreign credit is a result of the location and economic setting of London. The city's role as an international financial centre, and major transport and distribution centre made it attractive for foreign companies. Therefore, foreign credit had a ratio to total deposits of merely 3.1% in provincial areas, but 19.1% in London in the later sub-period. The published balances of Midland included foreign credit in advances. Therefore, it is more appropriate to include it for a better comparison with other banks. The LDR then increased to 90.9%, nearly 50% higher than the purely London banks' 62.2%. Provincial lending was neglected relatively owing to the catch up of London in advances. Overall, the development appears to be a result of 'provincials coming to town' as phrased by Cottrell (1992, p.46).

The London and provincial areas differed in respect of their composition of current and deposit accounts. The two types of accounts were only published as one aggregate. Only the Union Bank of London published current accounts as a single position. Midland's London and provincial areas differed in the share of current accounts. Although in the first sub-period the ratio was 3.67 in London and only 1.03 in provincial areas, the composition converged somewhat to 2.04 in London and 1.28 in provincial areas. The large share of current accounts could be a result of the high income environment of London. Londoners had higher wage income of 133% in 1891, 136% in 1901, and 137% in 1911 of the British average. Non-wage income was even higher at 176% in 1891, 173% in 1901, and 193% of the British average in 1911 (Crafts, 2005, p.60).

Interest rates were reported by the accounts, and offer further insight into the return and cost structures of the sections. The mean of interest paid on current account was constantly lower in London (1893–98: 0.048%, 1907–13: 0.297%) in comparison to the provincial sections (1893–98: 0.863%, 1907–13: 0.879%). Deposit accounts' interest payments were in a similar manner lower in London (1893–98: 0.669%, 1907–13: 1.08%) in comparison to the provincial areas, but converged over time (1893–98: 1.08%, 1907–1913: 1.271%). The extremely low interest rate paid on current accounts in London is a result of the habit of not paying interest on these accounts. From 1870s, London Banks developed this collusive process (Aldrich, 1910, pp.44, 74; Cottrell, 1979, p.200). Jaffé explained that interest was paid on current accounts above a fixed amount, which had to be held at

the bank. This could explain the very low rates in London, while provincial arrangements differed even inside banks (Aldrich, 1910, p.45; Jaffé, 1910, pp.186–188).

Advances reported returns in a similar manner with higher returns in provincial areas (1897–98: 2.68%, 1907–13: 2.303%) and lower values in London (1897–98: 1.776%, 1907–13: 1.963), and display some convergence. The data of December 1893 to June 1897 do not coincide with the data of the Black Books after they are summed up for the entire bank. Therefore, these data are excluded. The later years as well as interest payments on current and deposit accounts are identical to the Black Book's accounts as a sum of the entire bank.

Midland as an entire bank experienced a drop in return on advances and interest on current accounts after its expansion to London. Subsequently, both rates remained on rather stable levels, with marginally declining returns on advances and a small increase in current account's interest payments. The variation of the advance's share of assets of an entire bank operating under higher or lower interest rate conditions may result in different LDRs (p. 73).

Current accounts were on average larger in London (1893–98: 270.8, 1907–13: 280.8) in comparison to the provincial areas (1893–98: 192.6, 1907–13: 186.0), which could possibly be a result of large corporations and wealthy private customers in London. The difference is even more striking for deposit accounts (London 1893–98: 784.4, 1907–13: 707.4; Provincial areas: 1893–98: 293.6, 1907–13: 198.9). The documents only report the number of accounts which makes it impossible to measure any distribution of size or type of customer. Larger accounts in the 1890s could be a result of a low interest environment that lowered opportunity costs for money stored in deposit accounts. London's continuously extreme low interest rates for current accounts may have made the argument for foregone interest irrelevant. The large accounts in London in comparison to provincial areas were very likely a result of larger and wealthier customers, both private and corporate.

The turnover of current accounts, the major method for bank-payments, show a similar pattern due to the same reason: large turnover in London (1893–98: 13.5, 1908–13: 27.6) and a comparatively low turnover in provincial areas (1893–98: 8.4, 1908–13: 8.6). The turnover is calculated as the ratio between the pay-out to the amount held in current accounts. The high ratio of current accounts in London could be a result of the above mentioned customers. In addition to corporate customers who used current accounts for payments, it can be assumed that high income individuals used cheques more so as instruments for payments, and therefore owned current accounts.

The separation of London and provincial areas reveals some differences between both the areas. The argument of restrictive lending in provincial areas cannot be confirmed. Provincial lending was rather stable from the 1890s to 1910s. London increased advances in what appears to be more like a catch up process from a low level that facilitated the use of advances for lending. More than bills, foreign credit had a larger share in London due to its particular role as an international financial centre.

On both sides of the balance sheet, interest rates were in general higher in provincial areas. Most striking is the case of interest paid on current accounts in London as the rates were permanently on an extremely low level and distinctly lower in comparison to provincial areas. The interest rates provide a counterexample for the standardisation of procedures. Despite the integration, London and the provinces paid interest on current accounts under different arrangements.

However, factors other than the simple dichotomy are excluded. The aggregated provincial data cover sections that are heterogeneous. While Liverpool and Manchester were urban areas with industrial, commercial, and financial centres, other regions were more rural. On the other hand, London was entirely urban.

### 4.3.2 Sections

The sectional breakdown offers more precise accounts of the regional variations. Table 4-1 reports annual turnover, average size, and the LDRs (column 7 only advances, column 8 includes bills, and column 9 includes foreign credit as well) of a sample of sections, as well as Midland and Dresdner Bank in total. Dresdner Bank was included to consider the figures of Midland in some context. Dresdner Bank was one of the largest German banks of the period. Founded in Dresden in 1872, a branch in Berlin, Germany's financial centre, was opened in 1881, which became a major place for the bank's business (Riesser, 1912, p.368). A similarity to Midland is Dresdner Bank's foundation outside Berlin, Germany's financial centre, and a later relocation of the head office to Berlin.

Dresdner Bank shows a high and stable turnover in the specific time period. Current accounts were significantly larger, but their size declined. The different customer structure of German banks that focused on large corporate customers appears to explain the higher transaction volume and far larger current accounts (Tilly, 1986, pp.134, 150; Riesser, 1912, pp.204–206). Midland's far smaller accounts, on average, reflect the importance of retail banking of the English commercial banks. Larger branch networks made it a lot easier to collect small accounts throughout the country (branches of Dresdner Bank in 1910: 103 (Salings Börsenjahrbuch), Midland: 689 (The Economist)).

**Table 4-1: Deposit and credit characteristics of Midland Bank and Dresdner Bank, annual values.**

| | | | | | | Loan to deposit ratio | | |
|---|---|---|---|---|---|---|---|---|
| **Period** | **Section** | **Current account turnover** | **Deposit account turnover** | **Current account size in £** | **Deposit account size in £** | **Advances** | **Advances + Bills** | **Advances + Bills + Foreign credit** |
| 1908–1913 | City Bank | 69.309 | 2.775 | 410.665 | 936.02 | 0.502 | 0.833 | 1.142 |
| 1908–1913 | Liverpool | 29.811 | 1.623 | 319.1 | 170.897 | 0.68 | 0.896 | 1.46 |
| 1894–1897 | Carlisle | 9.132 | 1.275 | 144.007 | 146.136 | 0.872 | 0.913 | 0.913 |
| 1908–1913 | Carlisle | 11.536 | 0.786 | 134.585 | 144.404 | 0.426 | 0.437 | 0.439 |
| 1894–1897 | Manchester | 27.971 | 1.814 | 188.245 | 285.035 | 0.88 | 1.01 | 1.01 |
| 1908–1913 | Manchester | 22.63 | 1.049 | 240.348 | 227.441 | 0.736 | 0.885 | 0.907 |
| 1894–1897 | Midland | 16.12 | 0.754 | 213.843 | 358.32 | 0.499 | 0.598 | 0.598 |
| 1908–1913 | Midland | 19.303 | 0.834 | 168.254 | 304.486 | 0.513 | 0.566 | 0.571 |
| 1894–1897 | Midland Bank | 18.215 | 0.992 | 212.59 | 307.427 | 0.551 | 0.658 | 0.658 |
| 1908–1913 | Midland Bank | 27.75 | 1.2 | 209.718 | 228.367 | 0.553 | 0.662 | 0.745 |
| 1894–1897 | Dresdner Bank | 49.444 | 5.097 | 1.475.886 | 164.493 | 0.981 | 1.449 | 1.449 |
| 1908–1913 | Dresdner Bank | 50.965 | 5.83 | 964.101 | 146.165 | 0.432 | 0.913 | 0.913 |

Sources: Weekly accounts, annual reports of Dresdner Bank.

A further remarkable result is the steep decline in Dresdner Bank's LDR, while Midland's increased. Bills made up a very large share in Dresdner Bank in comparison to Midland, but there was no change in the downward trend. One explanation is an increase of deposits at Dresdner Bank that changed the numerator of the ratio. Midland's focus on retail banking appeared to be a possible explanation for the non-development of universal banking as criticised by Kennedy (1987, pp.122–125).

In addition to the overall trends, there were large variations between Midland's sections. The City Bank section mirrors the business structure of the City of London and shows some similarities with the other metropolitan sections, Liverpool and Manchester. All the three reported above average turnover and accounts' size, and a higher LDR. City Bank and Liverpool particularly reported high turnover and large current accounts.

The large variations in current accounts ratio to deposit accounts can be found in the sectional data. The urban sections of London reported high ratios of current accounts (London section 1893–98: 3.67, 1907–13: 2.05; City Bank section 1907–13: 2.05). Manchester (1893–1898: 1.78, 1907–1913: 2.99) and Liverpool (1907–13: 2.14) reported high values, while the Midland-section reported ratios on significantly lower levels for both the sub-periods (1893–98: 0.85, 1907–13: 0.78). The purely

urban areas appeared to follow the pattern of London with a high share of current accounts due to wealthier customers, and a higher density of private and corporate customers in these areas.

The turnover on current accounts grew in general. The increased use of payments by bank accounts appropriately explains this observation. While in the 1890s the values were close to 20 for the entire bank, they rose to a level close to 30 between 1908 and 1913. Current accounts also reveal a concentration of the transaction volume in London. While in 1898 the share of turnover processed by the entire Midland in London was less than 27%, it grew to 59% in 1910.[48] A large share of the increase can be attributed to City Bank's business integrated after the takeover in 1898. The turnover on current accounts at the City Bank section by far exceeded all the other sections. Carlisle's more rural area in north western England reported the lowest turnover. A surprising result was the decline in turnover in Manchester that contradicts the overall trend. The turnover was even lower than the whole Midland. Additionally, deposit accounts' turnover also declined.

The accounts' size appears to follow a similar pattern with larger accounts in urban sections (City Bank, Liverpool, and Manchester reported mixed results) and smaller accounts elsewhere. In particular, deposit accounts were larger in London and other urban sections. Manchester presented a particular set of increasing current accounts' size and declining deposits size. Deposit accounts' size declined similar to the entire bank, but current accounts increased by a third. However, the urban-rural pattern does not hold for the entire bank. Yorkshire, a section including rural and urban areas, reported large deposit accounts (1893–98: 546, 1908–13: 360) and above average current accounts (1893–98: 203, 1908–13: 259).

The larger accounts of the City Bank section reveal the growing importance of large customers. Midland acquired large accounts in London[49] from the mid-1890s owing to a larger set of services the bank provided on a national and international level. The weekly accounts report some of these customers by section and branch, including Harland and Wolf (shipyard, Belfast), International Harvester (farm machinery, Chicago)[50], and Mexican Eagle Oil (oil, Mexico)[51] (Holmes and Green, 1986, pp.115–116). Another growing group of customers were international banks seeking access to banking services in London. Some were domestic, but the majority were foreign banks.[52] These correspondent bank relationships generally included a combination of a minimum deposit and a maximum overdraft granted by a London bank (Michie and Mollan, 2012, p.26).

[48] Calculation based on the share of London section and City Bank section current accounts' payout as a share of total bank's current accounts' payout. This includes the London section and City Bank section as they overlap geographically.

[49] Collins (1991, p.38) provides a sketch of the positive effects that a larger bank's services has on customers.

[50] http://www.navistar.com/navistar/whoweare/heritage#1950

[51] https://www.bloomberg.com/research/stocks/private/snapshot.asp?privcapid=41864096

[52] Examples March/April 1912 Midland's summary of abstract books, UK0535: First National Bank Chicago (Chicago), Commerz und Disconto Bank (Berlin), Banque Continantale de Paris (Paris), Banque Francaise et Italienne pour l'Amérique du Sud (Rio de Janeiro), and Bank of Toronto (Toronto).

The LDR reflected large variations in lending between sections and by the type of credit. Liverpool and Manchester reported a high LDR in comparison to the total Midland, based on advances. Manchester reported a moderate decline of all three categories of LDR. The City Bank section maintained a particular pattern of high ratio of bills and relatively low advances. The very high bill ratio of approximately 30% of total deposits for 1908–1913 (entire Midland c. 10%) arises from the growing importance of bills as financial instruments in international trade, and the prominent role that London had in this market. Carlisle is the only section which experienced a breakdown in credit. The total Midland held a rather constant LDR, defined by advances and bills. In contrast to the discussion on bias against provincial credit, the Liverpool section reported far higher LDR's than both the London-based sections. The Manchester section reported declining but very high ratios, based only on advances, while bills did not lose ground in this area.

As the original core area of Midland, the Midland section followed the overall trends by moderately increasing turnover. However, accounts' size declined remarkably from the 1890s to the years around 1910. The LDRs remained nearly stable, but on a sub-average level. If we consult older balance sheets, Midland held a ratio of advances to total deposits in 1885 at 60.1% and after including bills, this was 70.7% (Black Books). Both values were lower in the later periods.

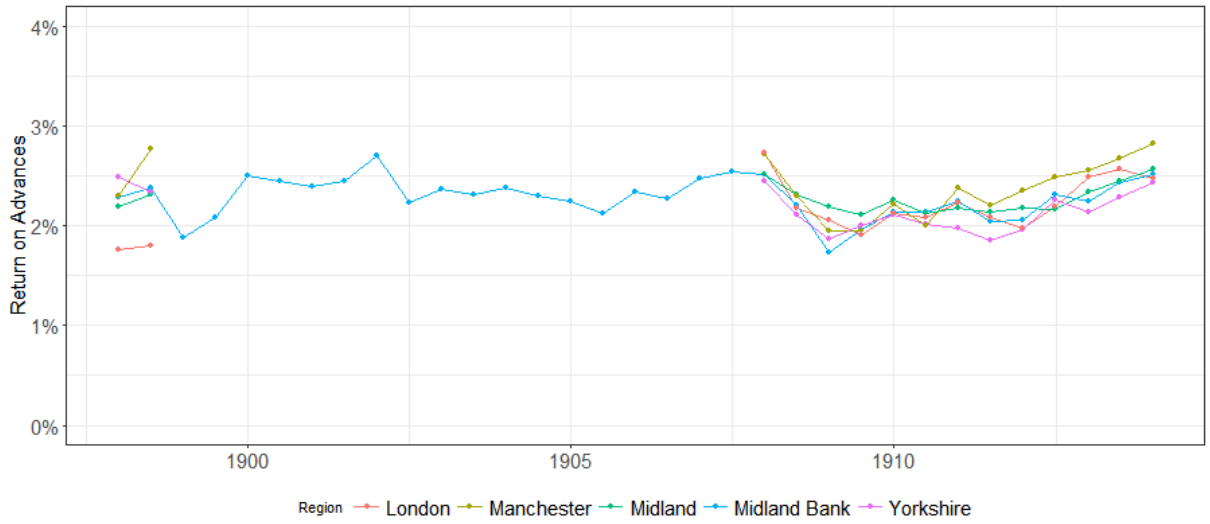
While the overall bills lost ground, the process was not uniform. In Birmingham, the bill was no more attractive but in the 'textile cities' it continued to be in use (Sayers, 1976, pp.21–22). Liverpool and Manchester belong to this group. Both held bills far above the average at 21% and 15% of total deposits in 1908–13, respectively (Nishimura, 1971, pp.110–111). The higher ratio of bills is a sign that Midland continued to supply these areas with this type of credit instrument. The City Bank section provides a different example for a very high ratio of bills to deposits. Both these cases counter the argument of restrictive centralised lending rules.

The last column of Table 4-1 includes foreign credit. The late appearance and high concentration makes them rather particular for some sections. A high concentration on the City Bank- and Liverpool-sections becomes visible. Both cities hosted financial and commercial service sectors of international importance, and were attractive for foreign corporations. In December 1913, approximately 80% of foreign credit was reported in these two sections, while the sample provided by Scott (1998, p.491) for 1900–09 reported 57.14% of multinationals in Britain based in London, and 15.71% based in North Western England. The distribution of multinationals mirrors the distribution of foreign credit. One reason appears to have been the attractiveness of London as a centre for transportation and distribution. Furthermore, customers and British corporate head offices pooled in London (Scott, 1998, p.496). The distribution of foreign credit was therefore the result of customers' distribution.

An outlier of the sections is Oldham with a maximum LDR of 200% in 1911, and similar high values in 1910 and 1912. The steep rise of LDR shows the extent to which Midland reacted to a regional demand for finance. In the decade before WWI, cotton, which was strong in England's North West, experienced a boom that could explain investment and credit expansion in this area (Lazonick, 1986, p.18). Capie and Collins (1996, p.40) provided an example for loan refusals to cotton spinners owing to the danger of over-commitment to the expanding sector in 1910–14. Oldham was part of Lancashire, and therefore part of the 'cotton districts'. The extremely high LDR during 1910–14 places the refusals in a very different light. The refusals appear significantly similar to placing a check on the already very high lending as a reaction of a sharp increase in credit.

Nishimura's data on the LDR in the 'cotton districts' show an average of 69.9% for 1907–1913 (1971, p.111). The respective sections of Midland in the 'cotton districts' are Liverpool (89.6%), Manchester (88.5%), Oldham (100.4%), and Preston (57.9%). With the exemption of Preston, the others are all clearly above the level of independent banks, as reported by Nishimura. Another example provides the Sheffield-section, which was until acquisition in 1901 the independent Sheffield Union Bank. Between 1907 and 1913, the average LDR was 64.4% (min: 58.8%, max: 67.1%), while the independent Sheffield Banking Company had an LDR of 62.7% (min: 58.4%, max: 65.8%) in the same period (after including bills, the values were 69.3% (min: 63.4%, max: 75.9%) and 71.5% (min: 69.6%, max: 74.3%), respectively). The lending of Midland and the independent bank were very similar. These data show that Midland lent on a similar or even higher level in comparison to independent banks and provides evidence against the argument of a systematic restraint on lending by the more standardised procedures of large banks in comparison to smaller, independent banks.

The return on advances and interest payments on current accounts experienced a structural break after expanding to London in 1891. By acquiring the Central Bank of London, Midland entered an area with lower interest rates (p. 73). Advance returns show some variation between the sections with the lowest return reported by London, while provincial sections altogether generated higher returns. However, after 1907, the values converged and the pattern dissolves Figure 4-4.




Sources: Weekly summary abstracts, Black Books.

**Figure 4-4: Return on advances, original sections (Midland, London, Manchester, and Yorkshire) and entire Midland Bank, June 1897–Dec 1913.**

In a striking contrast to advances' returns, interest paid on current accounts in London remained on an extremely low level over the entire period (Figure 4-5). The London section's interest rate appears to increase after 1908, but remains on a far lower level than the provincial section's rates. These are on a similar level on all reported dates. Interest rates paid on deposit accounts were more uniform. The London section continued to report the lowest values of all sections in the 1890s with an average of 0.74%, but the variation was significantly smaller and converged over this sub-period and increased to 1.2% on an average during 1907–1913.


Sources: Weekly summary abstracts, Black Books.

**Figure 4-5: Interest on current account, original sections (Midland, London, Manchester, and Yorkshire) and entire Midland Bank, June 1897–Dec 1913.**

The sections reveal heterogeneity that reflects the different economic settings. In some respect, the London area reports outstanding values. By far the largest accounts and the highest turnover reported by the City Bank section show London's central position in the economy and the banking system. A special case was made by foreign credit that was highly concentrated in sections in London and Liverpool. However, the distribution is not a result of a privileged treatment of London or a bias against provincial areas, but was mirrored by other urban sections.

The LDR of the Liverpool section surpassed London by all the three measures and Manchester only lacked in foreign credit. Both the cities provided counterexamples for the supposed bias against lending in provincial areas. High turnover in all the three cities is another commonality that is a likely result of the urban surrounding. The purely urban sections[53] report higher lending on an average in comparison to other sections (Appendix 4-1). This coincides with high turnover on current accounts and a large share of current accounts. The north-western sections' LDR provide an example that Midland more freely lent in provincial areas in comparison to independent banks. The simple comparison by LDR contradicts the supposed reduction of lending, after integration into a larger bank with standardised procedures. The advances ratio shows some degree of convergence that could be viewed as standardisation. London's ratio increased while Liverpool's declined, but other areas show extreme values and reveal flexibility in lending ratios. Certainly, other provincial areas must have lent less than the average, but the example provides clarity that there was no bias that led to a systematic reduction of lending.

A very interesting result is the permanently and significantly lower interest rate for advances and current accounts in London in comparison to the provinces. Interest paid on deposit accounts followed a similar but a far lesser distinct pattern. Low costs of funding could have curbed lending as the incentive to hold high return generating assets was lower. The return on advances may be related to costs of funding in a similar manner. A low rate of return could be a sign of more restrictive lending only for safe customers. However, it could be a result of other factors. Banks appear to have got safer, more liquid collateral in London (Aldrich, 1910, p.75; Jaffé, 1910, p.60). The presence of better collateral could have lowered the risk for lenders, and thus the interest rate on advances.

## 4.4 Econometric analysis of sectional lending

After this overview, a regression analysis was run on the sectional data to investigate the impact of liability-side factors on credit allocation and cash reserves held by Midland. The following fixed-effects models are estimated:

[53] These sections are London, City Bank, Liverpool, Manchester, New London, and Sheffield.

$$(1)\mathrm{CDR}_{t,s,p} = \alpha + \beta_1 Current\ Account\ to\ Deposit\ Account_{s,t,p} + \beta_2 Current\ Account\ turnover_{s,t,p} + \beta_3 Current\ Account\ size_{s,t,p} + \beta_4 Deposit\ Account\ turnover_{s,t,p} + \beta_5 Deposit\ Account\ size_{s,t,p} + S_{s,p} + T_{t,p} + \epsilon_{t,s,p}$$

$$(2)LDR_{s,t,p} = \alpha + \beta_1 Current\ Account\ to\ Deposit\ Account_{s,t,p} + \beta_2 Current\ Account\ turnover_{s,t,p} + \beta_3 Current\ Account\ size_{s,t,p} + \beta_4 Deposit\ Account\ turnover_{s,t,p} + \beta_4 Deposit\ Account\ size_{s,t,p} + \beta_5 Interest\ on\ Advances_{s,t,p} + \beta_6 Interest\ on\ Deposit\ Accounts + \beta_7 Interest\ on\ Current\ Accounts_{s,t,p} + S_{s,p} + T_{t,p} + \epsilon_{t,s,p}$$

Here, $\mathrm{S_{s,p}}$ is the section-fixed effect that captures unobserved factors, such as different customs and regional economic structure. $\mathrm{T_{t,p}}$ is the time-fixed effect, which includes factors that affect all sections identically, such as the equity ratio that has for logical reasons the same value for the entire bank.

The cash to deposit ratio (CDR) provides a measure for the banks' risk-aversion. A higher CDR implies larger reserves against withdrawals from customers, and therefore a safer bank overall. The downside of cash is that it creates no income.

The analysis is based on values of each half-year's 20th week to circumvent the impact of window dressing. By window dressing, banks created higher cash reserves than otherwise held by running down loans with short maturities. Adopting this procedure, the published accounts created a more favourable image of the bank. Goodhart (1972, p.99) used the same accounts for 1896–1898 for a similar purpose, but used the 21st week's data. The reason to use the 20th week is that the 21st does not fully avoid the impact of monthly window dressing, and thereby includes the rise of late May or June. Midland operated window dressing not merely for half-yearly published balances, but also for monthly publications (Subchapter 3.4.3). The weekly accounts provide sectional data for cash only for the period 1893–1898, but not for 1907–1913. A further downside of using the 20th week instead of half-yearly values is that interest payments were made only at the end of the half-year (Jaffé, 1910, p.187). Therefore, the CDR regression will be run without the interest variables.

### 4.4.1 Section-specific variables

The LDR is measured in three variations (advances, advances and discounts, advances plus discounts plus foreign credit) to total deposits, including deposit and current accounts. Considering these variations, different effects related to the different types of credit should become visible. Advances and discounts were the general types of credit that made it possible to compare LDR over time. Foreign credit appeared only in the later data set and was heavily concentrated in London and Liverpool.

Equity and reserves are not included as components of liabilities as they were booked as central components of the balance. However, deposits provide a good proxy for funding. Loans show the lending in each section and the resource allocation made by the bank. More lending in one section creates a higher LDR.

As window dressing did not affect credit positions and foreign credit accounts are only available for the end of each half-year from the Black Books, the LDR-regressions are calculated on the half-yearly data.

The different characteristics of current and deposit accounts may have impacted cash and lending as well. Current accounts were more liquid and risky, and probably demanded higher cash reserves in comparison to deposit accounts. Based on this argument, credit should be affected negatively by a higher ratio of current to deposit accounts. A positive impact on risk-taking by a higher equity ratio follows the same logic. Such a positive relation was found in English banks. The impact due to different maturities of current and deposit accounts was smaller than the difference to equity, but the economic logic points to the same direction (Subchapter 2.6).

From another perspective, there could have been a positive relationship between LDR (particularly advances) and current accounts. Advances were paid out on current accounts. The combination creates a link between advances and current accounts. More generally, current accounts could lead to more information gathering by the bank, which was necessary to decide on credit. According to these arguments, a larger share of current accounts could have a positive effect on LDR. In case of the CDR, higher liquidity of current accounts should create a positive effect.

The turnover of accounts is calculated by the ratio of the amount paid to the balance. Information gathering on customers as the basis for credit provision is the most basic operation of banks that monitored borrowers who cannot use financial markets for funding and instead borrow from banks (Diamond, 1991, 1984). A larger turnover should create more information on customers. This should create a positive relationship between turnover and LDR. Based on this concept of information creation, the cash ratio should be negatively affected as the need to maintain a surplus reserve would be reduced by more information. Furthermore, banks may attempt to retain customers with high turnovers by granting advances as a larger turnover leads to more commission income.

A large turnover could make a larger cash reserve necessary. The high cash ratio held in London could be a result of the transaction volume. However, the simple turnover may not fully capture this effect of unexpected transactions.

The average size of accounts was calculated by the number and amount per section. As no information on the type of customers exists, the average size provides only a basis for reasonable assumptions. Larger accounts should be a sign of wealthier customers and more corporate customers in a section. A withdrawal would make larger cash reserves necessary.

Larger accounts lead to lower costs of information gathering as deposits are spread over a smaller number of accounts. This effect should lead to a positive impact on LDR. In case of cash reserves, the effect should be negative owing to lower costs of information on customers. On the other hand, a larger account could be riskier in case of a withdrawal as more liquidity is required to cover it. Customers with large accounts could react more sensitively to crisis events. They may be better informed than other customers and would have a negative impact on credit and a positive impact on cash (The Bankers Magazine, 1876 p. 714).

Another perspective arises if the size of accounts, in particular current accounts, is used as a proxy for corporate customer's size. A corporation's size affects its decision to finance a project by a bank loan or in other ways. Large corporations have lower costs of external funding through markets as they are better known and create the necessary information for investors. Therefore, external funding will be used only if internal funds are not sufficient. Due to asymmetric information and the better capabilities of banks, monitoring and screening of smaller firms should clearly prefer bank debt, while larger firms face lower costs of financing through markets (Denis and Mihov, 2003, p.6; Myers, 1984, p.581). Considering this argument, larger accounts are negatively related to the LDR.

Interest paid on current and deposit accounts should provide information on funding costs that Midland faced. From 1870s, London banks paid no interest on current accounts in contrast to the provincial banks. However, the interest rate setting by London banks was a collusive process that might have overridden the link by market power of the colluding banks. The rate setting led to some uniformity in London (Aldrich, 1910, pp.44, 74; Cottrell, 1979, p.200; Jaffé, 1910, p.186). Different customs in interest payments should be reflected in interest rates. In addition to the particular characteristics, the banks' overall risk may influence the interest payments positively. Smaller or riskier banks may face higher costs of funding (Collins and Baker, 2001b, p.2). Furthermore, there could be a connection between assets and interest payments. Advances are more risky and generate a higher rate of income than securities or brokers' loans. As a result, customers could demand higher compensation for depositing their money with a bank that holds a larger share of advances. The relationship between interest payments on liabilities runs along similar lines as the influence of the structure of liabilities.

The return on advances, calculated by the ratio of interest received from advances to the amount, measures the profitability of advances. The rate depends on the riskiness of customers as well as the local credit market conditions. A positive relation could be expected from higher attractiveness of credit as a bank's asset. On the other hand, there is a limit to credit supply due to credit rationing. A negative relationship could be expected from competition in the credit market. More intense competition leads to lower interest rates. A less competitive credit market enables banks to set higher interest rates for credit and to lend more selectively. The comparison of London's low

advances' return and low advances' ratio in comparison to the higher rate of returns and advances in the province provides such an example.

Table 4-2 provides the descriptive statistics for the 20th week of each half-year. As cash was reported by section only between 1893 and 1898, the set is limited to these years. Table 4-3 reports the descriptive statistics of half-yearly data. They provide the basis for the loan to deposit regression that includes 1907–1913 as well. The two time periods are reported separately in column 3 and 4.

**Table 4-2: Sectional data for the 20th week 1893–1898.**

| Variable | Mean | SD |
|---|---|---|
| Cash to total deposits | 0.051 | 0.026 |
| Current account turnover | 8.509 | 5.497 |
| Deposit account turnover | 0.451 | 0.226 |
| Average size current account | 205.795 | 93.736 |
| Average size deposit account | 305.678 | 219.567 |
| Current account to deposit account | 1.568 | 0.821 |
| Advances + Discounts to total deposits | 0.727 | 0.224 |

Sources: Weekly summary abstracts.

**Table 4-3: Half-yearly sectional data for 1893–1898 and 1907–1913.**

| | | 1893–1898 | 1907–1913 |
|---|---|---|---|
| Loan to deposit (Advances + Discount + Foreign credit) | mean | 0.692 | 0.7547 |
| | sd | 0.2501 | 0.2715 |
| Loan to Deposit (Advances + Discount) | mean | 0.692 | 0.7008 |
| | sd | 0.2501 | 0.2028 |
| Loan to deposit (Advances) | mean | 0.5951 | 0.6187 |
| | sd | 0.2243 | 0.1817 |
| Current to deposit account | mean | 1.494 | 1.7151 |
| | sd | 0.9971 | 0.7894 |
| Current account turnover | mean | 9.4676 | 11.2541 |
| | sd | 44.291 | 7.12 |
| Current account avg size | mean | 192.7696 | 223.5656 |
| | sd | 84.1166 | 108.4587 |
| Deposit account turnover | mean | 0.6059 | 0.564 |
| | sd | 0.2789 | 0.2956 |
| Deposit account avg size | mean | 352.9405 | 287.4238 |
| | sd | 226.245 | 231.558 |
| Advances return | mean | 0.0229 | 0.0231 |
| | sd | 0.0034 | 0.0039 |
| Current account interest | mean | 0.0085 | 0.0078 |
| | sd | 0.0047 | 0.0029 |
| Deposit account interest | mean | 0.01 | 0.0125 |
| | sd | 0.0029 | 0.0022 |

Sources: Weekly summary abstracts, Black Books.

The values in Table 4-2 column 3 and Table 4-3 column 3 should be similar. Current accounts were larger in the 20th week, while deposit accounts were smaller. This could be the result of payments, but also the non-inclusion of the second half-year of 1898 in Table 4-3.

Some disparities between Table 4-3 and Table 4-1's values can be explained by are not totally developed as the sections are not weighted in the former table. The LDR expanded at least marginally between the two periods, particularly owing to the introduction of foreign credit. Current accounts' share of total deposits also increased. Current accounts' turnover and size grew between the two periods, while deposits turnover and size declined.

### 4.4.2 Regression results

**Table 4-4: Cash to total deposit regression.**

| | |
|---|---|
| Current account to deposit account | 0.004 |
| | (-0.006) |
| Current account turnover | 0.002*** |
| | (-0.001) |
| Deposit account turnover | 0.004 |
| | (-0.011) |
| Current account avg size | -0.0002*** |
| | (-0.0001) |
| Deposit account avg size | -0.00002 |
| | (-0.00002) |
| Observations | 90 |
| $R^2$ | 0.317 |
| Adjusted $R^2$ | 0.257 |
| F statistic | (df = 5; 73) 6.766*** |
| *Note:* | *p<0.1, **p<0.05, ***p<0.01 |

Table 4-4 reports the results of the cash to deposit regressions. Cash was positively linked to turnover on current accounts. This confirms Goodhart's results, and should explain a part of the rise in base line cash holdings after 1898 and the complementary declining amplitude of window dressing. Current account's size is significantly negatively related to cash ratios, while the other variables are not significant. This supports the argument that larger accounts made cash management easier. Additionally, the regression was run with interest payments on accounts (Appendix 4-2). As these were paid out at the end of the half-year, they are not available for the 20th week, and therefore were taken from the half-yearly dates. Both the interest rates were not significant, and therefore do not support a link between the cash ratio held by a bank and interest rates it paid on customers' accounts. A downside of the use of sectional data is that these are

unobservable by the public. A lowering effect on interest payments by the safety of a high cash ratio may be caused by the published accounts. As these were published for the entire bank, and therefore its entire resources, the effect could be insignificant on the sectional level.

Regressions I–VI in Table 4-5 report the results for the previously used variables and VII–XII show the results with interest rate variables included. The results show a significant and negative relationship between the ratios of current to deposit account only for the later data set (with the exemption of II). A growing awareness of the riskiness of funding could be an explanation. Current account turnover is positive and significant related to LDR in all regressions, excluding I and II. The coefficient is larger for the later data and presents a growing power of the combination of credit and transactions. Deposit account turnover is significant and positive mostly in the later data set (I, II, VI, and XI).

A larger coefficient could be a result of higher requirements information based on transactions instead of or in addition to other information. This may be a result of the ongoing standardisation and movement towards transaction banking. The incentive to retain customers with high turnover, by providing loans to them also finds support In light of the relation with customers; it could be argued that a positive relationship is a result of formal requirements for credit provision. Baker and Collins describe the English commercial banks' business model as largely arms-length and transaction based (Baker and Collins, 2003, pp.55–56). If the positive relation is interpreted as a result of an attempt to improve customer loyalty, it is a contradiction to the characterisation of transaction banking. However, in particular, advances and payments through current accounts are so closely related that the concept does not appear to be very useful in this context.

The size of current accounts in regressions of the later data is significantly negative (I, II, IV, VI, VIII, and XII). Considering the earlier data, there is no significant relationship. The negative impact of large accounts on advances in the later period could be a result of a lower demand for bank credit by larger corporations.

Deposit accounts' size is negative and significant after including interest variables for the later data set (VII and X). Interest received from loans is significant and negative related to LDR (Appendix 4-3). As the data for the earlier set are not reliable, the variable is used only for the later set. Interest on deposit accounts is only negatively significant in regression XII and contradicts the supposed positive relationship between credit and costs of funding.

To capture the possible impact of different lending procedures on newly acquired sections, a dummy variable was included to capture the first year, where the respective section constitutes a part of Midland.[54] The variable was not significant in any of the regressions, and therefore provides no evidence for a systematic reduction of lending after a takeover (Appendix 4-5, Appendix 4-6).

[54]The following sections: Carlisle, Huddersfield, Jersey, North and South Wales, North Western, Oldham, Preston, and Westmoreland.

Additionally, the regressions were run on provincial sections and London sections separately, (Appendix 4-7 and Appendix 4-8, respectively). The regression run only on the London sections provides no significant variables as the result. This is very likely the result of the small sample of one to three sections. Systematic differences to the full sample should be captured by this approach. The results are qualitatively very similar to the basic regressions. One diversion from the full set is that the current account turnover is only significant for the later period after including interest variables. An increasing influence by turnover on lending is supported by the result.

**Table 4-5: Loan to deposit regression.**

| | Advances + Discounts + Foreign Credit | Advances + Foreign Credit | Advances + Discounts | | Advances | |
|---|---|---|---|---|---|---|
| | 1907–1913 | 1907–1913 | 1893–1898 | 1907–1913 | 1893–1898 | 1907–1913 |
| | I | II | III | IV | V | VI |
| Current account to deposit account | -0.141** | -0.067 | 0.04 | -0.136*** | 0.028 | -0.063* |
| | (-0.058) | (-0.051) | (-0.041) | (-0.043) | (-0.037) | (-0.036) |
| Current account turnover | -0.0004 | -0.001 | 0.018*** | 0.019*** | 0.016*** | 0.019*** |
| | (-0.009) | (-0.008) | (-0.005) | (-0.006) | (-0.005) | (-0.006) |
| Deposit account turnover | 0.213** | 0.224*** | 0.054 | 0.089 | 0.097 | 0.100* |
| | (-0.089) | (-0.079) | (-0.064) | (-0.066) | (-0.058) | (-0.056) |
| Current account avg size | -0.002*** | -0.002*** | -0.0001 | -0.001*** | -0.0002 | -0.002*** |
| | (-0.0004) | (-0.0004) | (-0.0004) | (-0.0003) | (-0.0004) | (-0.0003) |
| Deposit account avg size | 0.0001 | 0.0003 | 0.0002 | -0.0001 | 0.0001 | 0.0002 |
| | (-0.0002) | (-0.0002) | (-0.0001) | (-0.0002) | (-0.0001) | (-0.0002) |
| Observations | 210 | 210 | 79 | 210 | 79 | 210 |
| $R^2$ | 0.432 | 0.502 | 0.25 | 0.613 | 0.274 | 0.687 |
| Adjusted $R^2$ | 0.356 | 0.414 | 0.168 | 0.505 | 0.184 | 0.566 |
| F statistic | 26.320*** (df = 5; 173) | 34.881*** (df = 5; 173) | 3.538*** (df = 5; 53) | 54.825*** (df = 5; 173) | 3.994*** (df = 5; 53) | 76.108*** (df = 5; 173) |
| | VII | VIII | IX | X | XI | XII |
| Current account to deposit account | -0.131** | -0.069 | 0.051 | -0.155*** | 0.038 | -0.094** |
| | (-0.065) | (-0.057) | (-0.044) | (-0.048) | (-0.039) | (-0.041) |
| Current account turnover | -0.002 | -0.002 | 0.016*** | 0.020*** | 0.014*** | 0.020*** |
| | (-0.009) | (-0.008) | (-0.006) | (-0.007) | (-0.005) | (-0.006) |
| Deposit account turnover | 0.226** | 0.257*** | 0.055 | 0.118 | 0.099 | 0.149** |
| | (-0.101) | (-0.088) | (-0.066) | (-0.074) | (-0.06) | (-0.063) |
| Current account avg size | -0.002*** | -0.003*** | 0.00002 | -0.001*** | -0.0001 | -0.002*** |
| | (-0.001) | (-0.0004) | (-0.0004) | (-0.0004) | (-0.0004) | (-0.0003) |
| Deposit account avg size | 0.0002 | 0.0004 | 0.0001 | -0.0001 | 0.00004 | 0.0001 |
| | (-0.0003) | (-0.0002) | (-0.0001) | (-0.0002) | (-0.0001) | (-0.0002) |
| Deposit interest | -2.392 | -5.920 | 8.054 | -5.176 | 8.262 | -8.704* |
| | (-8.064) | (-7.067) | (-8.150) | (-5.964) | (-7.372) | (-5.054) |
| Current interest | 11.389 | 10.954 | 5.563 | -1.832 | 5.184 | -2.266 |
| | (-12.420) | (-10.885) | (-5.005) | (-9.186) | (-4.528) | (-7.784) |
| Observations | 210 | 210 | 73 | 210 | 73 | 210 |
| $R^2$ | 0.435 | 0.506 | 0.291 | 0.615 | 0.32 | 0.693 |
| Adjusted $R^2$ | 0.354 | 0.412 | 0.183 | 0.501 | 0.202 | 0.565 |
| F statistic | 18.801*** (df = 7; 171) | 25.056*** (df = 7; 171) | 2.694** (df = 7; 46) | 39.028*** (df = 7; 171) | 3.098*** (df = 7; 46) | 55.233*** (df = 7; 171) |

*Note:* *p<0.1, **p<0.05, ***p<0.01

**Table 4-6: Loan to deposit regression 'original' set, including sections: London, Manchester, Midland, and Yorkshire.**

| | Advances + Discounts + Foreign Credit | Advances + Foreign Credit | Advances + Discounts | | Advances | |
|---|---|---|---|---|---|---|
| | 1907–1913 | 1907–1913 | 1893–1898 | 1907–1913 | 1893–1898 | 1907–1913 |
| | I | II | III | IV | V | VI |
| Current account to deposit account | -0.037 | 0.029 | 0.039 | -0.024 | 0.018 | 0.041 |
| | (-0.069) | (-0.057) | (-0.042) | (-0.063) | (-0.036) | (-0.051) |
| Current account turnover | 0.060*** | 0.037** | 0.046*** | 0.069*** | 0.033*** | 0.046*** |
| | (-0.02) | (-0.017) | (-0.012) | (-0.018) | (-0.01) | (-0.015) |
| Deposit account turnover | -0.139* | -0.063 | -0.126 | -0.144** | -0.083 | -0.068 |
| | (-0.074) | (-0.062) | (-0.088) | (-0.067) | (-0.075) | (-0.054) |
| Current account avg size | 0.003*** | 0.002* | 0.00003 | 0.003*** | -0.0002 | 0.002** |
| | (-0.001) | (-0.001) | (-0.0005) | (-0.001) | (-0.0004) | (-0.001) |
| Deposit account avg size | -0.001** | -0.001 | 0.0002** | -0.001** | 0.0001 | -0.001* |
| | (-0.0004) | (-0.0004) | (-0.0001) | (-0.0004) | (-0.0001) | (-0.0003) |
| Observations | 52 | 52 | 40 | 52 | 40 | 52 |
| $R^2$ | 0.32 | 0.175 | 0.484 | 0.415 | 0.392 | 0.311 |
| Adjusted $R^2$ | 0.191 | 0.104 | 0.266 | 0.248 | 0.215 | 0.185 |
| F statistic | 2.918** (df = 5; 31) | 1.313 (df = 5; 31) | 4.121*** (df = 5; 22) | 4.405*** (df = 5; 31) | 2.833** (df = 5; 22) | 2.793** (df = 5; 31) |
| | VII | VIII | IX | X | XI | XII |
| Current account to deposit account | -0.023 | 0.074 | 0.005 | -0.002 | 0.004 | 0.096 |
| | (-0.089) | (-0.075) | (-0.045) | (-0.082) | (-0.041) | (-0.066) |
| Current account turnover | 0.041** | 0.024 | 0.031* | 0.053*** | 0.022 | 0.035** |
| | (-0.02) | (-0.017) | (-0.015) | (-0.018) | (-0.014) | (-0.015) |
| Deposit account turnover | 0.003 | 0.029 | -0.079 | -0.023 | -0.037 | 0.003 |
| | (-0.091) | (-0.077) | (-0.082) | (-0.084) | (-0.076) | (-0.068) |
| Current account avg size | 0.002* | 0.001 | 0.0004 | 0.003** | 0.00004 | 0.001 |
| | (-0.001) | (-0.001) | (-0.0004) | (-0.001) | (-0.0004) | (-0.001) |
| Deposit account avg size | -0.0004 | -0.00003 | 0.00005 | -0.001 | 0.00001 | -0.0002 |
| | (-0.0005) | (-0.0004) | (-0.0001) | (-0.0004) | (-0.0001) | (-0.0004) |
| Deposit interest | -17.057** | -10.102 | 2.256 | -14.231* | 6.323 | -7.277 |
| | (-7.812) | (-6.606) | (-8.881) | (-7.165) | (-8.230) | (-5.826) |
| Current interest | 14.435 | 19.110 | 19.152** | 15.085 | 13.046* | 19.761 |
| | (-15.771) | (-13.336) | (-7.873) | (-14.465) | (-7.297) | (-11.761) |
| Observations | 52 | 52 | 36 | 52 | 36 | 52 |
| $R^2$ | 0.443 | 0.3 | 0.664 | 0.513 | 0.519 | 0.415 |
| Adjusted $R^2$ | 0.247 | 0.167 | 0.313 | 0.286 | 0.245 | 0.231 |
| F statistic | 3.290** (df = 7; 29) | 1.777 (df = 7; 29) | 4.793*** (df = 7; 17) | 4.364*** (df = 7; 29) | 2.616** (df = 7; 17) | 2.935** (df = 7; 29) |

*Note:* *p<0.1, **p<0.05, ***p<0.01

One interesting result is the highly significant and positive impact of interest on deposit accounts on LDR, by all definitions, for the later period. In contrast, the full set's results show absolutely no

significance. The strongest relation was found for the LDR, including all three categories of credit, and weakest for advances only. The finding makes a connection between funding costs and the amount of lending more definite. An explanation for the difference to the total data set could be the collusive process of interest rate setting in London. Almost identical to the complete set is the result of advances' returns in terms of significance and the coefficients. The result provides support for a unified lending procedure by the entire bank.

The size-variable is significant for nearly all regressions of the later set with a negative sign for current accounts, but positive for deposit accounts. After adding interest variables, the results are less coherent, but the current accounts' size remained negative for the later period. The close connection of current accounts and lending makes it likely that the negative relation is driven by declining demand for bank credit by larger customers.

Robustness checks on the regressions were run with the four sections included in both data sets in all the periods. By this selection, any bias due to new sections should be eliminated, particularly for comparisons over the two time periods. The robustness checks (Table 4-6) clearly support the positive link between current account turnover and LDR. When foreign credit is included (I, II, VII, and VIII), the relationship continues to be significant. While deposit account turnover was positive for some regressions, it became negatively significant but without a clear pattern (I, IV, IX, and XI). Current accounts size is significant and positive for the later set for most regressions (I, II, IV, VI, VII, and X). Deposit accounts' size shows mixed results with a positive sign for the earlier set (III) and negative sign for the later (I, IV, and VI). At least the negative relation of deposit accounts for the later years finds some support, while the results for the current accounts are contradicted. Interest received from advances is significantly negative for all (Appendix 4-4). Current account interest is positively related to LDR for the early data (IX and XI). It is not significant for the later data. In contrast, interest on deposit accounts is significant only for the later set (VII and X) and negative. The connection of interest rates and the amount of lending appears to offer an explanation for lower credit provision in London. However, after including the return on advances in the later set (Appendix 4-4), interest on current accounts is positive and significant in all the regressions, while deposit accounts' interest is not significant.

The regressions and robustness checks confirm that there were some clear structural breaks between the two data sets. A positive strengthening link between credit and transaction volume appears to be the most robust result. Fees from larger transactions as well as more information appear to have benefitted lending. Evidence for a negative relation of credit to current accounts' size is weakened by the robustness checks (Table 4-6). But the negative relation of interest on advances and the LDR was confirmed by robustness checks and provincial regressions. Better access to markets by large firms, and therefore lower demand for bank credit could provide a clear explanation

for such a link. Furthermore the steps made by clearing banks towards investment banking are very likely related to this relation of bank-credit and firm-size. American commercial banks, which stepped into investment banking in the early 20th century, utilized their branch-network as well. The largely distributive function commercial banks took from the 1890's onwards is very likely connected to changing demand from firms (Cottrell, 1979, p.241; White, 1986, pp.36–37).

The provincial sections and robustness check provide support for a positive link between credit and interest paid on accounts. This provides at least some support for the idea of a negative impact of lower costs of capital on credit. While Midland increased advances in London, other London banks had a lower share of advances in comparison to provincial banks. The different interest rates could provide an explanation. Overall, the section-fixed effects show low values for London. The robustness checks report in general lower fixed effects for the later data set in comparison to the earlier data set.

## 4.5 Conclusions

In contrast to the supposed restrictions on lending, the disaggregated data reveal that Midland lent on a stable level in provincial areas. Furthermore, Manchester and Liverpool, the largest urban centres outside London, reported lending on an even higher rate than London. The level of advances in London increased over time, and thereby adapted to the 'provincial' level, which created the reverse of what is generally assumed: Provincial areas were not subordinated to the habits of London, instead the London business adapted to the provincial standards. The invasion 'by a vast horde of Country bankers' (Journal of the Institute of Bankers, 1892: p. 345) appears to have affected London banks, which were integrated into larger banks.

The lending ratios show large variations between parts of the bank, with some tendency towards urban areas. Furthermore, it became clear that some areas continued to prefer bills as credit instruments.

The econometric analysis reveals some further interesting insights. The increased strength of the link between credit and transaction volume could be a result of increased emphasis on customers' loyalty by granting credit to those with high turnover. From an informational point of view, the strengthened link could be the result of a higher relevance of formal information, created by customers' transactions. In light of the limited power of the interpretation from the perspective of formalisation, the development of customer relationships appears to be more relevant. In particular, the increased importance of large customers and their handling from the London head office appears to align with this finding (Holmes and Green, 1986, p.115). What remains unresolved is the question of the strengthened link between transaction and credit restricted lending. It can be assumed that

the spread of the banking habit led to an increased use of cheques and transactions through bank accounts. This development makes the link less likely. However, to solve the issue, it is necessary to more elaborately investigate the payment habits of customers.

The literature on bank lending supports the finding that large banks emphasise more formal information, and thus have an advantage in lending to large firms (Berger et al., 2005, p.266). Large accounts in London and foreign exchange businesses reflect the orientation towards large corporate customers.

The positive relationship between credit and interest paid on account could be an explanation for the differences in lending between London and the province. However, the evidence is mixed, in particular in case of London. An explanation could be the collusive process of rate setting in London. The relation between costs of funding and the amount of credit could be overridden by the rate setting agreement, and as a result the connection is not observable. Further research on the impact of costs of funding on the amount of credit is necessary to investigate the connection.

The evidence of Midland provides no support for a systematic neglect of provincial areas. Aggregate credit was granted at a stable amount in provincial areas with some adaptation in London. This finding is in contrast with the supposed negative effect by the integration of provincial banking in a large London-based bank. A reduction of credit in newly acquired banks did not occur. Furthermore, the evidence shows that Midland lent on a level similar to independent banks. The generalisation of results and relation to other results (Collins and Baker, 2001b, pp.16–19) appears to be limited by the heterogeneity of the London and Provincial Banks. The differentiation between ‘old’ and ‘new’ London banks appears to have a lasting impact on decision making inside banks. The composition of the board of directors, as used by Cassis (1985), could be an approach for further research in this area.

## 4.6 Appendix

**Appendix 4-1: Overview statistics of purely urban and other sections.**

| Period | Area | | Advances | Advances + Bills | Advances + Bills + Foreign credit | Current account turnover | CA/DA | CA interest |
|---|---|---|---|---|---|---|---|---|
| 1893–1898 | Other | mean | 0.5859 | 0.6647 | 0.6647 | 7.8958 | 1.0759 | 0.0092 |
| | | sd | 0.2159 | 0.25 | 0.25 | 3.9667 | 0.4988 | 0.0037 |
| 1893–1898 | Urban | mean | 0.6225 | 0.7726 | 0.7726 | 14.1045 | 2.7272 | 0.0063 |
| | | sd | 0.2515 | 0.2386 | 0.2386 | 1.4818 | 1.0854 | 0.0064 |
| 1907–1913 | Other | mean | 0.6114 | 0.6651 | 0.6792 | 8.8322 | 1.4849 | 0.0086 |
| | | sd | 0.203 | 0.2131 | 0.2254 | 3.1941 | 0.8049 | 0.0024 |
| 1907–1913 | Urban | mean | 0.6342 | 0.7769 | 0.9161 | 16.4231 | 2.2062 | 0.0059 |
| | | sd | 0.1247 | 0.1546 | 0.2919 | 9.9373 | 0.469 | 0.0033 |

Sources: Weekly summary abstracts

**Appendix 4-2: Cash to deposit regression for the period 1893–1898, including interest rates of 26th week.**

| | All | Only Province | All | Only Province |
|---|---|---|---|---|
| Current account to deposit account | -0.002 | 0.017 | -0.003 | 0.015 |
| | (-0.02) | (-0.013) | (-0.024) | (-0.014) |
| Current account turnover | 0.00004 | 0.001 | -0.0001 | 0.001 |
| | (-0.002) | (-0.001) | (-0.002) | (-0.001) |
| Deposit account turnover | 0.058* | -0.002 | 0.048 | -0.004 |
| | (-0.033) | (-0.013) | (-0.036) | (-0.013) |
| Current account avg size | -0.0001 | -0.0003*** | -0.0001 | -0.0003*** |
| | (-0.0002) | (-0.0001) | (-0.0002) | (-0.0001) |
| Deposit account avg size | 0.0001 | 0 | 0.0001 | 0.00001 |
| | (-0.0001) | (-0.00003) | (-0.0001) | (-0.00004) |
| Interest on current account | | | 1.367 | 0.716 |
| | | | (-2.757) | (-0.989) |
| Interest on deposit account | | | 1.945 | -1.618 |
| | | | (-4.321) | (-1.598) |
| Observations | 78 | 68 | 72 | 63 |
| $R^2$ | 0.137 | 0.413 | 0.142 | 0.425 |
| Adjusted $R^2$ | 0.092 | 0.261 | 0.089 | 0.249 |
| F statistic | 1.657 (df = 5; 52) | 6.045*** (df = 5; 43) | 1.068 (df = 7; 45) | 3.904*** (df = 7; 37) |

*Note:* *p<0.1, **p<0.05, ***p<0.01

**Appendix 4-3: Loan to deposit regression (full set) for the period 1907–1913 with advances returns.**

| | **Advances + Discounts + Foreign Credit 1907–1913** | **Advances + Foreign Credit 1907–1913** | **Advances + Discounts 1907–1913** | **Advances 1907–1913** |
|---|---|---|---|---|
| | VII | VIII | X | XII |
| Current account to deposit account | -0.190*** | -0.120*** | -0.177*** | -0.107*** |
| | (-0.052) | (-0.045) | (-0.044) | (-0.038) |
| Current account turnover | 0.032*** | 0.028*** | 0.035*** | 0.032*** |
| | (-0.008) | (-0.007) | (-0.007) | (-0.006) |
| Deposit account turnover | 0.051 | 0.096 | 0.029 | 0.074 |
| | (-0.083) | (-0.071) | (-0.07) | (-0.06) |
| Current account avg size | -0.0002 | -0.001** | -0.001 | -0.001*** |
| | (-0.0005) | (-0.0004) | (-0.0004) | (-0.0003) |
| Deposit account avg size | -0.001** | -0.0002 | -0.0004** | -0.0001 |
| | (-0.0002) | (-0.0002) | (-0.0002) | (-0.0002) |
| Advances return | -31.281*** | -28.277*** | -14.254*** | -11.250*** |
| | (-3.408) | (-2.941) | (-2.893) | (-2.482) |
| Deposit interest | 3.397 | -0.168 | -0.772 | -4.337 |
| | (-6.075) | (-5.243) | (-5.157) | (-4.425) |
| Current interest | 13.435 | 13.061 | -1.207 | -1.582 |
| | (-9.558) | (-8.248) | (-8.114) | (-6.962) |
| Observations | 210 | 210 | 210 | 210 |
| $R^2$ | 0.623 | 0.681 | 0.662 | 0.724 |
| Adjusted $R^2$ | 0.505 | 0.551 | 0.536 | 0.586 |
| F statistic | 35.175*** (df = 8; 170) | 45.358*** (df = 8; 170) | 41.616*** (df = 8; 170) | 55.731*** (df = 8; 170) |

Note: *p<0.1, **p<0.05, ***p<0.01

**Appendix 4-4: Loan to deposit regression 'original' set (including sections London, Manchester, Midland, and Yorkshire) for the period 1907–1913 with advances return.**

| | **Advances + Discounts + Foreign Credit 1907–1913** | **Advances + Foreign Credit 1907–1913** | **Advances + Discounts 1907–1913** | **Advances 1907–1913** |
|---|---|---|---|---|
| | VII | VIII | X | XII |
| Current account to deposit account | 0.03 | 0.108 | 0.042 | 0.120** |
| | (-0.083) | (-0.065) | (-0.077) | (-0.059) |
| Current account turnover | 0.048** | 0.027* | 0.058*** | 0.037** |
| | (-0.019) | (-0.015) | (-0.018) | (-0.013) |
| Deposit account turnover | -0.041 | 0.015 | -0.059 | -0.003 |
| | (-0.079) | (-0.063) | (-0.074) | (-0.056) |
| Current account avg size | 0.001 | -0.0002 | 0.002* | 0.0004 |
| | (-0.001) | (-0.001) | (-0.001) | (-0.001) |
| Deposit account avg size | -0.0001 | 0.0002 | -0.0003 | 0.00004 |
| | (-0.0005) | (-0.0004) | (-0.0005) | (-0.0003) |
| Advances return | -24.370** | -23.187*** | -19.477** | -18.294*** |
| | (-9.191) | (-7.236) | (-8.569) | (-6.521) |
| Deposit interest | -7.092 | -4.254 | -6.114 | -3.275 |
| | (-5.417) | (-4.265) | (-5.051) | (-3.843) |
| Current interest | 27.222* | 29.331** | 25.497* | 27.607** |
| | (-15.277) | (-12.028) | (-14.243) | (-10.839) |
| Observations | 52 | 52 | 52 | 52 |
| $R^2$ | 0.5 | 0.456 | 0.548 | 0.524 |
| Adjusted $R^2$ | 0.269 | 0.245 | 0.295 | 0.282 |
| F statistic | 3.497*** (df = 8; 28) | 2.928** (df = 8; 28) | 4.250*** (df = 8; 28) | 3.861*** (df = 8; 28) |

Note: *p<0.1, **p<0.05, ***p<0.01

**Appendix 4-5: Basic Regression with dummy for first year after acquisition.**

| | Loan to Deposit Regression | | | | | |
|---|---|---|---|---|---|---|
| | **Foreign credit + Advances + Discounts** | **Foreign credit + Advances** | **Advances + Discounts** | | **Advances** | |
| | **1907-1913** | **1907-1913** | **1893-1898** | **1907-1913** | **1893-1898** | **1907-1913** |
| Current Account to Deposit Account | -0.141** | -0.067 | 0.041 | -0.136*** | 0.028 | -0.063* |
| | (-0.058) | (-0.051) | (-0.041) | (-0.043) | (-0.038) | (-0.036) |
| Current account turnover | -0.0004 | -0.001 | 0.018*** | 0.019*** | 0.016*** | 0.019*** |
| | (-0.009) | (-0.008) | (-0.005) | (-0.006) | (-0.005) | (-0.006) |
| Deposit account turnover | 0.213** | 0.225*** | 0.06 | 0.088 | 0.096 | 0.100* |
| | (-0.09) | (-0.079) | (-0.067) | (-0.066) | (-0.061) | (-0.057) |
| Current account avg size | -0.002*** | -0.002*** | -0.0001 | -0.001*** | -0.0002 | -0.002*** |
| | -(0.0004) | (-0.0004) | (-0.0004) | (-0.0003) | (-0.0004) | (-0.0003) |
| Deposit account avg size | 0.0001 | 0.0004 | 0.0002 | -0.0001 | 0.0001 | 0.0002 |
| | (-0.0002) | (-0.0002) | (-0.0001) | (-0.0002) | (-0.0001) | (-0.0002) |
| One year integrated | -0.008 | 0.023 | -0.022 | -0.025 | 0.003 | 0.006 |
| | (-0.164) | (-0.144) | (-0.063) | (-0.121) | (-0.057) | (-0.103) |
| Observations | 210 | 210 | 79 | 210 | 79 | 210 |
| $R^2$ | 0.432 | 0.502 | 0.252 | 0.613 | 0.274 | 0.687 |
| Adjusted $R^2$ | 0.354 | 0.411 | 0.166 | 0.502 | 0.18 | 0.563 |
| F Statistic | 21.808*** (df = 6; 172) | 28.908*** (df = 6; 172) | 2.919** (df = 6; 52) | 45.442*** (df = 6; 172) | 3.266*** (df = 6; 52) | 63.058*** (df = 6; 172) |
| *Note:* | | | | | | *p<0.1, **p<0.05, ***p<0.01 |

**Appendix 4-6: Basic Regression with dummy for first year after acquisition with interest rates.**

| | Foreign credit + Advances + Discounts | Foreign credit + Advances | Advances + Discounts | Advances |
|---|---|---|---|---|
| | **1907-1913** | **1907-1913** | **1907-1913** | **1907-1913** |
| Current account to Deposit Account | -0.197*** | -0.130*** | -0.186*** | -0.118*** |
| | (-0.054) | (-0.047) | (-0.046) | (-0.039) |
| Current account turnover | 0.033*** | 0.030*** | 0.036*** | 0.032*** |
| | (-0.008) | (-0.007) | (-0.007) | (-0.006) |
| Deposit account turnover | 0.054 | 0.102 | 0.039 | 0.088 |
| | (-0.085) | (-0.074) | (-0.072) | (-0.061) |
| Current account avg size | -0.0001 | -0.001* | -0.0004 | -0.001*** |
| | (-0.0005) | (-0.0004) | (-0.0004) | (-0.0003) |
| Deposit account avg size | -0.001** | -0.0003 | -0.0005** | -0.0002 |
| | (-0.0002) | (-0.0002) | (-0.0002) | (-0.0002) |
| Advances return | -31.173*** | -28.140*** | -14.205*** | -11.172*** |
| | (-3.439) | (-2.970) | (-2.903) | (-2.484) |
| Deposit Interest | 2.965 | -1.008 | -2.723 | -6.696 |
| | (-6.689) | (-5.777) | (-5.646) | (-4.831) |
| Current Interest | 8.854 | 8.024 | -3.087 | -3.916 |
| | (-10.704) | (-9.244) | (-9.034) | (-7.730) |
| One year integrated | -0.058 | -0.023 | -0.022 | 0.013 |
| | (-0.141) | (-0.122) | (-0.119) | (-0.102) |
| Observations | 210 | 210 | 210 | 210 |
| $R^2$ | 0.62 | 0.678 | 0.663 | 0.726 |
| Adjusted $R^2$ | 0.499 | 0.545 | 0.533 | 0.584 |
| F Statistic | 30.638*** (df = 9; 169) | 39.468*** (df = 9; 169) | 36.920*** (df = 9; 169) | 49.794*** (df = 9; 169) |

*Note:* *p<0.1, **p<0.05, ***p<0.01

**Appendix 4-7: Loan to deposit regression (only provincial sections).**

| | Advances + Discounts + Foreign Credit | Advances + Foreign Credit | Advances + Discounts | | Advances | |
|---|---|---|---|---|---|---|
| | 1907–1913 | 1907–1913 | 1893–1898 | 1907–1913 | 1893–1898 | 1907–1913 |
| Current account to deposit account | -0.025 (-0.107) | -0.003 (-0.096) | 0.145* (-0.086) | 0.014 (-0.074) | 0.152* (-0.077) | 0.036 (-0.065) |
| Current account turnover | -0.0003 (-0.013) | -0.002 (-0.011) | 0.014** (-0.006) | 0.037*** (-0.009) | 0.012** (-0.005) | 0.035*** (-0.008) |
| Deposit account turnover | 0.193 (-0.124) | 0.225** (-0.111) | 0.048 (-0.067) | 0.136 (-0.086) | 0.099 (-0.06) | 0.168** (-0.076) |
| Current account avg size | -0.003*** (-0.001) | -0.003*** (-0.001) | -0.0003 (-0.0004) | -0.002*** (-0.0005) | -0.0003 (-0.0004) | -0.002*** (-0.0004) |
| Deposit account avg size | 0.001* (-0.001) | 0.001* (-0.001) | 0.001** (-0.0003) | 0.001** (-0.001) | 0.001** (-0.0002) | 0.001** (-0.0005) |
| Observations | 182 | 182 | 69 | 182 | 69 | 182 |
| R2 | 0.486 | 0.545 | 0.301 | 0.69 | 0.358 | 0.74 |
| Adjusted R2 | 0.395 | 0.443 | 0.192 | 0.561 | 0.228 | 0.602 |
| F statistic | 28.005*** (df = 5; 148) | 35.455*** (df = 5; 148) | 3.784*** (df = 5; 44) | 65.876*** (df = 5; 148) | 4.904*** (df = 5; 44) | 84.190*** (df = 5; 148) |
| Current account to deposit Account | 0.009 (-0.107) | 0.027 (-0.096) | 0.175* (-0.093) | 0.026 (-0.075) | 0.187** (-0.081) | 0.044 (-0.066) |
| Current account turnover | -0.001 (-0.013) | -0.003 (-0.011) | 0.01 (-0.006) | 0.036*** (-0.009) | 0.007 (-0.006) | 0.034*** (-0.008) |
| Deposit account turnover | 0.071 (-0.129) | 0.12 (-0.116) | 0.053 (-0.07) | 0.067 (-0.09) | 0.105* (-0.061) | 0.115 (-0.08) |
| Current account avg size | -0.003*** (-0.001) | -0.003*** (-0.001) | -0.0002 (-0.0004) | -0.002*** (-0.0005) | -0.0003 (-0.0004) | -0.002*** (-0.0004) |
| Deposit account avg size | 0.001* (-0.001) | 0.001* (-0.001) | 0.001** (-0.0003) | 0.001** (-0.001) | 0.001** (-0.0003) | 0.001** (-0.0005) |
| Deposit interest | 47.971*** (-16.963) | 41.636*** (-15.254) | 11.665 (-9.160) | 26.684** (-11.849) | 8.794 (-8.005) | 20.349* (-10.559) |
| Current interest | -3.554 (-13.280) | -2.719 (-11.942) | 4.450 (-5.695) | -6.649 (-9.276) | 6.374 (-4.977) | -5.814 (-8.266) |
| Observations | 182 | 182 | 64 | 182 | 64 | 182 |
| R2 | 0.514 | 0.568 | 0.347 | 0.7 | 0.421 | 0.746 |
| Adjusted R2 | 0.412 | 0.456 | 0.206 | 0.562 | 0.25 | 0.599 |
| F statistic | 22.033*** (df = 7; 146) | 27.413*** (df = 7; 146) | 2.888** (df = 7; 38) | 48.761*** (df = 7; 146) | 3.951*** (df = 7; 38) | 61.382*** (df = 7; 146) |

Note: *p<0.1, **p<0.05, ***p<0.01

**Appendix 4-8: Loan to deposit regression (only provincial sections) with advances return.**

| | Advances + Discounts + Foreign Credit 1907–1913 | Advances + Foreign Credit 1907–1913 | Advances 1907–1913 | Advances + Discounts + Foreign Credit 1907–1913 |
|---|---|---|---|---|
| Current account to deposit account | -0.112 (-0.087) | -0.085 (-0.077) | -0.029 (-0.07) | -0.002 (-0.063) |
| Current account turnover | 0.039*** (-0.011) | 0.034*** (-0.01) | 0.055*** (-0.009) | 0.050*** (-0.008) |
| Deposit account turnover | -0.079 (-0.105) | -0.019 (-0.093) | -0.002 (-0.084) | 0.059 (-0.076) |
| Current account avg size | -0.001 (-0.001) | -0.001* (-0.001) | -0.001* (-0.0005) | -0.001*** (-0.0004) |
| Deposit account avg size | -0.0001 (-0.001) | -0.0001 (-0.001) | 0.001 (-0.001) | 0.001 (-0.0005) |
| Advances return | -31.763*** (-3.502) | -29.331*** (-3.100) | -14.470*** (-2.817) | -12.037*** (-2.540) |
| Deposit interest | 38.329*** (-13.638) | 32.733*** (-12.073) | 22.291** (-10.970) | 16.695* (-9.889) |
| Current interest | -2.412 (-10.645) | -1.665 (-9.423) | -6.128 (-8.562) | -5.381 (-7.719) |
| Observations | 182 | 182 | 182 | 182 |
| R2 | 0.69 | 0.733 | 0.747 | 0.78 |
| Adjusted R2 | 0.549 | 0.584 | 0.595 | 0.622 |
| F statistic | 40.287*** (df = 8; 145) | 49.711*** (df = 8; 145) | 53.381*** (df = 8; 145) | 64.414*** (df = 8; 145) |

Note: *p<0.1, **p<0.05, ***p<0.01

# 5. References

## 5.1 Archive Documents

Midland Bank: Black Books 1881-1913. UK 0532. London: HSBC Group Archives

Midland Bank: Weekly summary of abstracts 1893-1896. UK AA 0004. London: HSBC Group Archives

Midland Bank: Weekly summary of abstracts 1896-1898. UK AA 0005. London: HSBC Group Archives

Midland Bank: Summary of abstract books 1907-1913. UK 0535. London: HSBC Group Archives

National Provincial: National Provincial Bank Approximate weekly Statement of Liabilities and Assets. NAP/9118, NAP/9119. Edinburgh: RBS Group Archives.

Union of London & Smiths Bank: Profit and Loss Account. UNI 5/507-511. Edinburgh: RBS Group Archives.

## 5.2 Literature

Aldrich, N.W., 1910. *Interviews on banking in England, France, Germany, Switzerland, and Italy*. Publications of the National Monetary Commission. Washington.

Allen, L. and Saunders, A., 1992. Bank window dressing: Theory and evidence. *Journal of Banking & Finance*, 16(3), pp.585–623.

Altunbas, Y., Carbo, S., Gardener, E.P.M. and Molyneux, P., 2007. Examining the Relationships between Capital, Risk and Efficiency in European Banking. *European Financial Management*, 13(1), pp.49–70.

Attard, B., 2016. Imperial central banks? The Bank of England, London & Westminister Bank, and the British Empire before 1914. In: O. Feiertag and M. Margiraz, eds., *Les banques centrales et l'Etat-nation*. Paris: Presses de Sciences Po (P.F.N.S.P.), pp.189–212.

Baele, L., De Jonghe, O. and Vennet, V., 2007. Does the stock market value bank diversification? *Journal of Banking & Finance*, 31(7), pp.1999–2023.

Baker, M. and Collins, M., 1999. Financial Crises and Structural Change in English Commercial Bank Assets, 1860–1913. *Explorations in Economic History*, 36(4), pp.428–444.

Baker, M. and Collins, M.I., 2003. *Commercial banks and industrial finance in England and Wales, 1860 - 1913*. Oxford: Oxford University Press.

Baker, M., Eadsforth, C. and Collins, M., 2009. Avoiding toxic assets and ensuring bank stability: English commercial bank investments, 1880–1910. *Business History*, 51(6), pp.854–874.

The Bankers Magazine. London

The Banking Almanac. London

Berger, A.N., 1995. The Relationship between Capital and Earnings in Banking. *Journal of Money, Credit and Banking*, 27(2), pp.432–456.

Berger, A.N., Miller, N.H., Petersen, M.A., Rajan, R.G. and Stein, J.C., 2005. Does function follow organizational form? Evidence from the lending practices of large and small banks. *Journal of Financial Economics*, 76(2), pp.237–269.

Berger, A.N., Saunders, A., Scalise, J.M. and Udell, G.F., 1998. The effects of bank mergers and acquisitions on small business lending. *Journal of Financial Economics*, 50(2), pp.187–229.

*Berliner Börsenzeitung.* Various years. Berlin: Reinhardt.

Best, M.H. and Humphries, J., 1986. The city and industrial decline. In: B. Elbaum and W. Lazonick, eds., *The decline of the British economy*. Oxford: Clarendon Press, pp.223–239.

Broadberry, S.N., 1998. How did the United States and Germany overtake Britian? A sectoral analysis of comparative productivity levels, 1870–1990. *Journal of Economic History*, 58(2), pp.375–407.

Brunt, L., 2006. Rediscovering Risk: Country Banks as Venture Capital Firms in the First Industrial Revolution. *The Journal of Economic History*, 66(1), pp.74–102.

Burhop, C., 2006. Did banks cause the German industrialization? *Explorations in Economic History*, 43(1), pp.39–63.

Cain, P.J. and Hopkins, A.G., 1987. Gentlemanly capitalism and British expansion overseas II: new imperialism, 1850-1945. *The Economic History Review*, 40(1), pp.1–26.

Cain, P.J. and Hopkins, A.G., 2002. *British imperialism, 1688 - 2000*. 2nd ed. Harlow: Longman.

Cairncross, A., 1953. *Home and foreign investment 1870-1913: studies in capital accumulation*. Cambridge: Cambridge University Press.

Capie, F., 1988. Structure and Performance in British Banking, 1870–1939. In: P.L. Cottrell and D.E. Moggridge, eds., *Money and Power*. London: Palgrave Macmillan, pp.73–102.

Capie, F., 1995. Prudent and stable (but inefficient?): Commercial banks in Britain, 1890–1940. In: B. Michael D. and S. Richard Eugene, eds., *Anglo-American financial systems: Institutions and markets in the twentieth century*. Burr Ridge: Irwin.

Capie, F. and Collins, M., 1992. *Have the Banks Failed British Industry?* London: The Institute of Economic Affairs.

Capie, F. and Collins, M., 1996. Industrial Lending by English Commercial Banks, 1860s-1914: Why Did Banks Refuse Loans? *Business History*, 38(1), pp.26–44.

Capie, F. and Mills, T.C., 1995. British Bank Conservatism in the Late 19th Century. *Explorations in Economic History*, 32(3), pp.409–420.

Capie, F. and Rodrik-Bali, G., 1982. Concentration in British banking 1870–1920. *Business History*, 24(3).

Cassis, Y., 1985. Management and Strategy in the English Joint Stock Banks 1890–1914. *Business History*, 27(3), pp.301–315.

Cassis, Y., 1987. Profits and profitability in English banking, 1870 - 1914. *Revue internationale d'histoire de la banque*, 34/35, pp.1–30.

Cassis, Y., 1990. British finance: success and controversy. In: J.J. van Helten and Y. Cassis, eds., *Capitalism in a mature economy: financial institutions, capital exports and British industry, 1870 - 1939*, The new business history series. Aldershot: Elgar, pp.1–22.

Cassis, Y., 1992. Introduction: The weight of finance in European societies. In: Y. Cassis, ed., *Finance and Financiers in European history, 1880-1960*. Cambridge: Cambridge University Press, pp.1–15.

Cassis, Y., 1994. *City bankers: 1890 - 1914*. Cambridge: Cambridge University Press.

Cassis, Y., 2005. London Banks and International Finance, 1890-1914. In: Y. Cassis and É. Bussière, eds., *London and Paris as International Financial Centres in the Twentieth Century*. Oxford: Oxford University Press, pp.107–118.

Cassis, Y., 2016. International Financial Centres. In: Y. Cassis, R.S. Grossman and C.R. Schenk, eds., *The Oxford handbook of banking and financial history*. Oxford: Oxford University Press, pp.293–317.

Chapman, S.D., 1984. *The rise of merchant banking*. London: Allen & Unwin.

Collins, M., 1984. The Business of Banking: English Bank Balance Sheets, 1840–80. *Business history*, 26(1), pp.43–58.

Collins, M., 1994. The growth of the firm in the domestic banking sector. In: M.W. Kirby and M.B. Rose, eds., *Business Enterprise in Modern Britain. London: Routledge*. pp.263–287.

Collins, M., 1998. English Bank Development within a European Context, 1870–1939. *The Economic History Review*, 51(1), pp.1–24.

Collins, M. and Baker, M., 2001a. English commercial bank liquidity, 1860–1913. *Accounting, Business & Financial History*, 11(2), pp.171–191.

Collins, M. and Baker, M., 2001b. Sectoral Differences in English Bank Asset Structures and the Impact of Mergers, 1860-1913. *Business History*, 43(4), pp.1–28.

Collins, M., Baker, M. and Eadsforth, C., 2009. Avoiding toxic assets and ensuring bank stability: English commercial bank investments, 1880–1910. *Business History*, 51(6), pp.854–874.

Collins, M. and Hudson, P., 1979. Provincial Bank Lending: Yorkshire and Merseyside, 1826–60. *Bulletin of Economic Research*, 31(2), pp.69–79.

Collins, M.I., 1991. *Banks and industrial finance in Britain, 1800 - 1939*. Studies in economic and social history. Basingstoke [u.a.]: Macmillan.

Cottrell, P.L., 1979. *Industrial finance, 1830-1914: the finance and organization of English manufacturing industry*. London ; New York: Methuen.

Cottrell, P.L., 1992. The domestic commercial banks and the City of London, 1870-1939. In: Y. Cassis, ed., *Finance and Financiers in European History, 1880-1960*. Cambridge: Cambridge University Press, pp.39–62.

Crafts, N., 2005. Regional GDP in Britain, 1871-1911: some estimates. *Scottish Journal of Political Economy*, 52(1), pp.54–64.

Crick, W.F. and Wadsworth, J.E., 1936. *A hundred years of joint stock banking*. London: Hodder and Stoughton.

Da Rin, M. and Hellmann, T., 2002. Banks as Catalysts for Industrialization. *Journal of Financial Intermediation*, 11(4), pp.366–397.

Dahl, D. and Shrieves, R.E., 1992. The relationship between risk and capital in commercial banks. *Journal of Banking & Finance*, 16(2), pp.439–457.

De Cecco, M., 1974. *Money and empire: the international gold standard, 1890 - 1914*. Oxford: Blackwell.

Demirgüç-Kunt, A., Feyen, E. and Levine, R., 2013. The Evolving Importance of Banks and Securities Markets. *The World Bank Economic Review*, 27(3), pp.476–490.

Demsetz, R.S. and Strahan, P.E., 1997. Diversification, Size, and Risk at Bank Holding Companies. *Journal of Money, Credit and Banking*, 29(3), pp.300–313.

Denis, D.J. and Mihov, V.T., 2003. The choice among bank debt, non-bank private debt, and public debt: evidence from new corporate borrowings. *Journal of Financial Economics*, 70(1), pp.3–28.

Deutsche Bundesbank ed., 1976. *Deutsches Geld- und Bankwesen in Zahlen: 1876 - 1975*. Frankfurt am Main: Knapp.

Der Deutsche Ökonomist. Various years. Berlin: Heymanns.

Diamond, D.W., 1984. Financial Intermediation and Delegated Monitoring. *The Review of Economic Studies*, 51(3), pp.393–414.

Diamond, D.W., 1991. Monitoring and Reputation: The Choice between Bank Loans and Directly Placed Debt. *Journal of Political Economy*, 99(4), pp.689–721.

Donner, O., 1934. *Die Kursbildung am Aktienmarkt: Grundlagen zur Konjunkturbeobachtung an den Effektenmärkten*. [Vierteljahrshefte zur Konjunkturforschung / Sonderhefte] Vierteljahrshefte zur Konjunkturforschung. - Hamburg : Hanseat. Verl.-Anst, 1927. Berlin [u.a.]: Inst. für Konjunkturforschung.

The Economist. Various years. London: Economist.

Edelstein, M., 1982a. *Overseas investment in the age of high imperialism: the United Kingdom, 1850 - 1914*. London: Methuen.

Edelstein, M., 1982b. *Overseas investment in the age of high imperialism: the United Kingdom, 1850 - 1914*. London: Methuen.

Edwards, J. and Ogilvie, S., 1996. Universal Banks and German Industrialization: A Reappraisal. *The Economic History Review*, 49(3), pp.427–446.

Elbaum, B. and Lazonick, W., 1984. The Decline of the British Economy: An Institutional Perspective. *The Journal of Economic History*, 44(2).

Elbaum, B. and Lazonick, W., 1986. An Institutional Perspective on British Decline. In: B. Elbaum and W. Lazonick, eds., *The Decline of the British Economy*. Oxford: Clarendon Press, pp.1–17.

Esty, B.C., 1998. The impact of contingent liability on commercial bank risk taking. *Journal of Financial Economics*, 47(2), pp.189–218.

Fear, J. and Kobrak, C., 2010. Banks on Board: German and American Corporate Governance, 1870–1914. *Business History Review*, 84(4), pp.703–736.

Flannery, M.J. and James, C.M., 1984. The Effect of Interest Rate Changes on the Common Stock Returns of Financial Institutions. *The Journal of Finance*, 39(4), pp.1141–1153.

Fohlin, C., 1997. Bank Securities Holdings and Industrial Finance before World War I: Britain and Germany Compared. *Business and Economic History*, 26(2), pp.463–475.

Fohlin, C., 2001. The Balancing Act of German Universal Banks and English Deposit Banks, 1880-1913. *Business History*, 43(1), pp.1–24.

Fohlin, C., 2002. Regulation, taxation and the development of the German universal banking system, 1884–1913. *European Review of Economic History*, 6(2), pp.221–254.

Fohlin, C., 2007a. Does Civil Law Tradition and Universal Banking Crowd out Securities Markets? Pre-World War I Germany as Counter-Example. *Enterprise and Society*, 8(3), pp.602–641.

Fohlin, C., 2007b. *Finance capitalism and Germany's rise to industrial power*. Studies in Macroeconomic History. Cambridge: Cambridge University Press.

Fohlin, C., 2014. *Mobilizing money: how the world's richest nations financed industrial growth*. First paperback edition ed. Japan-US Center UFJ Bank monographs on international financial markets. New York: Cambridge University Press.

Foxwell, H.S., 1917. The Financing of Industry and Trade. *The Economic Journal*, 27(108), pp.502–522.

Gehrig, T. and Fohlin, C., 2006. Trading Costs in Early Securities Markets: The Case of the Berlin Stock Exchange 1880–1910. *Review of Finance*, 10(4), pp.587–612.

Gelman, S. and Burhop, C., 2008. Taxation, regulation and the information efficiency of the Berlin stock exchange, 1892–1913. *European Review of Economic History*, 12(1), pp.39–66.

Gerschenkron, A., 1962. *Economic backwardness in historical perspective: a book of essays*. Cambridge, Massachusetts: Belknap Press of Harvard Univ. Press.

Goodhart, C., 1972. *The business of banking, 1891-1914*. LSE research monographs. London: Weidenfeld & Nicholson.

Goodhart, C.A.E., 1988. *The evolution of central banks*. Cambridge, Massachusetts: MIT Press.

Goschen, G.J.G., 1905. *Essays and addresses on economic questions (1865-1893): with introductory notes (1905)*. London: E. Arnold.

Grossman, R.S. and Imai, M., 2013. Contingent capital and bank risk-taking among British banks before the First World War. *Economic History Review*, 66(1), pp.132–155.

Guinnane, T.W., 2002. Delegated Monitors, Large and Small: Germany's Banking System, 1800-1914. *Journal of Economic Literature*, 40(1), pp.73–124.

Hatton, T.J., O'Rourke, K.H. and Taylor, A.M. eds., 2007. *The new comparative economic history: essays in honor of Jeffrey G. Williamson*. Cambridge, Massachusetts: MIT Press.

Hoag, C., 2016. National bank window dressing and the call loan market, 1865–1872. *The Quarterly Review of Economics and Finance*, 60, pp.94–102.

Holmes, A.R. and Green, E., 1986. *Midland: 150 Years of banking business*. London: Batsford.

Holtfrerich, C.L., 1981. Die Eigenkapitalausstattung deutscher Kreditinstitute 1871-1945. *Das Eigenkapital der Kreditinstitute als historisches und aktuelles Problem*, pp.15–29.

Horne, G.F. and Smith, K.C., 1934. *An index number of securities, 1867-1914*. Royal Economic Society Memorandum. Royal economic Society.

*Huang, H and Thomas, R 2016. The weekly balance sheet of the Bank of England 1844-2006. OBRA dataset, Bank of England. http://www.bankofengland.co.uk/research/Pages/datasets/default.aspx*

Investors Monthly Manual. Various years. London: Investors Monthly Manual Office.

Jaffé, E., 1910. *Das englische Bankwesen*. 2. Aufl ed. Berlin : Duncker & Humblot.

Jones, M.T. and Obstfeld, M., 2001. Saving, investment, and gold : a reassessment of historical current account data. In: G.A. Calvo and Mundell, eds., *Money, capital mobility, and trade : essays in honor of Robert A. Mundell*. pp.303–363.

Journal of the Institute of Bankers (1892). Vol. 13.

Keeton, W.R., 1996. Do bank mergers reduce lending to businesses and farmers? New evidence from Tenth District states. *Economic Review - Federal Reserve Bank of Kansas City; Kansas City*, 81(3), pp.63–75.

Kennedy, W.P., 1976. Institutional Response to Economic Growth: Capital Markets in Britain to 1914. In: L. Hannah, ed., *Management Strategy and Business Development*. Palgrave Macmillan, pp.151–183.

Kennedy, W.P., 1987. *Industrial structure, capital markets and the origins of British economic decline*. Cambridge: Cambridge University Press.

King, R.G. and Levine, R., 1993. Finance and Growth: Schumpeter Might Be Right. *The Quarterly Journal of Economics*, 108(3), pp.717–737.

King, W.T.C., 1936. *History of the London discount market*. London: Routledge.

*Kurs-Tabellen der Berliner Fonds-Börse*. 1912-1913. Berlin: Verlag für Börsen- und Finanzliteratur.

Lazonick, W., 1986. The cotton industry. In: B. Elbaum and W. Lazonick, eds., *The decline of the British economy*. pp.18–50.

Levine, R., 1997. Financial Development and Economic Growth: Views and Agenda. *Journal of Economic Literature*, 35(2), pp.688–726.

Levine, R., 2002. Bank-Based or Market-Based Financial Systems: Which Is Better? *Journal of Financial Intermediation*, 11(4), pp.398–428.

Levine, R. and Zervos, S., 1998. Stock markets, banks, and economic growth. *The American economic review*, 88(3), pp.537–558.

Lintner, J., 1965. The Valuation of Risk Assets and the Selection of Risky Investments in Stock Portfolios and Capital Budgets. *The Review of Economics and Statistics*, 47(1), pp.13–37.

The Maddison-Project.

Matthews, P.W., 1921. *The Bankers' Clearing House : what it is and what it does*. London, New York: Sir I. Pitman & Sons.

McCloskey, D.N. and Sandberg, L.G., 1971. From damnation to redemption: Judgments on the late victorian entrepreneur. *Explorations in Economic History*, 9, pp.89–108.

Michie, R., 1988a. Dunn, Fischer & Co. in the City of London, 1906–14. *Business History*, 30(2), pp.195–218.

Michie, R.C., 1981. Options, concessions, syndicates, and the provision of venture capital, 1880–1913. *Business History*, 23(2), pp.147–164.

Michie, R.C., 1987. *The London and New York Stock Exchanges, 1850 - 1914*. London: Allen & Unwin.

Michie, R.C., 1988b. Different in name only? The London stock exchange and foreign bourses, c. 1850-1914. *Business History*, 30(1), pp.46–68.

Michie, R.C., 1999. *The London stock exchange: a history*. Oxford: Oxford University Press.

Michie, R.C., 2003. Banks and securities markets 1870-1914. In: D.J. Forsyth and D. Verdier, eds., *The origins of national financial systems. Alexander Gerschenkron reconsidered*. London: Routledge, pp.43–63.

Michie, R.C., 2016. *British banking: continuity and change from 1694 to the present*. First edition ed. Oxford: Oxford University Press.

Michie, R.C. and Mollan, S., 2012. The City of London as a Centre for International Banking: The Asian Dimension in the Nineteenth and Twentieth Centuries. In: S. Nishimura, T. Suzuki and R.C. Michie, eds., *The origins of International Banking in Asia: the nineteenth and twenteeth centuries*. Oxford: Oxford University Press, pp.13–54.

Mitchell, B.R., 2007. *International historical statistics. Europe: 1750 - 2005*. 6th ed. Basingstoke [u.a.]: Palgrave Macmillan.

Moore, L., Dwarkasing, N. and Braggion, F., 2011. *From Competition to Cartel: Bank Mergers in the U.K. 1885 to 1925*. [SSRN Scholarly Paper] Rochester, NY: Social Science Research Network. Available at: <http://papers.ssrn.com/abstract=1548828> [Accessed 4 Mar. 2016].

Mossin, J., 1966. Equilibrium in a Capital Asset Market. *Econometrica*, 34(4), pp.768–783.

Myers, S.C., 1984. The Capital Structure Puzzle. *The Journal of Finance*, 39(3), pp.574–592.

NBER Macrohistory Database.

Neuburger, H. and Stokes, H.H., 1974. German Banks and German Growth, 1883–1913: an Empirical View. *The Journal of Economic History*, 34(3), pp.710–731.

Neumann's Kurs-Tabellen der Berliner Fonds-Börse. 1890-1911. Berlin: Verlag für Börsen- und Finanzliteratur.

Newton, L., 1996. Regional Bank–Industry Relations during the Mid-Nineteenth Century: Links between Bankers and Manufacturing in Sheffield, c.1850 to c.1885. *Business History*, 38(3), pp.64–83.

Newton, L., 2000. Trust and virtue in English banking: the assessment of borrowers by bank managements at the turn of the nineteenth century. *Financial History Review*, 7(2), pp.177–199.

Nishimura, S., 1971. *The decline of inland bills of exchange in the London money market, 1855-1913*. Cambridge: Cambridge University Press.

Ogden, T., 2003. An analysis of Bank of England discount and advance behaviour, 1870-1914. In: J. Foreman-Peck, ed., *New Perspectives on the Late Victorian Economy*. Cambridge: Cambridge University Press, pp.305–343.

Orbell, J.M. and Turton, A., 2001. *British banking: a guide to historical records*. Studies in British business archives. Aldershot, Hants [u.a.]: Ashgate.

Palgrave, I. ed., 1912. *The Banking Almanac*. London: Skinner.

Petersen, M.A. and Rajan, R.G., 2002. Does Distance Still Matter? The Information Revolution in Small Business Lending. *The Journal of Finance*, 57(6), pp.2533–2570.

Pohl, M., 1982. *Konzentration im deutschen Bankwesen: (1848-1980)*. Schriftenreihe des Instituts für Bankhistorische Forschung e.V / Institut für Bankhistorische Forschung. Frankfurt am Main: Knapp.

Pohl, M., 1986. *Entstehung und Entwicklung des Universalbankensystems: Konzentration u. Krise als wichtige Faktoren*. Schriftenreihe des Instituts für Bankhistorische Forschung e.V / Institut für Bankhistorische Forschung. Frankfurt am Main: Knapp.

Pollard, S. and Ziegler, D., 1992. Banking and Industrialisation: Rondo Cameron twenty years on. In: Y. Cassis, ed., *Finance and financiers in European history, 1880-1960*. Cambridge: Cambridge University Press, pp.17–38.

Pressnell, L.S., 1968. Gold reserves, banking reserves, and the Baring crisis of 1890. In: C.R. Whittlesey and J.S.G. Wilson, eds., *Essays in money and banking : In honour of R. S. Sayers*. pp.167–228.

Rajan, R. and Zingales, L., 1998. Financial Dependence and Growth. *The American Economic Review*, 88(3), pp.559–586.

Riesser, J., 1912. *Die deutschen Grossbanken und ihre Konzentration im Zusammenhang mit der Entwicklung der Gesamtwirtschaft in Deutschland*. 4. verb. u. verm. Aufl. ed. Jena: Fischer.

Salings Börsenjahrbuch 2. Teil. Various years. Berlin: Haude & Spener.

Sayers, R.S., 1976. *The Bank of England 1891 - 1944*. Cambridge: Cambridge University Press.

Scott, P., 1998. The Location of Early Overseas Multinationals in Britain, 1900-1939: Patterns and Determinants. *Regional Studies*, 32(6), pp.489–501.

Sharpe, W.F., 1964. Capital Asset Prices: A Theory of Market Equilibrium Under Conditions of Risk. *The Journal of Finance*, 19(3), pp.425–442.

Sheppard, D.K., 1971. *The growth and role of UK financial institutions: 1880-1962*. London: Methuen.

Skinner, T., 1914. *The London banks and kindred companies and firms*. London: T. Skinner & Company.

Smith, K.C. and Horne, G.F., 1934. *An index number of securities 1867-1914*. London & Cambridge Economic Service, Special Memorandum. London: London & Cambridge Economic Service.

Stiroh, K.J., 2006. A portfolio view of banking with interest and noninterest activities. *Journal of money, credit and banking*, 38(5), pp.1351–1361.

Stiroh, K.J., 2010. Diversification in Banking. In: A.N. Berger, ed., *The Oxford handbook of banking*, Oxford handbooks. Oxford: Oxford University Press.

Suzuki, T., 1994. *Japanese government loan issues on the London capital market: 1870 - 1913*. London: Athlone Press.

Tilly, R., 1966. *Financial institutions and industrialization in the Rhineland 1815 - 1870*. Madison: University of Wisconsin Press.

Tilly, R., 1992. An overview on the role of the large German banks up to 1914. In: Y. Cassis, ed., *Finance and Financiers in European history, 1880-1960*. Cambridge: Cambridge University Press, pp.93–112.

Tilly, R.H., 1986. German banking, 1850 - 1914 : development assistance for the strong. *The journal of European economic history*, 15(1).

Tilly, R.H., 1989. Banking institutions in historical and comparative perspective : Germany, Great Britain and the United States in the nineteenth and early twentieth century. *Journal of institutional and theoretical economics*, 145(1), pp.189–209.

The Times. Various years. London

Wadsworth, J.E., 1968. Banking ratios past and present. In: C.R. Whittlesey and J.S.G. Wilson, eds., *Essays in money and banking: In honour of R. S. Sayers*. Oxford: Clarendon Press, pp.229–251.

Watson, K., 1996. Banks and industrial finance: the experience of brewers, 1880-1913. *The Economic History Review*, 49(1), pp.58–81.

Weber, A., 1915. *Depositenbanken und Spekulationsbanken: ein Vergleich deutschen und englischen Bankwesens*. 2., neu bearb. Aufl ed. München [u.a.]: Duncker & Humblot.

Weber, A., 1938. *Depositenbanken und Spekulationsbanken: ein Vergleich deutschen und englischen Bankwesens*. 4. völlig neu bearb. Aufl ed. München [u.a.]: Duncker & Humblot.

White, E.N., 1986. Before the Glass-Steagall Act: An analysis of the investment banking activities of national banks. *Explorations in Economic History*, 23(1), pp.33–55.

Withers, H., 1930. *The meaning of money*. 5th ed. London: Murray.

# 6. Summary

The Thesis attends the question of a difference in risk-taking between German and English joint stock banks in Chapter 2. Chapters 3 and 4 then focus on the claim of risk-averse English joint-stock commercial banks.

The goal of Chapter 2 is to discover if England's and Germany's banks indeed showed differences in risk-taking. The basis of the analysis is the banks' stock returns listed on the London and Berlin Stock Exchanges between 1890 and 1913. In the first step, systematic factors are excluded. This then makes it possible to compare both countries' banks. The stock exchange data are supplemented with information on balance sheets and other information. Findings from the first step show a higher bank-specific risk for German banks compared to England's banks. Regressions run with bank-specific variables show no country-specific difference. In contrast to provincial banks, banks' shares with head offices in Berlin were riskier. London banks show no significant difference to English provincial banks. A positive relation between the equity ratio and risk was found, which could support the characterization of universal banks in Germany as more risk-loving, as these were less dependent on deposits for funding. A rising number of branches in Germany contributed to lowering risk. Another factor is the earlier foundation of English banks, due to Britain's head start.

Chapter 3 examines the claim of an increased risk aversion of English commercial banks over the late 19$^{th}$ and early 20$^{th}$ century that led to restrictive lending. The Midland bank offers an example for the centralization of the banking system in London. The documents cover the period from 1881 to 1913 and thereby include these developments. Two other banks, the Union Bank of London and the National Provincial Bank of England, provide further evidence. The Midland provides no evidence for a reduction of credit. The finding seems to hold for banks with a similar provincial origin, while the "old" London banks indeed keep a lower credit ratio. Cash adapted after the expansion to London to the common high level of other London-based banks. The increase in published cash reserves was achieved by aggressive window dressing. This supports the impression of continuity. Profit and loss accounts display a step down in advances' returns but also in the costs of capital after expanding into London. But rates stay overall stable. Therefore the Midland's accounts provide no evidence for a restrain of credit.

Chapter 4 discusses the claim of restrictive lending by English commercial banks and anti-provincial bias. The archive documents of the Midland Bank provide accounting data on a divisional level for two time periods 1893-1898 and 1907-1913. The Midland Bank provides no evidence for a systematic neglect of provincial areas. Independent banks lend on a similar level as the respective divisions of the Midland Bank. The provincial divisions report no decline in the amount of credit over time. By increasing advances to the higher provincial level at the London-based divisions Midland contradicts.

Higher loan-to-deposit ratios were closely related to high turnover in urban divisions. The fixed effects regression data supports the observation by a positive link between credit and turnover. Only weak evidence was found for a positive link between interest paid on deposits and the amount of credit. Extremely low interest rates in London might be an explanation for lower credit at “old” London banks. No evidence was found for a negative impact on lending at newly acquired banks after integration into Midland Bank.

# 7. Zusammenfassung

Die Dissertation geht der Frage nach einem Unterschied in der Risikoübernahme deutscher und englischer Banken in Kapitel 2 nach. Kapitel 3 und 4 fokussieren sich dann auf die englischen Geschäftsbanken.

Das Ziel von Kapitel 2 ist darzulegen ob Englische und Deutsche Banken Unterschiede in ihrer Risikoübernahme zeigten. Grundlage der Analyse sind die Aktienrenditen von Banken, die an der Berliner und Londoner Börse zwischen 1890 und 1913 gehandelt wurden. Im ersten Schritt werden systematische Faktoren ausgeschlossen. Nach dem ausschließen der systematischen Komponente ist es möglich die Banken beider Länder zu vergleichen. Die Börsendaten wurden durch Bilanzdaten und andere Informationen ergänzt. Erste Ergebnisse zeigen ein größeres Bankspezifisches Risiko der Deutschen Banken. Nachdem Bankspezifische Faktoren in die Regression eingefügt wurden zeigt sich kein Länderspezifischer Unterschied mehr. Berliner Banken zeigen ein höheres Risiko als deutsche Provinzbanken. Londoner Banken hingegen zeigen kein signifikant höheres Risiko im Vergleich zu englischen Provinzbanken. Ein positiver signifikanter Zusammenhang zwischen Eigenkapitalquote und Risiko konnte gezeigt werden. Dies könnte das Bild risikobereiter deutscher Banken unterstützen, da diese weniger auf Einlagenfinanzierung angewiesen waren. Eine wachsende Anzahl von Filialen deutscher Banken hatte hingegen einen negativen Effekt auf das Risiko. Eine weitere signifikant negative Größe ist die frühere Gründung der englischen Banken.

Kapitel 3 setzt sich mit der Hypothese zunehmend risikoaverser englischer Banken im späten 19. Und frühen 20. Jahrhundert auseinander. Die Midland Bank stellt ein Beispiel des sich auf London konzentrierenden Bankensystems dar. Die Archivdokumente umfassen die Jahre 1881 bis 1913 und decken damit diese Entwicklung ab. Zwei weitere Banken, die National Provincial Bank und die Union Bank of London ergänzen das Kapitel um eine Vergleichende Perspektive. Die Midland Bank zeigt keine Reduktion der Kredite und widerlegt damit die Hypothese. Das Ergebnis wird von anderen Banken mit Ursprung in der Provinz bestätigt, während die „alten“ Londoner Banken weniger Kredite in ihrer Bilanz ausweisen. Im Falle der Barreserven passte sich die Midland hingegen an das übliche hohe Niveau anderer Londoner Banken an. Allerdings wurde dies in erster Linie durch Bilanzverschönerung erreicht wodurch der Eindruck von Kontinuität bestätigt wird. Die Gewinn- und Verlustrechnung zeigt einen Einbruch der Kreditrendite und der Kapitalkosten, nachdem die Midland Bank nach London expandierte. Allerdings blieben die Werte auf konstantem Niveau. Auch dies unterstreicht den Eindruck von Kontinuität.

Kapitel 4 diskutiert die Hypothese, englische Banken hätten restriktiv Kredite verliehen, insbesondere in der Provinz Englands. Die Archivdokumente der Midland Bank beinhalten Daten auf der disaggregierten Ebene der Sektionen für die Zeiträume 1893-1898 und 1907-1913. Die Midland zeigt

keine systematische Negierung der Provinzregionen. Unabhängige Banken zeigen ähnliche Kredit-Einlagen Verhältnisse wie die Sektionen der Midland im entsprechenden Gebiet. Die Provinz-Sektionen zeigen kein sinkendes Verhältnis von Kredit zu Einlagen (Loan-to-Deposit-ratio) in der Provinz. Andererseits steigt der Anteil der Buchkredite in London von niedrigerem Niveau auf das in der Provinz übliche Niveau an. Hohe Kredit-Einlagen Relationen zeigen einen Zusammenhang mit hohen Umsätzen in städtischen Sektionen. Die Fixed-Effects Regression bestätigte diese Beobachtung von einem positiven Zusammenhang zwischen Kredit und Umsatz. Ein schwacher positiver Zusammenhang wurde zwischen Krediten und Einlagenzinsen gefunden. Die besonders niedrigen Einlagenzinsen Londons könnten die niedrige Kreditvergabe der „alten“ Londoner Banken erklären. Kein negativer Einfluss wurde auf die Kredite von ehemals unabhängigen als Sektion in die Midland Bank integrierten Banken gefunden.

## Erklärung

Hiermit erkläre ich, _____, dass ich keine kommerzielle Promotionsberatung in Anspruch genommen habe. Die Arbeit wurde nicht schon einmal in einem früheren Promotionsverfahren angenommen oder als ungenügend beurteilt.

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