Mergers and Acquisitions in British Banking: Forty Years of Evidence from 1885 until 1925 *

Fabio Braggion, Narly Dwarkasing and Lyndon Moore†

December 28, 2010

Abstract

We study the effects of bank mergers and acquisitions in the U.K. from 1885 to 1925. The lack of a regulatory authority and the confidential nature of merger negotiations allows us to precisely measure the wealth effects of M&As in a laissez-faire environment. We find positive wealth effects for bidders (0.7%-1%) and targets (6.7%-8%) over the announcement month. When takeovers took place in a competitive environment wealth creation appears to be related to efficiency gains. As competition decreased, gains to shareholders appear to be related to increased oligopoly power. In a less competitive environment, banks tended to reduce the amount of loans and increase their holdings of safe marketable securities. Banks with higher charter value displayed higher capital ratios.

*The authors would like to thank Ran Abramitzky, Stefano Battilossi, Paul Beaudry, Glenn Boyle, Fabio Castiglionesi, Toby Daglish, Marco Da Rin, Hans Degryse, Olivier de Jonghe, Stefano della Vigna, Bob DeYoung, Tom Dixon, Mintra Dwarkasing, Leslie Hannah, Vasso Ioannidou, Steven Ongena, Maria Fabiana Peñas, Andrew Perchard, Mitchell Petersen, Luc Renneboog, Jack Robles, John Turner and seminar participants at the 2008 European Banking History Conference-Frankfurt, the 2009 EURHISTOCK conference-Madrid, International Monetary Fund, University of Cologne, University of Melbourne, Université de Montréal, Norwegian School of Management (Bergen), Queens University of Belfast, Reserve Bank of Australia, and Tilburg University for comments and suggestions. Dwarkasing thanks the NWO-Mozaiek program for financial support.

†Braggion is from EBC, CentER & Tilburg University. Dwarkasing is from Tilburg University. Moore is from CIREQ and Université de Montréal.

1 Introduction

The desirability (or not) of a having a concentrated banking system and the effect of bank consolidation on shareholders' wealth and banks' risk taking are important economic and financial issues. A good part of the recent debate in banking has been related to the desirability of more or less regulation in order to prevent 'excessive' risk taking by financial institutions and to avoid system stability problems. While the issue is of critical importance at the present time, the absence of a good number of case studies for modern developed economies has necessitated the examination of historical episodes (see e.g., Calomiris and Wilson (2004), Calomiris and Mason (2003), Moen and Tallman (2000), and Reinhart and Rogoff (2008)). We contribute to this literature by studying a forty year historical period in which banks merged in an unregulated and virtually unconstrained environment: the bank merger wave in the United Kingdom in the late 19th and early 20th centuries. We examine the wealth effects for shareholders resulting from the acquisitions, their determinants, and the evolution of the behaviour of banks as the banking industry became more concentrated.

This study provides insights into two issues. First, we analyze the process of bank consolidation in an almost completely unregulated environment. During this period, the share of deposits held by the largest 10 banks in the U.K. rose from 33% in 1880 to 74% in 1920 (see Capie and Rodrik-Bali (1982)), with a far greater increase in concentration in England and Wales (36% to 97%). Anti-trust authorities and legislation did not exist in the period; mergers, even between very large banks were possible and did occur, especially in the first two decades of the twentieth century. Capital requirements and deposit insurance also did not exist. Banks were free to choose their capital ratios according to their preferences. The guarantee of a bank bailout, operated by the government or the Bank of England, was not clear and well defined. From around the 1880s until 1914, there was some implicit guarantee that (potentially solvent) banks would be saved by other commercial banks under the coordination of the Bank of England. However, there was virtually no formal system of supervision and regulation. The combination of these factors gives us the opportunity to analyze shareholder gains and banks' risk taking in a virtually unconstrained environment.

Our study can provide a useful benchmark with which to compare studies that use modern data and in which regulatory issues are relevant.

The second issue is that most studies of mergers and acquisitions (M&As) find non-positive wealth effects for bidding firms around the merger announcement and zero gains overall when considering the combined deal.[1] This result is puzzling. If M&As destroy wealth, why would managers undertake acquisitions in the first place? Some studies (e.g. Roll (1986), Piloff and Santomero (1990), Malmendier and Tate (2008)) suggests that negative wealth effects could be the result of managerial empire building or hubris: managers may engage in M&As in order to maximize their own utility at the expense of shareholders. Another possibility is that M&As are initiated by firms with overvalued equity who wish to pay for the (real assets of the) target with overpriced shares. The (positive) effect of an announcement of a (good) merger financed with equity may be reduced by the simultaneous effective announcement that the price of the firm's equity is too high (see e.g. Savor and Lu (2009)). A final, potentially confounding, factor, stressed by Becher (2000), Asquith et al. (1983), Jensen and Ruback (1983), and Bhagat et al. (2005) is the difficulty to accurately measure M&A returns, due to the difficulty in timing information release. These authors suggest that there is little evidence that bidders systematically overpay for acquisitions.

In our study we can abstract from measurement errors as the timing of information release can be precisely dated due to the confidential nature of M&As in this era. The two banks' boards would meet in private, settle the terms of the agreement, and then announce the terms to shareholders. The negotiations were kept secret from all but the board; consultants, lawyers, and accountants all appear to have been excluded while a merger was under consideration by the board. With the possible exception of information leaks by board members (of which we find little evidence), information release was full and spontaneous.

The nature of M&A transactions also help us to abstract from an additional measurement problem: the truncation dilemma (see Bhagat, Dong, Hirshleifer, and Noah (2005)). A short

[1] See Jensen and Ruback (1983), Jarrell et al. (1988), and Andrade et al. (2001) for general surveys and Piloff and Santomero (1990), Berger et al. (1999), and DeYoung et al. (2009) for surveys that focus on the banking industry.

event window around the announcement data estimates only a fraction of the value that would be brought about by a successful transaction. This is because not all bids succeed and the market weights the potential gains from a merger with the probability the merger eventually proceeds.[2] In our historical context although the approval of bank shareholders was required this was a formality. In our sample, M&A transactions were completed at most two months after the announcement and, once the directors had agreed, the shareholders rubber-stamped the agreement. In Bhagat et al's sample of listed firms the probability of the (first) bid succeeding is 67.8% (690 of 1018 bids); Houston and Ryngaert (1994) find that 85.6% of all U.S. bank merger announcements were carried through to completion. In our sample the probability of an announced merger being completed is 99.4%.[3] As a result, our estimates are very likely to represent the market's estimate of the full value of the merger.

In a sample of 167 takeovers, we find positive wealth effects for bidding banks of 0.8% in the announcement month. Our result differs from most contemporary studies which find zero or negative wealth effects for bidders. In contrast to the literature on more recent M&As we find no evidence of a run-up of bidders' or targets' prices in the months preceding a merger announcement. We also find that target banks experienced positive abnormal returns of 6.6% in the announcement month and the combined abnormal returns were a little over 3%. In the early years the gains appear to be a combination of increased bank networks and efficiency savings. However, as the merger wave continued the incremental gains appear to be due to decreased competition (i.e. bank customers were the losers).

When we analyze banks' risk taking, we find that a more concentrated banking system tends to make the financial system extend fewer loans, and therefore to be less exposed to business cycle risk. The effects appear to be sizeable: a one standard deviation increase in the

[2]The 'intervention method' of Bhagat et al (2005), which allows an assessment of the private information about the bidding firm - revealed when an offer is made, can not be implemented in our data set. This method requires observations of rival bids for the same target which never occurred in the U.K. during our period of study.

[3]For a single announcement the target bank shareholders successfully protested against management's acceptance of a proposed merger. We find no instances of bidding banks' shareholders protesting (successfully or not).

local market concentration ratio of a bank leads to a 24% increase in that bank's holding of safe marketable securities and a 5% decrease in loans to the private sector. Moreover, we find that banks with higher charter value (which we proxy with Tobin's Q) tend to be safer, as they have higher capital ratios. A one standard deviation increase in Tobin's Q is associated with a 12% increase in the book capital ratio of and a 19% increase in the market capital ratio. These results lend support to the so-called 'franchise value' hypothesis: decreased competition prompts banks to embark on safer business strategies to guard their franchise value (see e.g., Smith (1984), Keeley (1990), Hellman, Murdoch, and Stiglitz (2000), Matutes and Vives (2000), and Repullo (2004)). Since the amount of credit extended to the private sectors decreases, our results also suggests that the main policy trade-off is between bank shareholders and bank customers.

We also find that takeovers of less profitable banks and a broadening of the ownership base were associated with higher returns. The degree of ownership concentration of the bidder was an important determinant for both bidders' and targets' returns. High ownership concentration bidders experienced lower returns when they announced an acquisition; however this effect was mitigated if the high ownership concentration bidder paid in shares for the acquisition (i.e. the merger would result in more diluted ownership of the merged firm). Similarly, public targets taken over by high ownership concentration bidders experienced lower returns at the announcement of the acquisition. This result suggest that, in the low-investor protection economy of turn of the century Britain, markets feared high ownership concentration and associated it with worse corporate governance practices, which is similar to the findings of Franks, Meyer, and Rossi (2009).

The degree of local competition was not robustly associated with M&A returns, although a reduction in local competition was beneficial for rival (i.e. non-merging) banks. We measure the degree of local competition that a bank faced as the overlap of that bank's branches with its rivals. We find that over the sub-sample, 1885 to 1915, competition effects were of little importance, however as the industry consolidated the benefit to incumbent banks of the disappearance of a competitor increased markedly. We find that from 1915 to 1925, in a month in which two banks merged, any banks not involved in the merger achieved an

abnormal return of around 1.8%.

We only consider mergers between domestic banks located in England or Wales. Mergers with Scottish, Irish, colonial or foreign banks are excluded for two reasons. First, they are subject to different banking laws, and second, the operated in different markets. No non-English/Welsh banks operated branch networks within England and Wales (with the exception of a branch in the financial hub of London), and English/Welsh banks did not operate branches abroad (with the exception of 2 or 3 branches just north of the Scottish border).

This paper proceeds as follows. In Section 2 we review the literature on banks' mergers and acquisitions. In Section 3 we describe the main institutional features of the London financial markets and the British Banking System at the turn of the twentieth century. In Section 4 we describe our data sources, we provide variable definitions, and we present descriptive statistics. Section 5 introduces the event study methodology. We present our results on wealth effects in Section 6 and on banks' behaviour in Section 7. Section 8 concludes.

2 Literature Review

2.1 Bank Mergers and Wealth Effects

A large number studies investigate the wealth effects of industrial firms' and banks' acquisitions. Jensen and Ruback (1983) summarize various studies of M&As between 1929 and 1976. On average, bidders gain about 3.8% in tender offers and obtain approximately zero in mergers whereas targets gain roughly 29%. These results are confirmed by Andrade et al. (2001) in a more recent survey: mergers concluded both in the 1980s and 1990s yielded negative, not statistically significant, returns for acquirers in various event windows around the announcement date. Conversely, they produced positive returns for targets of 14% to 20%.

For the banking industry, Becher (2000) takes the simple average of the results from six

different studies and finds that targets gain 20.5% whereas bidders roughly break even with excess returns equal to -0.6%. Since the bidder is usually much bigger than the target the combined value generated by M&As is very small. Houston and Ryngaert (1994) find an average wealth effect of -2.3% for U.S. bidder banks, whereas target banks have an average wealth effect of 14.4%, between 1985 to 1991 in a sample of large bank mergers. In a sample of 558 U.S. bank mergers concluded between 1980 and 1997, Becher (2000) finds target banks gain about 22% from the announcement, whereas bidders break-even in an event window of (-30, +5) days. These results, however, are sensitive to the event window selected: in a shorter event window, such as (-5,+5) days, bidder returns become significantly negative.

Studies also show that returns for bidder banks are significantly higher when the form of finance is cash (or a mix of cash and stock), rather than when payment is only stock (see e.g., Houston and Ryngaert (1997), Becher (2000), and Savor and Lu (2009)).

Ashton and Pham (2007) study the effect of 61 U.K. financial institution mergers over the period 1988 to 2004. They find that these mergers increased efficiency and had little impact on retail interest rates. Since most U.K. financial firms that were taken over in recent years were unlisted (e.g. building societies) they do not calculate wealth effects.

2.2 Competition and Risk Taking

Two competing hypotheses relate the level of banking competition with the degree of banks' risk taking. On one hand, several theoretical papers argue that increased competition leads banks to embark on safer business strategies (e.g., Smith (1984), Keeley (1990), Carletti and Hartmann (2003) and Repullo (2004)). The main reason is that greater market power increases the value of a bank franchise (or the 'charter value'). This increases banks' opportunity costs of bankruptcy. As a result banks act more prudently and pursue low-risk strategies. On the other hand, another family of studies rejects the previous view and emphasize that banks in uncompetitive markets are more likely to originate risky loans and generate financial instability. For instance Mishkin (1999) argues that banks in concentrated systems are more likely to be subject to 'too big to fail' policies that encourage risk-taking behavior

by bank managers. Boyd and DeNicoló (2005) argue that by increasing lending rates, banks in less competitive markets exacerbate moral hazard problems with their borrowers, which induces borrowers to undertake riskier projects. As a result, banks facing less competition hold riskier loans in their portfolios.

A large number of studies have tested these competing hypotheses (see Berger et al. (2004) for a survey). Using concentration as a proxy for banks' marker power, De Nicoló et al. (2004) show that more concentrated systems are more likely to experience crises. In contrast, Beck et al. (2006) present evidence that concentrated banking systems are more stable. More recent studies have analyzed the issue of competition and financial stability employing different measures of competition than the traditional Herfindahl-Hirschmann Index of concentration. Jimenez et al. (2007) measure competition using the Lerner index and find that in Spain competition in banking is associated with a higher-risk loan portfolio. Schaeck et al. (2009) use the Panzar and Rosse H-statistic as a measure of bank competition and in a cross-country analysis finds that more competitive banking systems are less likely to experience a systemic crisis. Schaeck and Cihak (2010) provide evidence consistent with the notion that competition increases financial stability because it makes the banking sector more efficient. Berger et al. (2009) relate various measures of banking competition in 23 countries to several proxies of risk taking and they find that banks with a higher degree of market power also have less overall risk exposure.

Other studies analyze historical context to shed light on this issue. Carlson and Mitchener (2006, 2009) show that U.S. states that allowed banks branching during the Great Depression also had more stable banking systems: branching opportunities increased local competition and made banks sounder and more efficient.

While these studies have been carried out in settings where regulation plays a very important role, we study how banks reacted to the degree of concentration/competition in an environment where virtually any type of regulation was absent. Our study contributes to understand how banks set their capital ratios and their degrees of liquidity when the government does not curtail their activities.

3 British banking in the late 19^{th} and early 20^{th} centuries

3.1 The Consolidation Process

Before War World One the U.K., and London in particular, was the pre-eminent international financial centre. The London stock market was more than twice as large, relative to GDP, as the New York Stock Exchange, and was the largest exchange in the world (see Rajan and Zingales (2003) and Dimson, Marsh, and Staunton (2002)). The U.K. was a typical market based economy in which equity and bond markets outsized the banking sector. Yet banks played an important role: in 1913 deposits were slightly over 30% of GDP.[4]

Banks were allowed to incorporate with transferable shares (i.e. as 'joint-stock') by the Banking Copartnership Act of 1826 as long as they were not located within 65 miles of London. Incorporated banks however retained unlimited liability. The Companies Act of 1879 permitted banks to establish themselves with limited liability (which they did *en masse*) and required banks to be independently audited (see Turner (2009)). From 1879 on, banks were also required to produce independently audited accounts. Deposit insurance was not introduced until 1982. From around the 1880s until 1914, there was perhaps an implicit guarantee that (potentially solvent) banks would be saved by other commercial banks under the coordination of the Bank of England, as had happened during the Barings rescue in 1890. However, there was virtually no formal system of supervision and regulation. Moral hazard problems may have been somewhat mitigated as the likelihood of a rescue package for a troubled bank remained highly uncertain. Investors were aware that bank failures could occur (see Goodhart and Schoenmaker (1995)) and several small public (but unlisted) banks failed during the 40 year period we consider.[5]

[4]Deposits at the largest 22 English and Welsh banks were around £713 million, nominal GDP was £2354 million.

[5]For example; London and General Bank (1892), Dumbell's Bank (1900), Carlton Bank (1901), Cheque Bank (1901), Economic Bank (1905), London Trading Bank (1910), Birkbeck Bank (1911), and Civil Service Bank (1914).

Capie and Rodrik-Bali (1982) find that in 1870 a total of 387 banks were operating in the U.K. British banks were mainly commercial banks involved in various types of business activities: from providing local means of payment to firms, to acting as financial intermediaries by attracting or offering money on behalf of their clients.[6] Towards the end of the nineteenth century the British banking industry experienced considerable growth in M&A activity (see Figure 1). Between 1870 and 1921 there were 264 bank mergers (or 'amalgamations', as contemporaries referred to them). By 1920 only 75 banks were left in the U.K., of which just 20 were English or Welsh public (also known as 'joint-stock') banks (see Capie and Rodrik-Bali (1982) and *The Economist's* Banking Supplement).[7] The process was mostly characterized by London-based banks taking over other banks. In the period 1885 to 1905, takeovers of private and small targets were more common and the two banks' branch networks were usually geographically diverse. In the second twenty years, targets were mostly public banks of a larger size, which were more likely to operate in the same geographical area as the bidder. Houston, James, and Ryngaert (2001) document a similar pattern in the recent U.S. bank merger movement. Market expansion mergers were more common in the 1980s, whereas in the 1990s local competitors were more likely to be acquired. The British consolidation process was almost entirely driven by voluntary mergers, although a few smaller banks taken over while in financial distress. After the outbreak of World War One mergers required the assent of Treasury, which was always given. The result of this process was the emergence of the 'Big Five' banks in Britain by 1918: Barclays, Lloyds, Midland, National Provincial, and Westminster. The concentration of banking power generated fears of increased monopoly power in the financial industry. On April 14, 1919, the government presented to Parliament the Joint Stock Banks Amalgamation Bill.[8] If approved the bill would have made amalgamations subject to the approval of the Board of Trade and Treasury, forbidden interlocking directorships, and banned the sale of any bank assets to a

[6] In contrast to German banks British banks did not purchase large equity stakes in industrial concerns, nor would they lend formally for long periods for the acquisition of property, plant and equipment (see Fohlin (1998) and Collins and Baker (2003) p. 63).

[7] Mergers could consist of more than two banks, for example 20 private banks combined in 1896 to form Barclays.

[8] Hansard record of parliamentary proceedings (available at hansard.millbanksystems.com).

rival bank. Discussion of legislation restricting mergers proceeded for years in Parliament (e.g. November 19, 1919, April 13, 1921, and February 26, 1924) although none was ever passed. During the 1920s approval for bank mergers was vested with Treasury and the Board of Trade (see Hansard: February 26, 1924), and the Federal Reserve commented in 1930 that (p. 21): 'in recent years the banks, realizing the strength of public opinion, have made few proposals for further amalgamations.'

Table I shows that in 1870 and 1880 the top 10 banks in the U.K. (in terms of deposit collection) had a share of about 31-32% of the total deposits: this figure grew to 74% by 1920. Even more astonishing was the increasing concentration when we examine only England and Wales: in 1870-1880 the top 10 banks controlled about 30-35% of deposits; this figure increased to 96.6% by 1920. The results are similar if we measure concentration as a proportion of deposits controlled by the top 5 banks: in the U.K. this figure increased from 19.6% in 1870 to 65.5% in 1920, and in England and Wales from 25% to 80%. The deposits Herfindahl index, which measures industry concentration, increased from 0.014 in 1870 to 0.091 in 1920 for the U.K. and from 0.017 to 0.125 if we measure just England and Wales (see Table II). In 1870 the U.K. banking system resembled that of Germany in the late 1990s (see Table III), whereas in 1920 the British system was closer to countries that have a high contemporary degree of concentration, such as Belgium or the Netherlands.

3.2 Negotiations

Mergers and acquisitions between two joint stock banks during this era involved the full acquisition of the shares of the target firm. M&A negotiations were conducted in private between the two banks' boards of directors. There were no tender offers nor hostile takeovers.[9]

While we do not have data on the durations of negotiations for each merger in our sample, the available anecdotal evidence suggests that the negotiations were concluded quickly and that they were carried out solely by the directors or the partners of the involved banks.

[9] The absence of hostile takeovers makes our sample similar to takeovers that took places during the 1990s. Andrade et al. (2001) document that only 4% of M&A transaction in the 1990s were hostile takeovers, and hostile bidders acquired fewer than 3% of all targets.

For instance, in 1897, within a month the London and Midland bank could successfully carry out amalgamation agreements with two banks: the Channel Island Bank in Jersey and the Huddersfield Banking Company (see Holmes and Green, 1986, p. 94). More complex negotiations (usually involving larger targets) may have taken a bit longer. For instance, the deal between the London and Midland Bank and City Bank was sealed in October 1898 with the negotiations started during the summer of the same year (see Holmes and Green, 1986, p. 97). We believe that the fast timing of the negotiations together with their confidential nature explain the absence of significant share prices run-ups prior to the public announcement of a merger.

When an agreement had been reached, letters were immediately mailed to both sets of shareholders. An article almost always appeared in the London newspaper *The Times* within a day or two of the agreement. Both firms' shareholders had to formally vote to accept the proposal reached by their boards. The process leading to the approval was extremely fast: within two months of the date of the directors' provisional agreement, shareholders met in an extraordinary general meeting and approved the deal. Often a fast conclusion to the deal was required by the provisional agreement struck between the boards. For example, the agreement between the Glamorganshire Bank and Capital and Counties (struck on March 5, 1898) required shareholder approval within 40 days (clause 15). If such approval was not forthcoming either side could rescind the provisional agreement without legal recourse available to either side. In our sample the average time between date of the directors' provisional agreement and the shareholders' approval is about one month and in some cases it is as short as two weeks.

In many amalgamations, the merger agreement stipulated that some of the managers (or the partners) of the target banks would join the board of directors of the bidding bank after the merger. If the target bank was much smaller than the bidder bank then a board seat was rare; instead the target directors would often retain some autonomy of the running of their former branches as a 'local committee'.

Despite the absence of hostile bids, the M&A market was competitive. Target directors were careful in evaluating the proposed terms of the deal, and they could walk away

if the terms were not satisfactory. London and Midland bank, for instance, entered into negotiations for the acquisition of Stuckey's Banking Company in 1909. These negotiations failed to produce an agreement and Stuckey's were eventually taken over by a successful bid from Parr's Bank in 1909 (see Holmes and Green (1986) p.125). London and Midland also missed a chance with Wilts and Dorset Bank, which was later acquired by Lloyds (Holmes and Green (1986) p.125). Although direct evidence of a competitive market for acquisitions is rare, the case of Hammond, Plumptree (also known as Canterbury Bank) is informative. A letter in the Lloyds archives describes the situation at a meeting on June 20, 1903, just prior to the takeover of Hammond, Plumptree: 'immediately after Mr. W.O. Hammond's (a partner's) death, letters were received from the London and County Bank, Lloyds Bank, the Union of London and Smiths Bank, and the Capital and Counties Bank, expressing a desire to enter into negotiations for the purchase of the business of the Canterbury Bank ... representatives of three of these banks ... were met in person by Mr McMaster at his Partners request.'

A major advantage of our study is that the timing of information release is precise. Negotiations appear to have been kept secret, usually until the very end (although we find a handful of merger 'rumours' that appear in *The Times* a day or two before the official announcement). In addition, the event itself is clearly defined, the release of the boards' provisional agreement was the key event and the subsequent events were completed very quickly and with near certainty.

4 Data

We locate the banks involved in M&As from Capie and Webber (1985). We supplement their list of mergers with information obtained from *The Times of London* and bank archives. The announcement dates and some details of the provisional agreements were obtained from the *The Times of London* and *The Manchester Guardian*. We obtain the full merger details (e.g., amount paid for the target, whether in shares or in cash, whether the directors/partners receive a seat on the bidder's board, whether any assets were excluded from the merger

etc.) from the provisional agreements located in the archives of Barclays, Lloyds, HSBC, and Royal Bank of Scotland.

Data on bank profitability, the number of shareholders, assets, liabilities and the branch network were retrieved from *London Banks and Kindred Companies*, *The Banker's Magazine*, and *The Banking Almanac*. We also obtain balance sheet information from *The Economist's* banking supplement, published semi-annually in May and October. Unfortunately, shareholder lists in the archives are very rare; as a result we cannot construct a direct measure of ownership concentration.[10] Following the literature (see Brav (2009)) we proxy ownership concentration using the number of shareholders of each bank. We also construct a measure of ownership concentration, Capital Issued per Shareholder, defined as the nominal value of common equity issued divided by the number of shareholders.

Of the 167 mergers, 94 (56%) involve public bidders taking over public targets and 73 (44%) involve public bidders taking over private targets. 114 deals were concluded between 1885 and 1905 and a further 53 between 1906 and 1925. We only select deals that involve publicly quoted bidders since we can only calculate returns for joint-stock, exchange-traded banks.[11] We define public banks as those which issued tradeable shares to the owners, and had a board of directors, rather than partners. The overwhelming majority of public banks were also exchange-traded, however, not all public banks were exchange-traded.[12] We present summary statistics of merging banks, at the time of their merger, in Table IV. Panel A shows that the bidding bank was, on average, around eight times as large as the target bank, and nearly 22 times as large when the target was a private bank. 9% of target banks were considered in financial distress at the moment of the acquisition, with a much higher percentage in distress in earlier years.[13] Bank profitability, measured as return on equity

[10] Turner (2009) suggests that the removal of unlimited liability for banks in 1879 implied that the directors spent less care in 'vetting' shareholders, and (p. 6): 'many banks ceased to maintain detailed shareholder and share-trading records after the 1880s.'

[11] There were several private banks taking over, or merging with, other private banks. We find no evidence of private bidders taking over public targets.

[12] For example, Barclays became a public (i.e., joint-stock) bank following its creation in 1896, but was not quoted on the London stock exchange until 1902.

[13] We classify a bank as being in financial distress if at least one of the following sources indicates that:

(ROE) is slightly higher for the acquiring bank, and this difference is most pronounced when the merger is between two public banks. The acquiring banks had roughly five times as many shareholders as the targets. In addition, acquiring banks tended to merge with banks that had more concentrated ownership, measured as Capital Issued per Shareholder. We use these two ownership measures as proxies for directors' control rights. When we look at the means of payment, about 76% of the acquisitions were entirely (or almost entirely) paid for in shares, a number in line with the figures presented by Houston and Ryngaert (2001).[14] Takeovers of public banks were more likely to be paid for in shares (88%) rather than acquisitions of private targets (57%). Following the method of Houston and Ryngaert (1994) we construct a measure of branch overlap. The measure is defined as:

$$Overlap = \frac{\sum_{i=1}^{n} \min(T_i, B_i)}{\sum_{i=1}^{n} (T_i + B_i)}$$

where n is the number of counties in which either bank has branches, T_i is the number of branches of the target in county i, and B_i is the number of branches of the bidder in county i. *Overlap* thus varies from zero (no overlap of branches) to 0.5 (perfect branch overlap). We find that mergers between overlapping banks increased through time, and mergers with private banks tended to occur when there was greater branch overlap. The value of *Overlap* for merging banks in our sample, 0.02, is slightly lower than the overlap of merging American banks in Houston and Ryngaert's study, 0.028, although they use cities as their unit of observation, rather than county. We place each bank branch into one of the 54 historic counties of England and Wales, using the Association of British Counties' *Gazetteer of British Place Names*.[15]

Creck and Wadsworth (1936), Sayers (1957), Holmes and Green (1986), Ackrill and Hannah (2001), and Orbell and Turton (2001).

[14] It was common to use cash payments in conjunction with payments in shares to 'round out' the payment. For example, when Barnsley Banking Co. was taken over by York City and County Bank, Barnsley Shareholders received one York City share (with a market value of £11 and 9 shillings) plus £1 and 11 shillings in cash for each Barnsley share. We treat cases such as this as an example of payment in shares.

[15] http://www.gazetteer.co.uk/

We treat the North, East, and West Ridings of Yorkshire as separate counties.

In Panel B we present additional summary statistics that we are able to construct for public banks. Around 27% of all public banks were headquartered in London, with this percentage increasing over the decades as London-based banks tended to take over provincial banks. The process of expanding the branch network proceeded over the 40 years of our study, the average bank had branches in 4.26 counties in the first decade and in almost 21 counties at the end of our sample. Banks held around 14% of their assets as cash. We use the same definition of as Collins and Baker (2003), which they term 'cash and near-cash'.[16] Banks held more cash at the end of our sample, although this is mainly due to increased cash reserves during the war. Investments in marketable securities averaged around 18% of bank assets, rising slightly towards the end of the period. Banks were very conservative in their investments, and Collins and Baker (2003) argue that p. 63: 'investments remain dominated by British central government and municipal stocks (*i.e. bonds*), colonial (and overseas) public sector bonds, and railway sector bonds or (less often) railway preference shares.' The authors calculate in Table 4.2 the share of investments composed of British government debt, British municipal debt and Colonial (e.g., Australian, Canadian, Indian, and New Zealand) debt as a percentage of all investments. They find that Metropolitan Bank held around 80% of its investments in this category between 1889 and 1913, London and Westminster around 85% between 1892 and 1908, and the London and Midland Bank a little under 70% from 1889 until 1913. Bank loans comprised a little under two-thirds of bank assets, although this amount was sharply reduced during the war. Banks did not publicly disclose (nor keep reliable internal records) that permit any disaggregation of loans. Collins and Baker (2003) state that p. 68: 'there is no breakdown as to the duration of loans, nor as to the distribution between different sectors of the economy ... until obliged to do so in the early 1930s before the Macmillan Committee.' Capital, at book value, fell from 19.2% of assets in the first decade to 7.8% in the final decade. The market value of capital, as a percentage of (the book value of) assets, fell from 26.7% to 11.9% in the period 1916-1925. The average bank size increased enormously over the period, with the book value of assets

[16] Some banks list cash as 'notes and coins', some as 'notes, coins and deposits at the Bank of England', and others as 'notes, coins, deposits at the Bank of England and deposits with other banks'. We treat all of these balance sheet items as 'cash'.

per bank rising from £5.2 million in the first decade to £101.8 million in the final decade.

We obtain monthly asset price data on publicly listed banks from the *Investor's Monthly Manual* (IMM), a sister publication of the Economist. The IMM recorded the prices, dividends, and issued capital for banks, railways, and industrial companies. The IMM only reports share prices at a monthly frequency. It would be possible to collect daily data on London-listed joint-stock banks. However, almost all of the provincial joint-stock banks were only listed on provincial exchanges in the 19th and early 20th centuries. Data for provincial exchanges are difficult to obtain which requires us to rely on the IMM which collects both London and provincial price data.[17]

5 Method

We measure the return in an announcement month as the percentage change in a bank's share price (adjusted for dividends, if any) from the last business day of the month before the provisional merger agreement was signed until the last business day of the month in which the agreement was signed.

We use an event study method to assess the impact of merger announcements on returns. For each announcement we calculate the abnormal return on ordinary equity as:

$$r_{j,t} = R_{j,t} - (\widehat{a}_j + \widehat{b}_j R_{m,t}) \tag{1}$$

where $R_{j,t}$ is the actual return of security j and $R_{m,t}$ is the actual market return. We estimate a_j and b_j with the market model using monthly data for 24 months, from 26 months before to 3 months before the M&A announcement:[18]

$$R_{j,t} = a_j + b_j R_{m,t} + e_{j,t}. \tag{2}$$

We calculate the market return using 104 securities, although not all securities are present for the entire 40 year period. Our index is composed of 20 British railways, 11 iron and

[17] The provincial banks in our sample were listed on the Birmingham, Bradford, Bristol, Cardiff, Halifax, Leeds, Liverpool, Manchester, Sheffield, and Swansea exchanges.

[18] We try both shorter and longer estimation windows. Our results are not affected by the choice of the estimation window.

coal firms, six insurance firms, 10 gas and water firms, 11 shipping firms, five telegraph companies, 10 breweries, and 31 industrial firms. We weight individual security returns by market capitalization. By value our market index captures around 20% of the London market in 1900 and 17% in 1920.

We average the abnormal returns over all N securities that are t months from a M&A announcement date:

$$AAR_t = \frac{1}{N}\sum_{i=1}^{N} r_{i,t}. \tag{3}$$

We cumulate the average abnormal returns (AAR) using various event windows to calculate the cumulative average abnormal return ($CAAR$).

6 Results

6.1 Bidders

Following the method presented in the previous section, we estimate the abnormal return for each M&A, compute the $CAAR$ and the associated standard errors. The results for bidders are displayed in Table V. We calculate a bidder $CAAR$ in the announcement month of about 0.8%, which is statistically significant at the 1% level.[19]

Table V also presents the results when we split the sample in two. The wealth effect is larger in the first two decades of our sample: 1.1% from 1885 until 1905, which is statistically significant at the 1% level, versus 0.25% which is not statistically significant for the period 1906 to 1925. Our results are not particularly sensitive to our choice of event window. If we consider the $CAAR$ from one month before to the month of the announcement, (-1, 0), we find that our estimated wealth effect increases from 0.8% to 1.0%. If we instead change the event window to the month of the announcement to one month after the announcement (0, 1) we find the wealth effect increases slightly from 0.81% to 0.86%.[20]

[19] We perform various tests that control for thin trading. In particular, we re-run the event study analysis the Dimson (1979) corrections for beta. We run the Dimson correction under different specifications of the lead-lag process. The results of the analysis are little changed.

[20] In addition to computing t-statistics, we also compute the rank statistic of the abnormal returns. While

The positive wealth effects we document for bidding banks, differs from Houston and Ryngaert (1994), -2.3%, and Houston et al. (2001), -3.5%. It also contradicts most of the M&A literature for non-financial firms. For example, Savor and Lu (2009) find negative wealth effects for acquirers with share offers, -3.3%, although slightly positive (although non-significant) wealth effects for cash offers, +0.3%. Our results are consistent with two, non-mutually exclusive, hypotheses: that mergers exploited synergies (e.g. Becher (2009)), and/or that mergers increased the oligopoly power of the bidding bank, leading to an increase in expected profits.

When we distinguish between bidders acquiring a private target versus bidders acquiring a public target, we find strong wealth effects for the latter cases, possibly because public targets are on average substantially larger (see Table IV, Panel A). When a bidder took over a publicly quoted bank the bidder experienced a positive abnormal return of a little over 1%, statistically significant at the 1% level. On the other hand, the acquisition of a private bank results in a smaller wealth effect, roughly 0.5%, which is statistically significant at the 5% level. Our result contrasts with research findings for M&As in the 1980s and 1990s that involve non-financial companies. Chang (1998) and Faccio, McConnel, and Stolin (2006) find positive abnormal returns for bidders that acquire private targets and near zero abnormal returns for bidders that acquire public targets.

6.2 Targets and Combined

We also perform the event study analysis on public targets for which asset price information is available. Our sample includes 94 M&As that involve public targets. From 94 M&As we could retrieve asset prices for 82 target banks. We use a shorter estimation window for targets, since return data are unavailable for the target after the merger.[21] The window is

the t-statistic relies on the assumption that market returns are distributed normally, the rank statistic does not make any specific assumption on the distribution of the returns. The results are basically unchanged. Also with the rank statistic, M&As abnormal returns are highly statistically significant in the month of the announcement.

[21] Due to the rapid nature of most mergers, the target bank was often delisted from its stock exchange (and its price did not appear in the IMM) the month after the merger occurred.

13 months, 12 months before the announcement plus the month of the announcement. The results for target banks appear in Table V Panel B.

The results indicate positive wealth effects for targets, on average 6.6%, statistically significant at the 1% level. When we divide the sample in two, we find a positive wealth effect of 3.3% between 1885 and 1905 (statistically significant at 1%), and a much larger effect between 1906 and 1925: 10.9% statistically significant at the 1% level.

These findings are in line with the findings of other studies that report significant positive returns for target banks (see e.g., Becher (2000) and Cornett et al. (2000)), although the wealth effects we find are lower. Houston and Ryngaert (1994) report a higher average positive wealth effect for target banks, 14.3%, estimated in an event window of five days.

The results for the total wealth effect (the weighted average of the bidder and the target) are in Table V Panel C.[22] In both the full sample and in the two subperiods the total combined value change is about +2%, statistically significant at the 1% level. The value creation effect, 2.7%, is larger in the second period (1906-1925) during the time when the banking sector was becoming more and more concentrated.

6.3 Information Leakages and Price Run-ups

Although our reading of the historical literature suggests that merger negotiations were kept private, there may have been a circle of insiders who knew about, and traded on, the progress of merger negotiations. We check for information leaks by examining the $CAARs$ of bidders and targets before the announcement. Table VI panels A and B shows the $CAARs$ for bidders and exchange-traded targets during the 24 months preceding the announcement.

The bidder bank's $CAARs$ are both close to zero and statistically insignificant during the two years prior to the merger announcement, which indicates that little or no advance knowledge of the M&A offer was available to the market. The $CAARs$ for bidder banks is

[22] The combined wealth effect is computed as $\sum_{t=1}^{T}\left(\frac{MV_B*(1+AR_{B,t})+MV_T*(1+AR_{T,t})}{MV_B+MV_T}\right)$, where MV_B and MV_T are the market value of the bidder and the target two months before the announcement and AR_t are the abnormal returns in month t. T identifies the length of the event window.

very negative, -8.4%, two years before the merger and, although this effect is not statistically significant, it was possibly a sign to the market that the target bank was poorly managed which caused other banks to start the merger process.

We collect weekly share prices for the bidder for a subsample of 35 M&As between 1893 and 1907. The $CAAR$ for the bidder is zero two weeks before the announcement, 0.1% (not statistically significant) the week before, and 0.25% (significant at the 1% level) in the week of the announcement. These additional results support our argument that merger negotiations were kept secret until the official announcement by the boards of directors.

The literature on mergers and acquisitions suggests that information disclosure can not be precisely timed. Keown and Pinkerton (1981) and Malatesta (1983) find positive cumulative abnormal returns in the period preceding the official announcement. Acharya and Johnson (2010) find evidence of suspicious equity market activity associated with private-equity buyouts, moreover there tends to be more suspicious activity, pre-announcement, the greater the number of equity participants in the deal. Our results confirm the historical evidence which suggested that little information leaked from directors' negotiations, perhaps because the circle of confidants was very small. Therefore the public announcement is indeed the relevant information disclosure event as far as the market is concerned, and our announcement window precisely captures the effect of information release.

6.4 Determinants of Wealth Creation

We now turn to the question of what constituted a 'good' deal, where 'good' means value enhancing for the shareholders. To assess this we regress the abnormal return of the bidder and then the target in the month of the M&A announcement on various deal characteristics.

We present the results for bidder banks in Table VII. Deals tended to be viewed as good by the market if they will result in a bank that has a more diversified shareholder base, and this result is robust across specifications, whereas other economic variables are not robustly associated with higher returns for target shareholders. A more diversified shareholder base would have been expected to increase the liquidity of the shares in the secondary market,

which may have lead to the positive price reaction. An alternative explanation is that a more diversified shareholder base led to better corporate governance outcomes, perhaps as a result of a dilution of the voting power of directors/insiders.

Columns (2)-(8) show a positive coefficient on payment in shares, with an estimated effect of 0.6% (column (2)) if we do not include other measures of ownership concentration. Bidders with a more diversified investor base (measured as either more shareholders, or less capital issued per shareholder) tended to experience higher returns upon the announcement of a takeover, with these effects statistically significant in three of eight specifications. Taking over a target with more shareholders tended to produce higher returns for the bidding bank, which is significant in two of four specifications. We interact payment in shares with our two measures of ownership concentration in columns (7) through (10). When a bank with a more concentrated ownership base (either fewer shareholders or more capital issued per shareholder) paid in shares it tended to experience higher returns in the month of the announcement, and these estimates are statistically significant at the 5% level in three of four specifications. The market positively viewed takeover bids by banks with diversified ownership. The market attributed lower returns to bidders for deals in which a highly concentrated bidder paid in cash (i.e. the bidder did not dilute its ownership). The market looked more favorably at payment in shares made by highly concentrated bidders, perhaps because these payments implied a dilution of power for the bidder's large shareholders in the merged bank. If we evaluate the predicted abnormal return for a bidder (with explanatory variables set at sample means) that takes over a target (with explanatory variables also set at sample means) we find positive abnormal returns for acquisitions paid for in shares. The predicted ARs for share acquisitions are +5% (column (7)) and +3% (8) versus cash acquisition ARs of -9% (7) and -6% (8). During this period payments in shares did not appear to signal that the bidder had overvalued equity, but rather that the bidder had committed to a more diversified share ownership, which was viewed positively by the market.

The results for target banks' excess returns appear in Table VIII. We find strong effects of the target's profitability: targets that were less profitable experienced a larger abnormal return in the announcement month. This effect is also economically strong: a one standard

deviation decrease of the target's return on equity is associated with a 0.5 percentage point increase in the wealth effect. We believe this is due to the perception that poorly run banks that were taken over would experience management reforms and cost-savings by the bidder. More profitable bidding banks also tended to push up the abnormal returns for target banks, perhaps because more profitable bidding banks could afford to make more generous takeover offers, although the effects are not statistically significant. Targets who agreed to be paid in shares experienced higher abnormal returns, probably because the beneficial effects of a more diversified ownership were shared between bidder and target banks.

We also study the effect on the target's excess returns of the ownership concentration of the bidder. Columns (4)-(7) show that target banks taken over by highly concentrated bidders experienced lower returns. For instance, a one standard deviation decrease in the number of the bidder's shareholders generates a 0.6 percentage point decrease in the wealth effect for the target. The effect is statistically significant at the 1% level. This result suggests that highly concentrated banks that engaged in M&A activity were not especially well regarded by the market, perhaps because such banks were more likely to have had a clique of owner/managers engaged in empire building. Target ownership concentration, for which we use the amount of capital issued per shareholder as a proxy, has a positive coefficient, statistically significant at the 5% level. This result indicates that highly concentrated targets experienced higher excess returns when acquired, perhaps because an inefficient clique was about to be broken up. Since we find this positive association, even for mergers paid for in cash, it appears that the corporate governance story is more compelling than the liquidity story because when a merger is financed with cash there are no first order effects to the liquidity of the merged entity's equity.

To the extent that investors associated highly concentrated banks with worse corporate governance practices, the results in Tables VII and VIII suggest that investors viewed M&As in which the merged entity had a less concentrated ownership structure more favorably. Such mergers generated higher returns for both the bidder and the target.

6.5 Were Mergers Anti-Competitive?

In this section we study whether the positive wealth effects associated with mergers that we find could have been related to an increase in the market power of the surviving banks. There are, in principle, three possible effects of mergers on rival banks. Firstly, mergers may increase the profitability of the surviving banks if there is a reduced amount of product market competition. Since there will be fewer banks in the market post-merger, in principle anti-competitive activities should be easier.[23] This effect implies a positive relation between merger announcements and the abnormal returns of rival banks. Secondly, merger announcements may convey information about the possibility of merging, its acceptance by customers and shareholders, and any cost savings that mergers can bring, which again implies a positive association between announcements and rival banks' abnormal returns. Finally, the merged bank may be a larger, more efficient competitor for rivals in the product market, which implies a negative impact on rivals' abnormal returns.

We employ Eckbo's (1983) method to check whether a decrease in competition played a role in determining the positive wealth effects of mergers. We examine the abnormal returns of rival banks (i.e. those not involved in the merger) at the time of each merger announcement in Table IX, Panel A. We estimate betas individually for each firm, we calculate $CARs$ and the cross-sectional average ($CAAR$) in the announcement month.[24] In the full sample (1885-1925) we find that in the month of a M&A announcement rival banks gained, on average, 0.12% which is statistically significant at the 1% level. Mergers with public banks tended to be associated with higher returns for rival banks (because public banks tended to be larger

[23] We would like to measure banks' margins as the interest rate differential between lending and borrowing. However, banks in the late 19^{th} and early 20^{th} century did not report this information in their financial accounts.

[24] To account for any contemporaneous cross-correlation of returns, Eckbo (1983) pools the rivals of each merger into one equally weighted industry portfolio. This procedure helps to resolve problems of cross-sectional correlation of returns that may bias downwards standard errors. Instead, we follow Petersen (2008) and cluster the standard errors. We cluster standard errors along various dimensions: merger, rival bank and both mergers and rival bank. Results do not change in any dimension. In Table IX, we present the results with standard errors clustered by rival bank.

than private banks). The distribution of these gains is however different from period to period. Most of the gains to rivals banks came in the post-1916 period, when news of a merger was associated with a 1.8% abnormal return for rival banks, statistically significant at the 1% level. Higher returns for rivals during the period of mega-mergers is consistent with the idea that most of the gains to shareholders during this period came at the expense of decreased bank competition. We believe that it is unlikely that these gains are due to information transmission about the possibility of merging. As the gains for rival banks are concentrated in the last part of the time period, the information hypothesis would imply that banks needed roughly thirty years to learn about merging possibilities in an environment in which banking practices were little changed.

In Panel B we regress the $CARs$ of rival banks in an announcement month on various characteristics of the merger. We measure the local competition faced by a bank in a certain year with $Bank\ HHI$, a measure based on a county-level Herfindahl-Hirschmann Index which employs the number of bank branches to measure concentration.[25] $Bank\ HHI$ is a bank specific weighted average of county-level competition, where the weights are given by the fraction of the bank's branches in a particular county. A higher(lower) $Bank\ HHI$ means that the bank is present in a less(more) competitive market.[26]

The variable $Rivals'\ Exposure$ measures the extent to which a rival bank was exposed to the merging banks. Table IX panel (b), columns (1)-(4) considers the impact of $Rivals'\ Exposure$, $Overlap$, and an interaction term between $Rivals'\ Exposure$ and $Overlap$ on the abnormal returns of the rival banks. While the coefficients on $Rivals'\ Exposure$ and $Overlap$ are not statistically significant, the interaction term has a negative sign statistically

[25] We are aware that measures of industry concentrations based on the Herfindhal-Hirschmann index have been criticized as poor proxies for competition (Claessens and Laven, 2004). Unfortunately, we do not have enough information on banks costs and revenues to construct other industrial organization based proxied of competition like in Jimenez et al. (2007), Schaeck et al. (2009) and Schaeck and Cihak (2010).

[26] We present here an example to clarify how the variable Bank HHI is constructed. The Bank of Liverpool in 1885 had branches in three counties: Cheshire (1 branch), Lancashire (8 branches) and Westmorland (1 branch). The Herfindahl-Hirschmann for Cheshire in 1885 was 0.16 , for Lancashire 0.067 , and for Westmorland 0.34. As a result the variable Bank HHI for Bank of Liverpool in 1885 was 0.103 : $\frac{1}{10}$*0.16+$\frac{4}{5}$*0.067+$\frac{1}{10}$*0.34.

significant at the 5%-10% level when we consider the sub-sample of takeovers involving only public targets. We interpret this result as saying that if the two merging banks were located in close proximity to each other (high *Overlap*) the merger would be very 'in-market' and consequently the merged bank would enjoy cost savings and/or local market power which tended to have a negative effect on a rival bank that was in that local market (i.e. high *Rivals' Exposure*). The economic effect is also sizable, a standard deviation increase of the interaction term yields a decline of 0.1 percentage points in rivals' abnormal returns which corresponds to about a 10% decline.

Table IX panel (b), columns (5)-(6) analyzes the effect of a triple interaction term on rivals' abnormal returns. The triple interaction term is constructed as *Bank HHI* * *Overlap* * *Rivals' Exposure*. In both the specifications presented the coefficient on the triple interaction term is positive and statistically significant at the 1% level. These results can be interpreted to mean that mergers that were strongly 'in-market' (i.e. high *Overlap*) were good news for a bank that was very exposed to the merger (i.e. high *Rivals' Exposure*) if that bank was present in markets with low levels of competition (i.e. high *Bank HHI*). Intuitively, if a bank was mainly located in markets with tacit collusion/little competition then mergers that result in the elimination of a rival bank that was mostly present in the same markets was good news, since collusion would have been easier to sustain.

To measure the economic importance of these effects we consider the thought experiment of holding all explanatory variables fixed at their sample means and then increasing *Bank HHI* by one standard deviation. The net effect of this (i.e. considering the four separate coefficients that include *Bank HHI* in column (6)) is a positive effect of 0.1%. This says that news of a merger was better for banks that were located in markets with less competition (i.e. higher *Bank HHI*).

To assess impact of more (or less) exposure by a rival bank to a merger we also consider the following thought experiment. We hold all explanatory variables equal to their sample means and increase *Rivals' Exposure* by one standard deviation. If we use the coefficients in column (6) then *Rivals' Exposure* (by itself) is associated with a 0.3% increase in rival banks' abnormal returns. This consistent with the story that rival banks are learning about

the benefits (and possibilities) of mergers by observation of their neighbouring banks merging. However, the interaction term of *Overlap* and *Rivals' Exposure* yields a partially offsetting effect of -0.06% which we interpret as saying that if the two merging banks were located in close proximity to each other (high *Overlap*) the merger would be very 'in-market' and consequently the merged bank would enjoy cost savings and/or local market power which tended to have a negative effect on a rival bank that was in the same local market (i.e. high *Rivals' Exposure*). The triple interaction term *Bank HHI* adds 0.1% to the abnormal return after the positive shock to *Rivals' Exposure*. Therefore, in an overall sense, being more exposed to mergers was good news for rival banks, which suggests that the learning by observing and greater possibilities for collusion effects of mergers overwhelm the cost saving/stronger competitor effect.

A final test is to measure banks' excess returns in response to proposed legislation that was intended to restrict mergers in the banking industry, the Joint Stock Banks Amalgamation Bill. In April 1919, the Liberal government introduced a bill to the House of Commons with the intention of restricting M&As in the banking industry. Although the bill was never voted on, it would have prevented banks from further mergers or partial asset sales. In the April 1919 banks experienced negative wealth effects of about -0.7%, statistically significant at the 5% level.[27] London banks, which were in general more active in the takeover market and hence more exposed to the bill, experienced slightly worse abnormal returns, -0.8%, statistically significant at the 10% level.

6.6 Long-run Impact of Mergers

We would also like to measure the long-run effects of mergers on the merged bank, to see if investors' positive expectations about the performance of merged banks eventuated. We use two metrics to evaluate the future performance of merged banks: future profitability and future market returns on equity. Neither of these measures is without drawbacks, therefore we report both for robustness.

[27] An alternative interpretation to a story of poor returns due to prevented M&A activity is that banks' share prices were reduced due to the (proposed) restrictions on the resale of their assets.

Data on U.K. bank profits were manipulated pre-1969 (see Capie and Billings (2001)). These authors show that all banks engaged in 'smoothing' reported profits, by means of transfers to and from secret reserves. In addition, the levels of bank profits are sometimes quite distorted, due to a failure to adequately treat bad loans and/or gains or losses on the sale of marketable securities. We find that there is no clear relation between the number of mergers a bank has completed in the previous five years and that bank's future profitability, although this may be partly due to the measurement issue of profits. Merging does not appear to result in increased profits, or at least not *reported* profits. We do however find that the more counties a bank was present in, the larger was the bank's reported profits.

Our second measure, the calculation of long term returns, is also problematic. We would like to be able to calculate future *abnormal* returns, but to do this we would need to define a control group, which contains firms which are similar in both observable and (hopefully) unobservable characteristics. If, as seems very likely, there were industry shocks in the banking sector during the merger wave then the control group needs to consist of other banks. However, almost all the banks that survived as independent operations until 1925 were engaged in multiple acquisitions, usually many acquisitions spread over the entire sample period. The handful of non-Big 5 banks that survived until 1925 (Bank of Liverpool and Martins, Lancashire and Yorkshire, Manchester and County, and Manchester and Liverpool District) were much less likely to have acquired other banks during our sample, and were an order of magnitude smaller than the merging banks, therefore it seems likely that they differed systematically from the merging banks.

Therefore, for each bank-year we regress the average (*unadjusted*) return from month $t + 13$ to month $t + 48$ on various bank characteristics. We find that there is virtually no relation between the number of mergers a firm has completed in the previous five years and future returns, conditional on other observables. Mergers, *per se*, do not appear to result in improved performance on the stock market. However, the less competition a bank faces (higher $Bank\ HHI$) the higher the returns a bank obtains. We also find that banks headquartered in London were associated with higher returns than provincial banks.[28]

[28]Lloyds had joint headquarters in Birmingham and London, we treat Lloyds as a London-based bank.

7 Bank Behaviour

Although the impact of mergers on shareholders is important, given that the banking system is tightly linked via the credit channel with other sectors of the economy, the impact of mergers on bank behaviour is another cause for concern. To assess this we measure the impact of mergers on bank balance sheet ratios. We present the aggregate ratios for public banks that operated in England and Wales in Figure 3.[29] Loans over assets declined by about 10% points in our sample period, whereas cash over assets and investments over assets increased by about 5 percentage points. Book and market capital ratios halved during the sample period, from 28% to 14% and from 20% to 10% respectively. By the end of the period banks' capital ratios are very close to modern U.S. capital ratios (see Berger et al., 2008).[30] Such a large decline in capital ratios could be due to the expansion of the banking activity and the formation of a national branching network. By extending their branch networks, banks could better diversify their activities and hold lower capital ratios.

In Table XI Panel A we present regressions of bank balance sheet ratios on various bank characteristics. Each observation is a bank-year. In columns (1) through (5) we show the OLS results (which include year and bank fixed effects) and in columns (6) - (10) we present two stage least squares (2SLS) estimates, where we use a measure of the degree of local competition a bank faced at the start of our sample ($Bank\ HHI$ in 1885) as an instrument for the amount of local competition.[31] We use the 2SLS procedure to reduce potential problems of reverse causality from balance sheet ratios to bank concentration, for example banks with a higher cash/assets ratio may have been more easily able to take over rival banks, which would increase $Bank\ HHI$. The results indicate that banks in more concentrated markets tended to reduce their cash holdings and loans and to increase their investments in

[29] These data include all joint-stock banks that publicly reported their balance sheets (only a handful of small joint-stock banks did not report). The data exclude private banks, building societies, friendly societies etc.

[30] Both our figures and the figures presented by Berger et al. do not take into account off balance sheets items.

[31] The instruments are strongly statistically significant. Results are available upon request from the authors.

marketable securities. The economic effects are sizeable; the 2SLS results indicate that a one standard deviation increase in lagged $Bank\ HHI$ results in a 2 percentage point decrease in the cash ratio (equal to a 17% decrease from the mean ratio), a 6 percentage point (35%) increase in the investments ratio, and a 3 percentage point (5%) decrease in the loans ratio. Given that investment portfolios were heavily weighted towards (very low risk) government bonds, the dominating effect of more concentration seems to be less risk taking, since less credit was extended via loans. More concentration is also weakly associated with lower capital ratios.

Other results are that as banks became larger they tended to somewhat reduce their cash and investments while increasing their loans. Larger banks were associated with lower book value of capital to assets ratios, and although the effect on the market value of capital to assets is not statistically significant it is negative. The 2SLS results indicate that a one standard deviation increase in lagged size is associated with roughly a 4 percentage point decrease (21%) in the book capital ratio. More profitable banks (one side effect of increased concentration) were associated with lower book ratios of capital to assets and (in the 2SLS results) the holding of more marketable securities and fewer loans. London based banks were more likely to hold more cash, and make fewer loans, and the more counties a bank was present in tended to increase the cash holdings and decrease the investments. The coefficient on $\Delta SIZE$ indicates that fast growing banks tended to decrease their capital ratios, both book and market.

In Panel B we repeat the regression of Panel B, except that we replace $Bank\ HHI$ with Tobin's Q following the procedure of Keeley (1990). The results are broadly unchanged. Banks with a higher charter value (with Tobin's Q used as a proxy) tend to hold more capital relative to assets. Using the 2SLS results we find that a one standard deviation increase in lagged Tobin's Q is associated with a roughly 2 percentage point (21%) higher capital ratio (at book value) and a roughly 5 percentage point (19%) higher capital ratio (at market value). Banks with a higher charter value (i.e. Tobin's Q) were careful to remain safe and thereby to maintain their charter value.

Larger banks, more profitable banks, and banks present in more counties (all side effects

of increased market concentration) tended to have lower capital ratios. Faster growing banks made, on average, more loans and held fewer marketable securities than slower growing banks.

In conclusion, we document that increased bank concentration is associated with fewer loans and increased holdings of government debt, which is likely to have had a net effect of lowering bank risk taking. No major British banks failed during the period of our study (or indeed during the 20^{th} century), and although the merger wave and the development of a national branching system resulted in lower capital ratios, it also influenced banks to hold less risky assets. Although capital ratios decreased during our sample period, banks with a higher charter value tended to have had higher capital ratios, i.e. they tended to be safer.

8 Conclusion

We study the shareholder wealth effects for banks during the forty year wave of M&As in the U.K. between 1885 and 1925. The analysis of this period allows the investigation of M&As over a very long period of time and studies how returns from acquisition deals evolved while the banking industry was becoming more and more concentrated. We study 167 takeovers and we find positive wealth effects for bidders and targets in the month of the M&A announcement. This result is different from studies that use recent data which find zero or negative wealth effects for bidders.

As the merger wave progressed, banks uninvolved in a proposed merger experienced close to +2% abnormal returns in a month in which two rivals announced that they were merging. Declining competition appears to have benefited all banks' shareholders, at the expense of bank customers. Less competition also appears to have manifested itself as a decline in bank loans relative to assets. Tacit collusion may have involved restricting the supply of loans to businesses to push up the interest rate that they paid.

References

Acharya, Viral, and Timothy Johnson, More Insiders, More Insider Trading: Evidence from Private-Equity Buyouts, *Journal of Financial Economics*, Vol. 98(3), pp. 500-523, 2010.

Ackrill, Margaret and Leslie Hannah, *Barclays: The Business of Banking 1690-1996*, Cambridge University Press, 2001.

Andrade, Gregor, Mark Mitchell, and Erik Stafford, New Evidence and Perspectives on Mergers, *Journal of Economic Perspectives*, Vol. 15(2), pp. 103-120, 2001.

Asquith, Paul, Robert Bruner and David Mullins, The Gains to Bidding Firms from Mergers, *Journal of Financial Economics*, Vol. 11(1), pp. 121-139, 1983.

Becher, David, The valuation effects of bank mergers, *Journal of Corporate Finance*, Vol. 6(2), pp.189–214, 2000.

Becher, David, Bidder Returns and Merger Anticipation: Evidence from Banking Deregulation, *Journal of Corporate Finance*, Vol. 15(1), pp. 85–98, 2009.

Beck, Thorsten, Asli Demirgüç-Kunt, and Ross Levine, Bank Concentration, Competition, and Crises: First Results, *Journal of Banking and Finance*, Vol. 30(5), pp. 1581–1603, 2006.

Berger, Allen N. , Rebecca Demsetz, and Philip Strahan, The consolidation of the financial services industry: Causes, consequences, and implications for the future, *Journal of Banking and Finance*, Vol. 23(1), pp. 135-194, 1999.

Berger, Allen N., Asli Demirgüç-Kunt, Ross Levine, and Joseph Haubrich, Bank Concentration and Competition: An Evolution in the Making, *Journal of Money, Credit and Banking*, Vol. 36(3), pp. 434–50, 2004.

Berger, Allen N., Robert DeYoung, Mark J. Flannery, David Lee and Özde Öztekin, How Do Large Banking Organizations Manage Their Capital Ratios?, *Journal of Financial Services Research*, Vol. 34(1) pp. 123-149, 2008.

Berger, Allen N., Leora F. Klapper and Rima Turk-Ariss, Bank Competition and Financial Stability, *Journal of Financial Services Research*, Vol. 35(1) pp. 99-118, 2009.

Bhagat Sanjai, Ming Dong, David Hirshleifer, and Robert Noah, Do tender offers create value? New methods and evidence, *Journal of Financial Economics*, Vol. 76(1), pp. 3-60, 2005.

Boyd, John, and Gianni deNicoló, The Theory of Bank Risk-Taking and Competition Revisited, *Journal of Finance*, Vol. 60(3), pp. 1329–42, 2005.

Brav, Omer, Access to Capital, Capital Structure, and the Funding of the Firm, *Journal of Finance*, Vol. 64(1), pp. 263-308, 2009.

Calomiris, Charles and Joseph Mason, Fundamentals, Panics and Bank Distress During the Depression, *American Economic Review*, Vol. 93(5), pp. 1615-47.

Calomiris, Charles and Berry Wilson, Bank Capital and Portfolio Management: The 1930s 'Capital Crunch' and the Scramble to Shed Risk, *Journal of Business*, Vol. 77(3), pp. 421-56, 2004.

Carletti Elena and Philipp Hartmann, Competition and financial stability: what's special about banking? In: Mizen P (ed) Monetary history, exchange rates and financial markets: essays in honour of Charles Goodhart, vol. 2. Edward Elgar, Cheltenham, UK, 2003

Carlson, Mark and Kris Mitchener, Branch Banking, Bank Competition, and Financial Stability, *Journal of Money, Credit and Banking*, Vol. 38(5), pp. 1293-1327, 2006.

Carlson, Mark and Kris James Mitchener, Branch Banking as a Device for Discipline: Competition and Bank Survivorship during the Great Depression, *Journal of Political Economy*, Vol. 117(2), pp. 165-210, 2009.

Capie, Forrest and Ghila Rodrik-Bali, Concentration in British Banking, 1870-1920, *Business History*, Vol. 24, pp. 280-292, 1982.

Capie, Forrest and Mark Billings, Profitability in English banking in the twentieth century, *European Review of Economic History*, Vol. 5(3), pp. 367-401, 2001.

Capie, Forrest and Alan Webber, *A Monetary History of the United Kingdom, 1870-1982*, Allen & Unwin, London, 1985.

Carbó, Santiago, David Humphrey, Joaquín Maudos and Philip Molyneux, Cross-country Comparisons of Competition and Pricing Power in European Banking, *Journal of International Money and Finance*, Vol. 28(1), pp. 115-134, 2009.

Chang, Saeyoung, Takeovers of Privately Held Targets, Methods of Payment, and Bidder Returns, *Journal of Finance*, Vol. 53(2), pp. 783-84, 1998.

Claessens, Stijn, and Luc Laeven. "What Drives Bank Competition? Some International Evidence." *Journal of Money, Credit and Banking*, Vol. 36(3), 563–83, 2004.

Collins, Michael, *Money and banking in the U.K.: A history*, Croon Helm, Beckenham, Kent, 1988.

Collins, Michael, and Mae Baker, *Commercial Banks and Industrial Finance in England and Wales, 1860-1913*, Oxford University Press, Oxford, 2003.

Cornett, Marcia, Gayane Hovakimian, Darius Palia, and Hassan Tehranian, The impact of the Manager- Shareholder conflict on acquiring banks returns, Working paper, Boston College, 2000.

Corrado, Charles and Terry Zivney, The Specification and Power of the Sign Test in Event Study Hypothesis Tests Using Daily Stock Returns, *Journal of Financial and Quantitative Analysis*, Vol. 27(2), pp. 465–478, 1992.

Crick, W. F. and J. E. Wadsworth, *A Hundred Years of Joint Stock Banking*, Hodder and Stoughton, London, 1936.

De Nicoló, Gianni, Phillip Bartholomew, Jahanara Zaman, and Mary Zephirin, Bank Consolidation, Internationalization, and Conglomerization: Trends and Implications for Financial Risk, *Financial Markets, Institutions and Instruments*, Vol. 13, pp. 173–217, 2004.

DeYoung, Robert, Douglas Evanoff, and Philip Molyneux , Mergers and Acquisitions of Financial Institutions: A Review of the Post-2000 Literature, *Journal of Financial Services Research*, Vol. 36(2-3), pp. 87-110, 2009.

Dimson, Elroy, Risk Measurement when Shares are Subject to Infrequent Trading, *Journal of Financial Economics*, Vol. 7(2), 197-226, 1979.

Dimson, Elroy, Paul Marsh and Michael Staunton, *Triumph of the Optimists: 101 Years of Global Investment Returns*, Princeton University Press, Princeton, 2002.

Eckbo, B. Espen, Horizontal Mergers, Collusion and Stockholder Wealth, *Journal of Financial Economics*, Vol. 11(2), pp. 241-273, 1983.

Faccio, Mara, John McConnell and David Stolin, Returns to Acquirers of Listed and Unlisted Targets, *Journal of Financial and Quantitative Analysis,* Vol. 41(1), pp. 197-220, 2006.

Franks, Julian, Colin Mayer, and Stefano Rossi, Spending Less Time with the Family: The Decline of Family Ownership in the U.K., *Review of Financial Studies*, Vol. 22(10), pp. 4009-4056, 2009.

Goodhart, Charles and Dirk Schoenmaker, Should the Functions of Monetary Policy and Banking Supervision Be Separated? *Oxford Review of Economic Policy*, Vol. 47, pp. 539-560, 1995.

Gorton, Gary and Richard Rosen, Corporate Control, Portfolio Choice, and the Decline of Banking, *Journal of Finance*, Vol. 50(5), pp. 1377-1420, 1995.

Hannah, Leslie, Takeover Bids in Britain before 1950: an Exercise in Business Pre-History, *Business History*, Vol. 16(1), pp. 65-77, 1974.

Hannah, Leslie, Mergers in British Manufacturing Industry, 1880-1918, *Oxford Economic Papers*, 26(1), pp. 1-20, 1974.

Hannah, Leslie, Global Equity Markets in 1900: Why were East Asia and the USA so far behind Africa, Australia and Europe, and did it matter?, Asia-Pacific Economic and Business History Conference presentation, 2007.

Hellman, Thomas, Kevin Murdoch, and Joseph Stiglitz, Liberalization, Moral Hazard in Banking and Prudential Regulation: Are Capital Requirements Enough?, *American Economic Review*, Vol. 90(1), pp. 147–65, 2000.

Hietala, Pekka, Steven Kaplan, and David Robinson, What is the Price of Hubris? Using Takeover Battles to Infer Overpayments and Synergies, *Financial Management*, Vol. 32(3), pp. 5-31, 2003.

Holmes, A. R. and Edwin Green, *Midland 150 Years of Banking Business*, Batsford, London, 1986.

Houston, Joel, and Michael Ryngaert, The overall gains from large bank mergers, *Journal of Banking and Finance*, Vol. 18(6), pp. 1155-1176, 1994.

Houston Joel, Christopher James and Michael Ryngaert, Where do merger gains come from? Bank mergers from the perspective of insiders and outsiders, *Journal of Financial Economics*, Vol. 60(2), pp. 285-331, 2001.

The Investor's Monthly Manual: http://icf.som.yale.edu/imm/

James, Christopher, and Peggy Wier, Returns to Acquirers and Competition in the Acquisition Market: The Case of Banking, *Journal of Political Economy*, Vol. 95(2), pp. 355-370, 1987.

Jarrell, Gregg, James Brickley and Jeffrey Netter, The Market for Corporate Control: The Empirical Evidence since 1980, *Journal of Economic Perspectives*, Vol. 2(1), pp. 49-68, 1988.

Jensen, Michael, and Richard Ruback, The Market for Corporate Control: The Scientific Evidence, *Journal of Financial Economics*, Vol. 11(1), pp. 5-50, 1983.

Jiménez, Gabriel, Jose A. Lopez and Jesús Saurina, How does competition impact bank risk taking? Working paper, Banco de Espana, 2007.

Keeley, Michael, Deposit Insurance, Risk, and Market Power in Banking, *American Economic Review*, Vol. 80(5), pp. 1183-1200, 1990.

Keown, Arthur, and John Pinkerton, Merger Announcements and Insider Trading Activity: An Empirical Investigation, *Journal of Finance*, Vol. 36(4), pp. 855-69.

Malatesta, Paul, The Wealth Effect of Merger Activity and The Objective Functions of Merging Firms, *Journal of Financial Economics*, Vol. 11(1), pp. 155-181, 1983.

Malmendier, Ulrike and Geoffrey Tate, Who Makes Acquisitions? CEO Overconfidence and the Market's Reaction, *Journal of Financial Economics*, Vol. 89(1), pp. 20-43, 2008.

Matutes, Carmen, and Xavier Vives, Imperfect Competition, Risk Taking and Regulation in Banking, *European Economic Review*, Vol. 44(1), pp. 1–34, 2000.

Mishkin, Frederic S., Financial Consolidation: Dangers and Opportunities, *Journal of Banking and Finance*, Vol. 23(2-4), pp. 675–691, 1999.

Moen, Jon, and Ellis Tallman, Clearinghouse Membership and Deposit Contraction During the Panic of 1907, *Journal of Economic History*, Vol. 60(1), pp. 145-63, 2000.

Nelson, Ralph, 1959, *Merger Movements in American Industry, 1895-1956*, NBER.

Petersen, Mitchell, Estimating Standard Errors in Financial Panel Data Sets: Comparing Approaches, Review of Financial Studies, Vol. 22(1), pp. 435-480, 2008.

Orbell, John and Alison Turton, *British Banking: A Guide to Historical Records*, Ashgate, Aldershot, 2001.

Rajan, Raghuram and Luigi Zingales, The Great Reversals: The Politics of Financial Development in the 20th Century, *Journal of Financial Economics*, Vol. 69(1), pp. 5-50, 2003.

Reinhart, Carmen, and Kenneth Rogoff, Banking Crises: An Equal Opportunity Menace, *NBER Working Paper No. 14587*, 2008.

Repullo, Rafael, Capital Requirements, Market Power, and Risk-Taking in Banking, *Journal of Financial Intermediation*, Vol. 13(2), pp. 156–82, 2004.

Roll, Richard, The Hubris Hypothesis of Corporate Takeovers, *Journal of Business*, Vol. 59(2), pp. 199-216, 1986.

Savor, Pavel, and Qi Lu, Do Stock Mergers Create Value for Acquirers?, *Journal of Finance*, Vol. 64(3), pp. 1061-1097, 2009.

Sayers, R. S., *Lloyds Bank in the History of English Banking*, Clarendon Press, Oxford, 1957.

Schaeck, Klaus, Martin Cihak, and Simon Wolfe. Are competitive banking systems more stable? *Journal of Money, Credit, and Banking*, Vol. 41(4), pp. 711-734, 2009.

Schaeck, Klaus and Martin Cihak, Competition, efficiency, and soundness in banking:An industrial organization perspective, Working Paper, 2010.

Smith, Bruce, Private Information, Deposit Interest Rates, and the 'Stability' of the Banking System, *Journal of Monetary Economics*, Vol. 14(3), pp. 293–317, 1984.

Table I

British Bank Deposit Concentration, 1870-1920

Sum of the largest banks' deposits divided by the sum of all banks' deposits. Source: Capie and Rodrik-Bali (1982) Table 3.

	Top 10 banks		Top 5 banks	
	U.K.	England/Wales	U.K.	England/Wales
1870	31.0	32.8	19.6	25.0
1880	32.5	36.2	20.6	26.4
1890	32.0	38.0	21.0	26.5
1900	41.0	46.3	25.5	31.0
1910	56.0	64.7	35.5	43.0
1920	73.7	96.6	65.5	80.0

Table II

British Banking Herfindahl Index, 1870-1920

Sum of squared market shares. Market share of a bank is equal to its deposits divided by aggregate deposits. Source: Capie and Rodrik-Bali (1982) Table 4.

	U.K.	England/Wales
1870	0.014	0.017
1880	0.016	0.020
1890	0.017	0.022
1900	0.022	0.029
1910	0.037	0.053
1920	0.091	0.125

Table III

European Banking Herfindahl Index: 1995 - 2001

Sum of squared market shares. Market share of a bank is equal to its deposits divided by aggregate deposits. Source: Carbó et al (2009) Table 1

	Herfindahl
Belgium	0.12
France	0.04
Germany	0.02
Netherlands	0.13
U.K.	0.04
European Union	0.07

Table IV
Summary Statistics

Bank assets are in thousands of pounds. Target in distress equals 1 if the target bank was in financial distress and 0 otherwise. Return on Equity equals the previous year's profits divided by the nominal value of paid up capital. # of Shareholders equals the number of bank shareholders in the year prior to the merger. Capital Issued/Shareholders equals the nominal value of issued capital divided by the number of shareholders in the year prior to the merger. Branch overlap ranges from 0 (no branch overlap) to one-half (full overlap). Bolded coefficients indicate statistically significant mean differences (between time periods and between private and public targets) at the 5% level. London bank equals 1 if the bank is headquartered in London and 0 otherwise. Counties Present in is the number of counties in which the bank had at least 1 branch. Cash is the value of cash and cash equivalents, investments in the value of marketable securities, loans is the value of outstanding loans, and assets in the value of bank assets, all measured at book values. Capital is the value of shareholders' equity.

Panel A - All Banks, Data as at Time of Merger

	Mean (s.d.) Full Sample	Obs.	Mean (s.d.) 1885-1905	Mean (s.d.) 1906-1925	Mean (s.d.) Private Targets	Mean (s.d.) Public Targets
Assets, £ '000 (Bidder)	41,480 (55,320)	165	**20,964 (16,358)**	**86,062 (79,337)**	**37,329 (50,276)**	**44,774 (59,081)**
Assets, £ '000 (Target)	5,451 (12,716)	136	**1,920 (2,145)**	**12,593 (20,219)**	**1,698 (2,576)**	**7,434 (15,268)**
Target in Distress	0.09 (0.84)	166	**0.115 (0.320)**	**0.02 (0.137)**	0.084 (0.031)	0.085 (0.281)
Return on Equity (Bidder)	0.11 (0.033)	166	**0.10 (0.019)**	**0.13 (0.048)**	0.10 (0.027)	0.11 (0.038)
Return on Equity (Target)	0.10 (0.159)	103	**0.10 (0.199)**	**0.094 (0.022)**	0.105 (0.026)	0.082 (0.023)
# of Shareholders Bidder	8,641 (10223)	129	**4,507 (3,419)**	**15,977 (12,808)**	7,132 (7,458)	9,546 (10,635)
# of Shareholders Target	1,782 (3,092)	167	**673 (628)**	**3,490 (4,375)**	n.a.	1,782 (3,092)
Capital Issued/Shareholders Bidder (£)	552 (289)	129	**582.7 (277)**	**439.2 (190)**	553 (298)	525 (229)
Capital Issued/Shareholders Target (£)	636 (476)	138	665 (389)	589 (591)	n.a.	636 (476)
Branch Overlap	0.020 (0.051)	163	0.017 (0.0493)	0.026 (0.054)	**0.07 (0.020)**	**0.03 (0.063)**
Payment in shares	0.76 (0.43)	151	0.73 (0.45)	0.84 (0.38)	**0.57 (0.499)**	**0.88 (0.324)**

Panel B - Public Banks, Annual Data (1885-1925)

	Full Sample	1885-1895	1896-1905	1906-1915	1916-1925
London Bank	0.266	0.216	0.259	0.381	0.410
	(0.442)	(0.412)	(0.438)	(0.486)	(0.494)
Counties Present in	7.236	4.26	7.084	12.800	20.94
	(10.85)	(6.73)	(9.94)	(14.48)	(21.23)
Return on Equity	0.089	0.085	0.088	0.096	0.121
	(0.025)	(0.023)	(0.023)	(0.026)	(0.039)
Cash / Assets	0.140	0.131	0.133	0.164	0.200
	(0.068)	(0.071)	(0.054)	(0.073)	(0.087)
Investments / Assets	0.179	0.171	0.185	0.178	0.223
	(0.118)	(0.133)	(0.114)	(0.088)	(0.082)
Loans / Assets	0.638	0.657	0.641	0.611	0.526
	(0.127)	(0.140)	(0.117)	(0.102)	(0.102)
Capital (Book) / Assets	0.170	0.192	0.162	0.149	0.078
	(0.077)	(0.069)	(0.057)	(0.109)	(0.030)
Capital (Market) / Assets	0.247	0.267	0.258	0.206	0.119
	(0.199)	(0.264)	(0.119)	(0.116)	(0.033)
Assets, £ ’000	12,864	5,248	10,392	23,837	101,737
	(29,293)	(8,511)	(14,228)	(29,738)	(126,887)

Table V
Wealth Effects of Mergers and Acquisitions

We calculate the average abnormal returns of bidders and targets in the months surrounding the announcement of a merger. Month 0 is the month in which the announcement took place. T-stats are in parentheses.

Panel A: Bidders

	Average Abnormal Returns				# Obs.
Event Window	**(0)**	**(-1 , 0)**	**(0 , +1)**	**(-1 , +1)**	
Full Sample (1885-1925)	0.81%***	0.98%***	0.86%***	1.04%***	
	(4.32)	(4.12)	(3.83)	(3.86)	167
1885-1905	1.07%***	1.04%***	1.2%***	1.2%***	
	(4.28)	(4.01)	(3.66)	(4.15)	114
1906-1925	0.25%	0.87%*	0.04%	0.6%	
	(0.94)	(1.74)	(0.11)	(1.22)	53
Public Targets (1885-1925)	1.04%***	1.4%***	0.9%***	1.3%***	
	(3.93)	(3.95)	(3.64)	(3.95)	94
Private Targets (1885-1925)	0.51%**	0.44%	0.79%*	0.72%*	
	(2.20)	(1.49)	(2.18)	(2.02)	73

Panel B: Targets

	Average Abnormal Returns				# Obs.
Event Window	**(0)**	**(-1 , 0)**	**(0 , +1)**	**(-1 , +1)**	
Full Sample (1885-1925)	6.6%***	7.8%***	6.8%***	8.1%***	
	(5.54)	(5.58)	(5.52)	(5.54)	82
1885-1905	3.3%***	4.5%***	4.0%***	4.0%***	
	(4.36)	(3.91)	(4.57)	(3.90)	47
1906-1925	10.9%***	12.4%***	10.7%***	12.2%***	
	(5.93)	(4.45)	(5.24)	(4.17)	35

Panel C: Combined Value

	Average Wealth Effect				# Obs.
Event Window	**(0)**	**(-1 , 0)**	**(0 , +1)**	**(-1 , +1)**	
Full Sample (1885-1925)	2.1%***	2.6%***	2.0%***	2.5%***	
	(5.85)	(6.32)	(5.74)	(6.17)	82
1885-1905	1.7%***	2.1%***	1.9%***	2.2%***	
	(5.97)	(4.99)	(5.42)	(4.63)	47
1906-1925	2.7%***	3.4%***	2.2%**	2.9%**	
	(3.38)	(3.52)	(2.41)	(2.83)	35

Table VI

M&A information leakages: Bidder

Average cumulative abnormal returns for firms involved in a merger in the months leading up to the merger announcement.

	Bidders		Targets	
Months relative to the announcement	CAR	t-statistics	CAR	t-statistics
[-24,-13]	-0.001	-0.03	-0.084	-1.53
[-12,-5]	0.004	1.32	0.004	0.59
[-4,-1]	0.0007	0.28	0.011	1.58
[-4,0]	0.008***	2.64	0.084***	5.48
-12	0.002	1.65	0.000	-0.02
-11	0.000	0.01	0.001	0.46
-10	0.001	0.36	0.000	0.08
-9	-0.001	0.91	0.001	0.24
-8	0.001	0.85	0.004*	1.82
-7	-0.001	0.51	-0.002	0.49
-6	0.003**	2.03	0.004	1.4
-5	0.000	0.08	-0.004	1.25
-4	-0.002	1.03	0.004	1.52
-3	-0.002	1.18	0.001	0.42
-2	0.002	1.58	0.001	0.15
-1	0.002	1.07	0.012	1.48

Table VII
Cross-sectional Analysis of Bidders' Abnormal Returns

The dependent variable is the bidder's abnormal return in the announcement month. Public Target equals one if the target bank was joint-stock and zero otherwise. Payment in Shares equals one if the M&A was fully paid for by shares and zero otherwise. Overlap measures the branch overlap of the target and the bidder, it ranges from zero (no overlap) to one-half (complete overlap). Two London Banks equals one if both banks were headquartered in London and zero otherwise. Two Provincial Banks equals one if both banks were headquartered outside London and zero otherwise. # Branches are the number of branches of the target and bidder, respectively. Standard errors appear in parentheses. ROE, Target Distress, # of Shareholders, Capital Issued are as defined in Table IV.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Public Target	0.009*	0.006	-0.003	-0.037*	0.011	0.018	-0.011	-0.038*	0.01	0.019
	(0.005)	(0.006)	(0.019)	(0.019)	(0.016)	(0.020)	(0.017)	(0.021)	(0.016)	(0.020)
Payment in Shares		0.006	0.007	0.016	0.013*	0.018*	0.150**	0.102**	-0.179**	-0.204**
		(0.007)	(0.007)	(0.012)	(0.007)	(0.010)	(0.054)	(0.047)	(0.073)	(0.095)
Overlap			-0.021	0.049	0.01	0.056	-0.02	0.055	0.03	0.08
			(0.045)	(0.056)	(0.045)	(0.044)	(0.041)	(0.058)	(0.044)	(0.050)
Two London Banks			0.001	-0.023*	-0.006	-0.016	-0.001	-0.023*	-0.006	-0.016
			(0.011)	(0.012)	(0.012)	(0.013)	(0.009)	(0.012)	(0.012)	(0.012)
Two Provincial Banks			0.008	0.01	0.003	0.012	0.007	0.01	0.003	0.011
			(0.008)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Bidder ROE			-0.118	-0.28	-0.224	-0.236	-0.143	-0.288	-0.213	-0.238
			(0.133)	(0.185)	(0.169)	(0.196)	(0.146)	(0.188)	(0.177)	(0.199)
Target ROE				-0.012		-0.007		-0.01		-0.004
				(0.007)		(0.008)		(0.007)		(0.008)
Ln (#Branches, Target)			-0.003	-0.003	0	0.001	-0.002	-0.002	0	0.001
			(0.003)	(0.004)	(0.003)	(0.003)	(0.002)	(0.004)	(0.003)	(0.003)
Ln (#Branches, Bidder)			0.002	0.011	0.003	0.008	0.001	0.011	0.003	0.007
			(0.006)	(0.007)	(0.006)	(0.006)	(0.005)	(0.007)	(0.006)	(0.006)
Target Distress			-0.003		0.008		0.001		0.009	
			(0.015)		(0.015)		(0.014)		(0.014)	
Ln (# of Shareholders, Bidder)			0.001	-0.005			0.015**	0.004		
			(0.004)	(0.006)			(0.006)	(0.006)		
Ln (# of Shareholders, Target)			0.003	0.009*			0.004	0.009*		
			(0.004)	(0.005)			(0.004)	(0.005)		
Capital Issued/Shareholders, Bidder					-0.002	0.002			-0.025*	-0.028*
					(0.011)	(0.013)			(0.012)	(0.016)
Capital Issued/Shareholders, Target					0.002	0.004			0.002	0.003
					(0.003)	(0.004)			(0.003)	(0.004)
Payment in Shares *									0.031**	0.035**
Capital Issued/Shareholders, Bidder									(0.012)	(0.015)
Payment in Shares *							-0.017**	-0.010*		
Ln (# of Shareholders, Bidder)							(0.006)	(0.006)		
R-squared	0.03	0.02	0.05	0.14	0.08	0.13	0.09	0.15	0.1	0.14
Observations	167	151	147	101	131	101	147	101	131	101

Table VIII

Cross-sectional Analysis of Targets' Abnormal Returns

The dependent variable is the target's abnormal return in the month of the announcement. Bidder London Bank is equal to one if the bidder was headquartered in London and zero otherwise. Other variables are as defined in Tables IV and VII. Standard errors appear in parentheses.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Payment in Shares	0.069***	0.043*	0.054**	0.05	0.031	-0.25	0.173
	(0.022)	(0.024)	(0.023)	(0.030)	(0.025)	(0.225)	(0.279)
Overlap		-0.058	0.001	-0.001	0.001	-0.001	0.001
		(0.145)	(0.003)	(0.005)	(0.004)	(0.005)	(0.004)
Bidder London Bank			-0.027	-0.090**	-0.073*	-0.092**	-0.073*
			(0.036)	(0.041)	(0.039)	(0.041)	(0.039)
Bidder ROE			0.738	0.588	0.098	0.581	0.088
			(0.499)	(0.459)	(0.433)	(0.449)	(0.439)
Target ROE			-2.497***	-2.422***	-2.218***	-2.438***	-2.223***
			(0.622)	(0.569)	(0.567)	(0.572)	(0.573)
Ln (# Branches, Target)				-0.01	-0.002	-0.01	-0.002
				(0.030)	(0.020)	(0.030)	(0.020)
Ln (# Branches, Bidder)				-0.013	0.026*	-0.01	0.027
				(0.022)	(0.015)	(0.021)	(0.017)
Capital Issued/Shareholders, Bidder					-0.080***		-0.06
					(0.022)		(0.039)
Capital Issued/Shareholders, Target					0.054**		0.053**
					(0.021)		(0.022)
Ln (# of Shareholders, Bidder)				0.068***		0.035	
				(0.021)		(0.028)	
Ln (# of Shareholders, Target)				-0.005		-0.007	
				(0.024)		(0.024)	
Payment in Shares * Capital Issued/Shareholders, Bidder							-0.022
							(0.042)
Payment in Shares * Ln (# of Shareholders, Bidder)						0.036	
						(0.027)	
R-squared	0.03	0.10	0.29	0.39	0.43	0.40	0.43
Observations	82	82	81	81	81	81	81

Table IX

Effects of a Merger on Rival Banks

In Panel A we calculate the average abnormal returns of rival banks (i.e. those not participating in the merger) in the month of a merger announcement. We calculate the standard errors and the associated t-statistics by clustering by bank. In Panel B we regress the abnormal return of rival banks in the month of a merger announcement on various characteristics. Rivals' Exposure is calculated as 0.5 * Overlap (Bidder , Rival) + 0.5 * Overlap (Target, Rival). HHI_c is a measure of county level concentration, calculated as $\sum(branches_{i,c}/branches_{total,c})^2$ where the sum is taken over i, $branches_{i,c}$ is the number of branches of bank i in county c, and $branches_{total,c}$ is the total number of all banks' branches in county c. Bank HHI, for bank b, is equal to $\sum HHI_c * (branches_{b,c} / branches_{b,total})$ where $branches_{b,c}$ is the number of branches of bank b in county c, and $branches_{b,total}$ is the total number of bank branches of bank b.

Panel A

	All Targets					Public Targets Only				
Sample	Full	1885-1895	1896-1905	1906-1915	1916-1925	Full	1885-1895	1896-1905	1906-1915	1916-1925
Average Abnormal Return	0.12%***	-0.001	0.002***	0.001	0.017***	0.16%***	-0.001	0.003***	0.001	0.016***
T-statistic	3.07	1.22	4.64	0.96	3.24	3.46	1.41	4.55	1.23	3.69
Observations	9241	4239	3500	1188	314	4762	1908	1852	731	271

Panel B

	(1)	(2)	(3)	(4)	(5)	(6)
Banks	All	All	Only Public	Only Public	Only Public	Only Public
Sample	Full	Full	Full	Full	Full	Full
Firm Fixed Effects	No	Yes	No	Yes	No	Yes
Overlap	0.002	0.003	0.010*	0.009	0.015	0.015
	(0.005)	(0.005)	(0.006)	(0.006)	(0.011)	(0.010)
Rivals' Exposure	0.000	0.000	0.016	0.013	0.042*	0.061**
	(0.007)	(0.007)	(0.012)	(0.009)	(0.023)	(0.025)
Overlap * Rivals' Exposure	-0.01	-0.024	-0.121*	-0.107**	-0.468***	-0.498***
	(0.047)	(0.048)	(0.069)	(0.049)	(0.164)	(0.166)
Bank HHI					-0.011	0.004
					(0.010)	(0.020)
Bank HHI * Overlap					-0.242	-0.390*
					(0.206)	(0.215)
Bank HHI * Rivals' Exposure					-0.044	-0.053
					(0.060)	(0.059)
Bank HHI * Overlap * Rivals' Exposure					2.863**	3.207**
					(1.296)	(1.313)
R-squared	0.03	0.03	0.03	0.03	0.03	0.03
Observations	9015	9015	4743	4743	4739	4739

Table X
Long-Run Effects of Mergers

For each bank-year we regress future returns and future ROE on various bank characteristics. Future returns is equal to the arithmetic average of returns in month t+13 to month t+48. Future ROE is equal to the arithmetic average of ROE in year t+2, t+3 and t+4. #BIDS (Past 5) is the number of mergers a bank has completed in the previous 5 years. Bank HHI is as defined in Table IX, LOG (Size) is the natural logarith of bank assets, London Bank is as defined in Table IV, and Δ Bank HHI is the change in Bank HHI from year t-1 to year t.

Dependent Variable	Future ROE	Future Returns
Bank HHI	0.024	0.138**
	(0.079)	(0.056)
#MERGERS (Past 5)	0.001	-0.001
	(0.004)	(0.002)
LOG (Size)	-0.008	-0.012
	(0.006)	(0.010)
London Bank	0.011	0.053***
	(0.008)	(0.013)
LOG (Counties Present In)	0.010**	-0.007
	(0.004)	(0.005)
Δ Bank HHI	-0.008	0.004
	(0.006)	(0.006)
R-squared	0.29	0.14
Observations	1123	1063

Table XI
Determinants of Balance Sheet Ratios

We regress balance sheet ratios on bank characteristics in Panel A. Columns (1) - (5) are estimated via OLS with year and bank fixed effects. Columns (6) - (10) are estimated via two-stage least squares (using Bank HHI in 1885 as an instrument for Bank HHI) with year fixed effects. We repeat the regressions in Panel B for publicly traded banks. In Panel B we replace the bank Herfindahl Index with Tobin's Q and instrument with Tobin's Q in 1885. Standard errors appear in parentheses. Bank HHI (lagged one year) is as defined in Table IX; Size is the natural logarithm of the book value of assets; ROE, London Bank, and Counties Present In are as defined in Table IV. Δ Size is Size in year t less Size in year t-4. We report the 'within' R-squared for the 2SLS regressions.

Panel A

	Cash/ Assets (1)	Investm./ Assets (2)	Loans/ Assets (3)	Cap(Book) /Assets (4)	Cap(Mkt.) /Assets (5)	Cash/ Assets (6)	Investm./ Assets (7)	Loans/ Assets (8)	Cap(Book) /Assets (9)	Cap(Mkt.) /Assets (10)
Bank HHI (LAG)	-0.153	0.617***	-0.441*	-0.083	-0.214	-0.599***	1.460***	-0.691**	-0.059	-0.236
	(0.150)	(0.230)	(0.270)	(0.101)	(0.156)	(0.221)	(0.280)	(0.309	(0.131)	(0.405)
Size (LAG)	-0.014	-0.023*	0.02	-0.020**	0.003	-0.015	-0.015	0.012	-0.016***	-0.018
	(0.019)	(0.013)	(0.020)	(0.008)	(0.010)	(0.010)	(0.013)	(0.015)	(0.005)	(0.015)
ROE (LAG)	-0.136	0.019	0.076	-0.346***	-0.193*	0.040	0.634*	-0.679*	-0.784***	-0.710
	(0.130)	(0.179)	(0.195)	(0.099)	(0.103)	(0.185)	(0.373)	(0.390)	(0.161)	(0.506)
Returns (Lag)	-0.012	-0.040	0.028	-0.012	0.001	0.049	0.109	-0.162	-0.073*	-0.148
	(0.031)	(0.031)	(0.032)	(0.018)	(0.033)	(0.081)	(0.081)	(0.117)	(0.039)	(0.097)
London Bank						0.038*	0.034	-0.087***	-0.002	-0.012
						(0.020)	(0.025)	(0.029)	(0.008)	(0.023)
Ln (Counties Present In)	0.018	-0.014	0.026*	0.013	0.011	0.031**	-0.034**	0.017	-0.006	0.016
	(0.011)	(0.012)	(0.014)	(0.009)	(0.011)	(0.012)	(0.017)	(0.019)	(0.007)	(0.032)
Δ Size	-0.011	-0.007	0.008	-0.009	-0.014	-0.017	-0.016	0.033	-0.017*	-0.055***
	(0.011)	(0.010)	(0.015)	(0.007)	(0.009)	(0.014)	(0.019)	(0.022)	(0.009)	(0.018)
R-squared	0.22	0.27	0.28	0.57	0.66	0.18	0.33	0.28	0.66	0.27
Observations	1476	1476	1476	1476	1468	1338	1338	1338	1338	1333

Panel B, Public Banks

	Cash/ Assets	Investm./ Assets	Loans/ Assets	Cap(Book) /Assets	Cap(Mkt.) /Assets	Cash/ Assets	Investm./ Assets	Loans/ Assets	Cap(Book) /Assets	Cap(Mkt.) /Assets
Tobin's Q (LAG)	0.001	0.046	-0.027	0.174***	0.558***	-0.017	-0.063*	0.077*	0.071**	0.662***
	(0.053)	(0.067)	(0.080)	(0.046)	(0.044)	(0.024)	(0.040)	(0.040)	(0.024)	(0.012)
Size (LAG)	-0.005	-0.029**	0.016	-0.023***	-0.015*	0.001	-0.033**	0.013	-0.015***	-0.009***
	(0.019)	(0.013)	(0.018)	(0.008)	(0.008)	(0.009)	(0.015)	(0.016)	(0.004)	(0.003)
ROE (LAG)	-0.091	-0.026	0.057	-0.290***	-0.071	0.054	0.206	-0.233	-0.631***	-0.281
	(0.131)	(0.191)	(0.206)	(0.096)	(0.075)	(0.167)	(0.364)	(0.372)	(0.156)	(0.121)
Return (LAG)	-0.01	-0.037	0.017	-0.015	-0.015	0.133	-0.064	-0.097	-0.049*	-0.044
	(0.031)	(0.032)	(0.035)	(0.018)	(0.021)	(0.094)	(0.059)	(0.087)	(0029)	(0.028)
London Bank						0.028	0.008	-0.05	0.002	0.002
						(0.021)	(0.031)	(0.035)	(0.007)	(0.005)
Ln (Counties Present In)	0.013	0.001	0.014	0.008	0.007	0	0.045***	-0.023*	-0.013***	-0.011***
	(0.009)	(0.012)	(0.013)	(0.006)	(0.005)	(0.007)	(0.012)	(0.012)	(0.004)	(0.003)
Δ Size	-0.008	-0.009	0.012	0.003	0.005	-0.005	-0.048**	0.045**	-0.002	0.005
	(0.008)	(0.011)	(0.014)	(0.005)	(0.005)	(0.012)	(0.19)	(0.018)	(0.007)	(0.006)
R-squared	0.18	0.21	0.25	0.59	0.8	0.14	0.13	0.19	0.66	0.91
Observations	1386	1386	1386	1386	1382	1278	1278	1278	1278	1277

Figure 1

Number of Bank Mergers in the United Kingdom

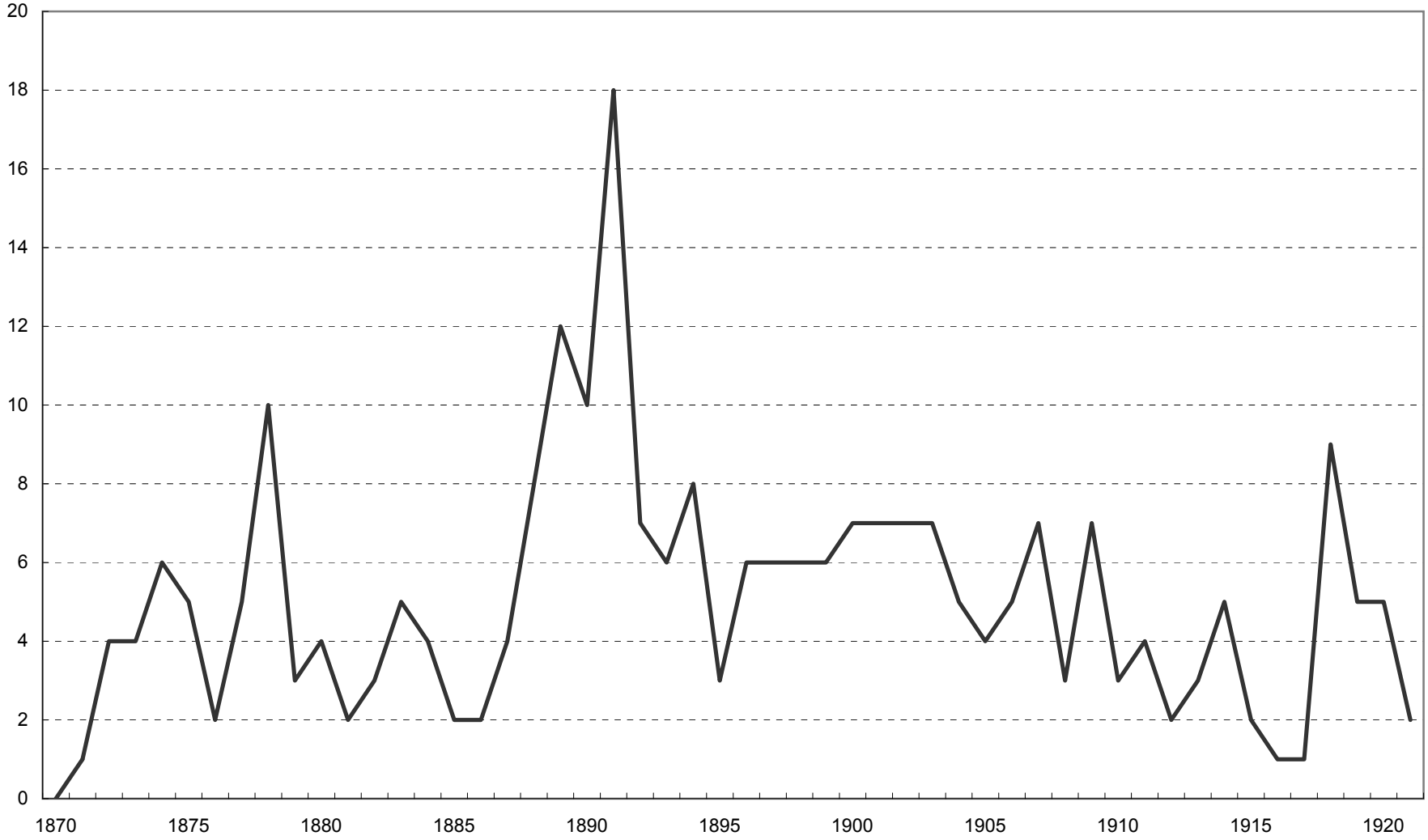

Figure 2
Branch Herfindahl Index

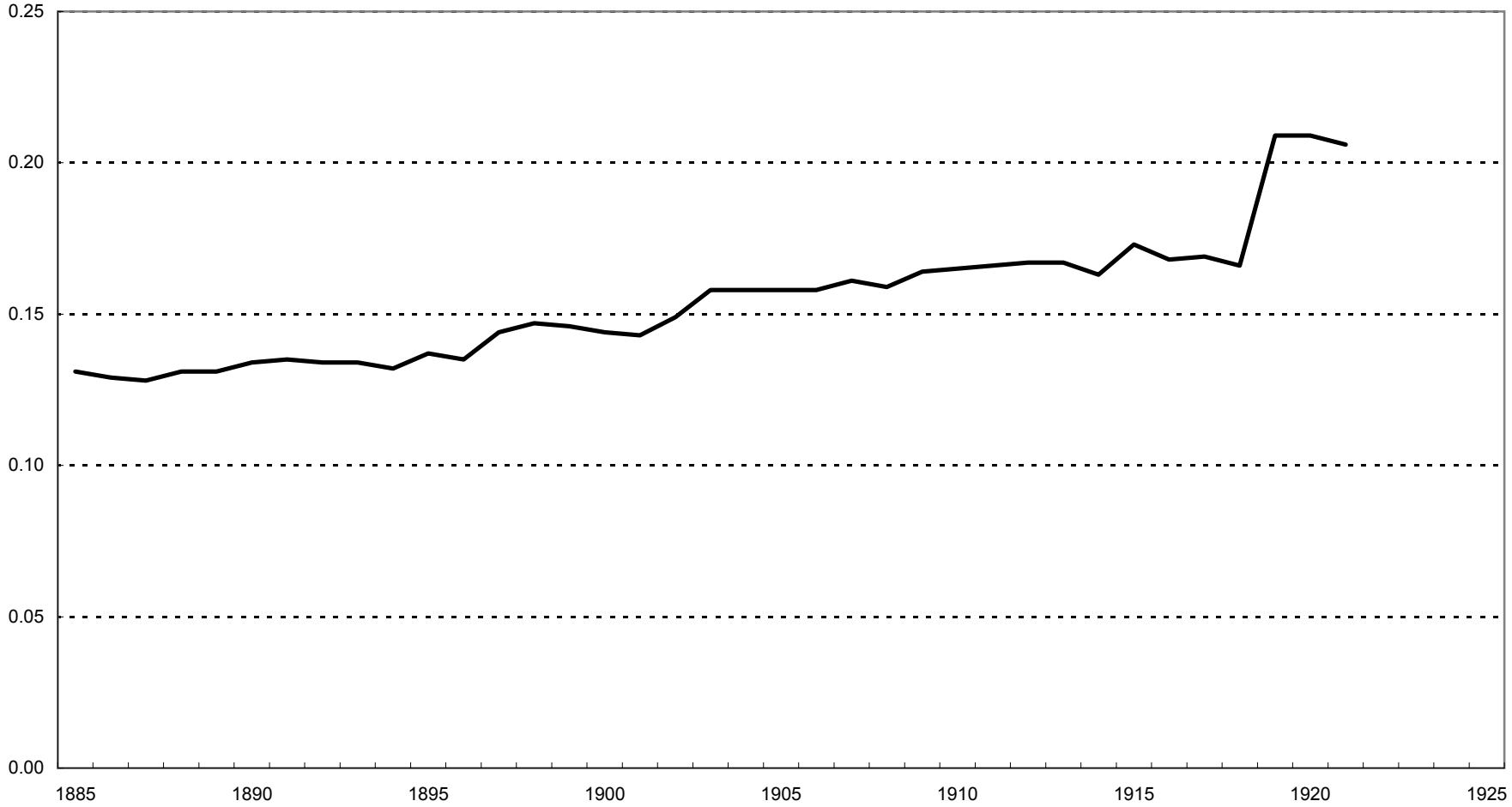

Figure 3
Balance Sheet Ratios