

From Competition to Cartel: Bank Mergers in the U.K.

1885 to 1925 *

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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 allow 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 reduced their loans and increased their holdings of government bonds. Banks with higher charter values had higher capital ratios.

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1 Introduction

The desirability (or not) of 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 many studies of mergers and acquisitions (M&As) find non-positive wealth effects for bidding firms around the merger announcement, with the most negative effects due to takeovers of publicly traded firms (see e.g., Andrade et al. (2001), Fuller, Netter, and Stegmoller (2002), Officer (2003, 2004), Betton, Eckbo, and Thorburn (2007, 2008a, 2008b), and Hackbarth and Morellec (2008)). If M&As often destroy wealth, why do managers undertake acquisitions? A group of explanations rely on the possibility that managers may engage in M&As in order to maximize their own utility at the expense of shareholders (Roll (1986), Piloff and Santomero (1990), and Malmendier and Tate (2008)); other works claim that M&As are initiated by firms with overvalued equity who wish to pay for the (real assets of the) target with overpriced shares (see e.g., Andrade et al (2001) and Savor and Lu (2009)); another possibility relates to the difficulty to accurately measure M&A returns, due to the difficulty in timing information release (Becher (2000), Asquith et al. (1983), Jensen and Ruback (1983), and Bhagat et al. (2005)).

In our study we avoid measurement error 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 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.¹ In our historical context although the approval of bank shareholders

¹The 'intervention method' of Bhagat et al (2005), which allows an assessment of the private information

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%.² 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 abnormal returns for bidders of 0.8% in the announcement month. 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 local market concentration ratio of a bank leads to a 24% increase in that bank's holding of marketable securities (mostly safe government bonds) 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 a higher capital to assets ratio. A one standard deviation increase in Tobin's Q is associated with a 12% increase in the ratio of capital (book value) to assets and a 19% increase in the capital (market value) to assets ratio. These results

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.

²For 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).

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 conclusion 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, they 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).

We proceed 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 Bank Mergers

2.1 Wealth Effects of Mergers

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 market concentration 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 De Nicoló (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' market 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 find 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 bank 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 did not curtail their activities.

3 British banking in the late nineteenth and early twentieth centuries

3.1 The Consolidation Process

U.K. banks were allowed to incorporate with unlimited liability by the Banking Copartnership Act of 1826, as long as they were not located within 65 miles of London.³ Ownership was done with transferable shares. The Joint Stock Banking Act of 1844 required banks to hold a minimum nominal capital of £100,000, and the minimum denomination of shares was £100 (to restrict bank ownership to the wealthier classes). The 1844 Act was later considered to be too restrictive and was repealed in 1857 (see Collins, 1988 p. 73, and Grossman, 2010 p. 183). The 1857 Act permitted banks to change to limited liability companies, under certain conditions, which relatively few banks chose to do (see Turner (2009)). Following the failure of the City of Glasgow Bank in 1878 banking legislation was changed again. The Companies Act of 1879 required banks to be independently audited and eased the rules on limited liability (which banks rushed to take advantage of, see Turner (2009)). However, there was virtually no formal system of supervision and regulation. Moral hazard problems may have been mitigated as a bank bail-out was uncertain, and the system of uncalled capital meant that shareholders were liable for more than their original investment (see Turner (2009)). 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.⁴ Deposit insurance was not introduced until 1982 (see Saunders and Wilson, 1982).

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 short-term credit to local firms, to acting as financial intermediaries

³The geographical restriction of 65 miles was removed in 1833.

⁴For 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).

by attracting deposits and making loans.⁵ 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).⁶

The merger wave was mostly characterized by London-based banks (and provincial banks that had relocated to London) taking over other banks. Large provincial banks would often take over a London-based bank which was a member of the clearing house (in order to obtain clearing house membership), and then subsequently relocate to London. In this way Barclays, Lloyds, and Midland Bank all became London-based. 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 were 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. Scholars have defined the British banking industry in the interwar period as: “a highly cartelised and rigid system.” (Griffiths, p. 3, 1973). He states that (p. 8): “agreement between the clearing banks on a rate for ‘basic’ or ‘regular’ money

⁵In 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).

⁶Mergers could consist of more than two banks, for example 20 private banks combined in 1896 to form Barclays.

to the discount market, which would also be the minimum rate on call loans, seems to have arisen in the years immediately after the end of the First World War, when lending to the discount market was dominated by the five large clearing banks.” According to Capie and Billings (2004) most scholars: “would accept it (ie., the cartel being present) from around 1920.” On April 14, 1919, the government presented to Parliament the Joint Stock Banks Amalgamation Bill.⁷ 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 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.

⁷Hansard record of parliamentary proceedings (available at hansard.millbanksystems.com).

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.⁸

While we do not have data on the duration of negotiations for each merger in our sample, the available anecdotal evidence suggests that negotiations were concluded quickly and that they were carried out solely by the directors or the partners of the involved banks. For instance, in 1897 over the course of 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 signed 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 that we document later.

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. The minutes of these extraordinary meetings often indicates that shareholders were entirely ignorant of the preceding merger negotiations. For example, the Times of London reports at the extraordinary meeting of the Imperial Bank shareholders in December 1892, to confirm the merger with the London Joint Stock Bank, the shareholder Mr. Hodges: "inquired who first suggested the amalga-

⁸The 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.

mation - ‘which bank and when?’” 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, Plumtree (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, Plumtree: “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. We obtain the announcement dates and some details of the provisional agreements from the *The Times of London* and *The Manchester Guardian*. We take 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.⁹ 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

⁹Turner (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.’

(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.¹⁰ We define public banks in the same way as London Banks and Kindred Companies and The Banking Almanac define them; those banks 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.¹¹ 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.¹² Bank profitability, measured as return on equity (*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. 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).¹³ 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

¹⁰There were several private banks taking over, or merging with, other private banks. We find no evidence of private bidders taking over public targets.

¹¹For 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.

¹²We classify a bank as being in financial distress if at least one of the following sources indicates distress: Creck and Wadsworth (1936), Sayers (1957), Holmes and Green (1986), Ackrill and Hannah (2001), and Orbell and Turton (2001).

¹³It 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.

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 had 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*.¹⁴

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 took 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’.¹⁵ 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

¹⁴<http://www.gazetteer.co.uk/>

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

¹⁵Some 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’.

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 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.¹⁶

¹⁶The provincial banks in our sample were listed on the Birmingham, Bradford, Bristol, Cardiff, Halifax, Leeds, Liverpool, Manchester, Sheffield, and Swansea exchanges.

5 Results

5.1 Which banks were involved in M&As?

To begin our discussion of M&As we address the issue of which banks were involved in the process, either as bidders or as targets. To investigate this we run a probit model with the dependent variable equal to one if the bank was a bidder (target) and zero otherwise. Our unit of observation is a bank-year.

We present the results in Table IX, where we split the sample along the dimensions of bidder/target, public/private bank, and by sub-sample (1885-1905 and 1906-1925). We find that bidders (columns (1) - (3)) tended to be more profitable, London-based, and larger. These banks also tended to hold more loans as a percentage of assets, to be present in more counties, and to have a higher market value (which we measure with Tobin's Q).

Target banks, on the other hand, tended to be less profitable, headquartered outside London, and smaller. Targets tended to hold more deposits as a percentage of assets. Bidder banks may have been more interested in deposit-heavy banks, since acquiring them may have proved to be a cheap source of loanable funds. Banks that were taken over were less likely to hold a high ratio of loans to assets, and were less likely to be present in many counties. We also consider membership of the London Clearing House, as scholars have stressed the importance of gaining access to it as a motivation for pursuing a merger (e.g., Capie and Billings p. 75, (2004)). We find that members of the Clearing House were more likely to be targets in the first half of our sample (1885-1905), the period during which the smaller members of the Clearing House were acquired by large provincial banks. Bidders that took over members of the Clearing House became members themselves. The final variable we consider is that of public banks, and we find that public banks were less likely to be targets than were the private banks.

5.2 Bidders

We use an event study analysis to assess the impact of merger announcements on banks' equity returns. For each merger announcement we calculate the abnormal return on the bank's ordinary equity using the market model using various event window.¹⁷ The results for bidders appear in Table V. We calculate a bidder *CAAR* in the announcement month of about 0.8%, which is statistically significant at the 1% level.¹⁸ 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%.¹⁹

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 stands at odds with much 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%, and slightly positive (but 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

¹⁷We estimate the market model using monthly data and various estimation windows. The results presented in the paper employ a 24 months estimation window from 26 months before to 3 months before the merger announcement

¹⁸We 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.

¹⁹In addition to computing t-statistics, we also compute the rank statistic of the abnormal returns. While 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.

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 differs with results for the 1980s and 1990s that involve non-financial companies. Chang (1998) and Faccio, McConnell, and Stolin (2006) find positive abnormal returns for bidders that acquire private targets and near zero abnormal returns for bidders that acquire public targets.

5.3 Targets and Combined

We also perform the event study analysis for public targets with available asset prices. Our sample includes 94 M&As that involve public targets. From these M&As we could retrieve asset prices for 82 targets. We use a shorter estimation window for targets, since return data are unavailable for the target after the merger.²⁰ The window is 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

²⁰Due 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.

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.²¹ 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 amount of value creation, 2.7%, is larger in the second period (1906-1925) while the banking sector was becoming more and more concentrated.

5.4 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. Insider trading was legal in the U.K. during the period of our study, and was only forbidden in 1980 (see Bhattacharya and Daouk, Table I (2002)). In fact company directors (one group of insiders) were not even required to report to the company their or their family's trades of the firm's securities prior to 1967. Firms were only required to inform the stock exchange of their directors' dealings after 1976 (see Pope, Morris, and Peel (1990)). 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 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

²¹The combined wealth effect is computed as $\frac{T}{t=1} \left(\frac{MV_B * (1 + AR_{B,t}) + MV_T * (1 + AR_{T,t})}{MV_B + MV_T} \right)$, 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.

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. The evidence suggests that merger negotiations were kept secret until the official announcement by the boards of directors, despite the absence of insider trading rules. Banerjee and Eckard (2001) study the first merger wave in the U.S., 1897-1903, and also discover little evidence of insider trading, despite the absence of government regulation.

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.

5.5 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.

Most variables are not robustly associated with bidder returns. However, the interplay of paying for an acquisition with shares and ownership concentration is important. When a bank with a more concentrated ownership base (either fewer shareholders or more capital issued per shareholder) paid in shares it experienced higher returns in the month of the announcement (columns (7) - (10)). The economic effect is also important, if we consider for instance Table VII column 10, a one standard deviation increase of ownership concentration for deals paid in cash reduces the bidders' abnormal returns by 1 percentage point. But if the

deal was paid in shares a standard deviation increase in ownership concentration increases abnormal returns by 0.3 percentage points. This result is consistent with two explanations. First, these payments implied a dilution of power for the bidder's large shareholders in the merged bank and possibly a movement towards a better governance structure. This interpretation is in line with the conclusions of Franks, Meyer and Rossi (2009), who find that, despite low investor protection, ownership concentration in U.K. commercial companies at the beginning of twentieth century was decreasing as a result of mergers activities without compromising the quality of corporate governance. A second explanation relates ownership concentration and asymmetric information issues between large shareholders and the market. To the extent that large shareholders are averse to stock financing because of the potential risk of losing control, the fact that they nevertheless use stock to finance acquisitions may signal to investors that the deal is value enhancing (see Amihud, Lev and Travlos (1990)).

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 *ROE* 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.

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 bidder 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, and it is consistent with the idea that

an inefficient clique was about to be broken up. Since the asymmetric information model of Amihud, Lev and Travlos (1990) does not make any empirical prediction about target ownership concentration and target abnormal returns, the corporate governance story – the market appreciated ownership dilution as a signal of improved governance – is more compelling. Table VIII also shows that targets who agreed to be paid in shares experienced higher abnormal returns, which suggests that the market expected that the beneficial effects of a more diversified ownership would be shared between bidder and target banks

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.

5.6 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 to coordinate.²² 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

²²We would like to measure banks' margins as the interest rate differential between lending and borrowing. However, banks in the late nineteenth and early twentieth century did not report this information in their financial accounts.

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 X, Panel A. We estimate betas individually for each firm, we calculate *CARs* and the cross-sectional average (*CAAR*) in the announcement month.²³ 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 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 1.6% abnormal return for rival banks, statistically significant at the 1% level. The post-1916 period is when our Herfindahl index of banking concentration (see Figure 2) is at its peak. 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 an industry concentration measure *Bank HHI*, a measure based on a county-level Herfindahl-Hirschmann Index which employs the number of bank branches to measure concentration.²⁴ *Bank HHI* is a bank specific weighted average of county-level concentration,

²³To 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 bank, rival bank and both merger and rival bank. Our results do not change in any dimension. In Table X, we present the results with standard errors clustered by rival bank.

²⁴Measures of industry concentrations based on the Herfindahl-Hirschmann index have been criticized as poor proxies for competition (see e.g., Claessens and Laven, 2004). Unfortunately, we do not have

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) concentrated market.²⁵

The variable *Rivals’ Exposure*, calculated as $0.5 * \text{Overlap}(\text{Bidder}, \text{Rival}) + 0.5 * \text{Overlap}(\text{Target}, \text{Rival})$, measures the extent to which a rival bank was exposed to the merging banks. Table X 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 individually, the interaction term has a negative sign which is statistically significant at the 5% and 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 one standard deviation increase in the interaction term yields a decline of 0.1 percentage points in rivals’ abnormal returns which corresponds to about a 10% decline.

Table X Panel B, columns (5)-(6) analyzes the effect of a triple interaction term on rivals’ abnormal returns. The triple interaction term is constructed as $\text{Bank HHI} * \text{Overlap} * \text{Rivals’ Exposure}$. 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 rival bank that was very exposed to the merger (i.e. high *Rivals’ Exposure*)

enough information on banks costs and revenues to construct other industrial organization based proxied of competition as in Jimenez et al. (2007), Schaeck et al. (2009) and Schaeck and Cihak (2010).

²⁵We present an example of 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, based on all bank branches present in Cheshire, for Lancashire 0.067, and for Westmorland 0.34. *Bank HHI* for Bank of Liverpool in 1885 was $0.103 : \frac{1}{10} * 0.16 + \frac{8}{10} * 0.067 + \frac{1}{10} * 0.34$.

if that rival bank was present in markets with high levels of concentration (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 more concentration (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. These results are consistent with Sapienza (2002). She finds, in a sample of Italian banks, that mergers reduce the interest rates charged to borrowers when the market share of the acquired bank is small. However, as the market share of the acquired bank increases, the interest rates charged to borrowers increases.

A final test is to measure banks' abnormal 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 April 1919 banks experienced negative wealth effects of about -0.7%, statistically significant at the 5% level.²⁶ 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.

5.7 Long-run Impact of Mergers

We now 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 stock market returns. Both of these measures come with drawbacks, therefore we report both for robustness.

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 profitability, or at least not *reported* profitability (see Table XI, first column). 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

²⁶An 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.

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 more concentrated the market a bank was present in (higher *Bank HHI*) the higher the returns the bank obtains. We also find that banks headquartered in London were associated with higher returns than provincial banks. Since the Big 5 banks were all headquartered in London, multicollinearity issues make it difficult to discriminate between London banks obtaining higher returns, and banks involved in many acquisitions obtaining higher returns.²⁷

6 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 increased market concentration on bank behaviour is another cause for concern. We infer changes in bank behavior by measuring the impact of mergers on bank balance sheet ratios.

²⁷Lloyds had joint headquarters in Birmingham and London, we treat Lloyds as a London-based bank.

We present the aggregate ratios for public banks that operated in England and Wales in Figure 3.²⁸ 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% of assets 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).²⁹ 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 safely hold lower capital ratios.

In Table XII Panel A we present regressions of bank balance sheet ratios on various bank characteristics. Each observation is a bank-year. In columns (1) - (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 industry concentration.³⁰ 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 to 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 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 (low risk) government bonds,

²⁸These 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, and all other financial institutions.

²⁹Both our figures and the figures presented by Berger et al. do not take into account off balance sheets items.

³⁰The instruments are strongly statistically significant. Results are available upon request from the authors.

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 twentieth 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.

7 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 bidding banks.

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 (proxied by industry concentration) 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 businesses paid.

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