# A Century of Firm – Bank Relationships:

## Did Banking Sector Deregulation Spur Firms to Add Banks and Borrow More?

Fabio Braggion[∗]
*CentER - Tilburg University*

Department of Finance
PO Box 90153, NL 5000 LE Tilburg, The Netherlands
Telephone: +31 13 4668209, Fax: +31 13 4662875
E-mail: f.braggion@uvt.nl


Steven Ongena
*CentER - Tilburg University* and *CEPR*

Department of Finance
PO Box 90153, NL 5000 LE Tilburg, The Netherlands
Telephone: +31 13 4662417, Fax: +31 13 4662875
E-mail: steven.ongena@uvt.nl

This Draft: December 2012

# A Century of Firm – Bank Relationships:

## Did Banking Sector Deregulation Spur Firms to Add Banks and Borrow More?

**Abstract**

We study how relationships between firms and banks evolved between during the Twentieth century in Britain and we relate it to firms' borrowing policies and leverage ratios. We document and explain a remarkable transition from single to multiple firm-bank relationships during the last twenty years of the sample period. Larger, global, or transparent companies with greater needs for bank credit and specialized services were more likely to add a bank, especially when located in un-concentrating local banking markets. Deregulation and intensifying competition in the banking sector during the 1970s therefore seemingly spurred banks to supply credit and services through multilateral arrangements. Firms that add a bank following deregulation borrow more than similar firms that do not add a bank, and their bank debt expands while their trade (and other) credit contracts. (131 words)

# I. Introduction

The depth of the recent financial crisis is partly attributed by policymakers and academics alike to excessively high leverage of corporations and banks. Both were heavily indebted at the onset of the financial crisis as low interest rates may have promoted cheap debt financing prior to the crisis, "exacerbating" the well-known structural tax advantages of debt.[1] However, sharp increases of leverage ratios are not a recent phenomenon. Recent work by Graham, Leary and Roberts (2011) shows that the US corporate leverage doubled from pre-war years to the 1970s. They explain this phenomenon not only by looking at the changes that took place in taxation, but also by linking it with fundamental developments in industry composition, firm characteristics, assets and investments, and – important for our paper – credit supply conditions.

We also take a long term perspective and relate firms' leverage and debt financing to a key aspect of financial markets: the secular behaviour of firms-banks relationship. The penchant of corporates to borrow from multiple banks operating in a competitive banking market may be an important, yet so far overlooked, driver of the corporate leveraging. Competing banks may fail for example to fully internalize the consequences of future corporate indebtedness (Bizer and DeMarzo (1992), Degryse, Ioannidou and Schedvin (2011)), especially when vying for market share. As a consequence banks may "overlend."

In this work, we collect data for a large sample of UK firms between 1896 and 1986, and document that with the onset of banking sector deregulation in 1970 a subsequent and remarkable shift from bilateral to multilateral relationship banking took place. We then relate such a shift to firms' use of debt finance and its effect on leverage ratios.

---

[1] Goodhart and Schoenmaker for example argue that therefore "removing [the] tax advantages of debt is vital" to remove the structural bias towards debt financing that encourages companies to take on debt rather than equity (*Financial Times*, December 30, 2010).

We show that the more transparent and levered firms started to use more (but similar-type) banks following deregulation, yet that these firms did not necessarily engage more banks before deregulation. Their leverage and bank debt increased more following deregulation than that of observably similar firms that did not add banks, while their trade (and other) credit likewise contracted. Both the decision to approach a new bank and to borrow there are likely to be driven by common factors that are unobserved to us (i.e., the econometricians): we address the lurking endogeneity problem by matching firms that add banks to otherwise (observably) similar firms, and by performing a difference-in-difference analysis (explained below).

Our paper makes two contributions. First, we provide an alternative channel through which a relaxation of credit supply constraints can affect firms' financial policies, i.e., the switch from bilateral to multilateral relationship lending. In particular, we study if the deregulation that was intended to promote competition in the banking sector eased firms' access to additional banks and consequently changed firms' borrowing policies. Leary (2009), Sufi (2009), Lemmon and Roberts (2010) and Rice and Strahan (2010) also investigate if the relaxation of credit supply constraints affect corporate borrowing. Complementing their work we analyse ninety years of pertinent corporate information, including firm-bank connections, for all commercial and industrial listed firms in the UK to document the differential effect of banking deregulation on relationship banking and the corporate leveraging.

Second, we contribute to the growing literature that studies the evolution of finance over the very long period of time. Like Rajan and Zingales (2003), Chambers and Dimson (2009), Frydman and Saks (2010), Graham, Leary and Roberts (2011) and Schularick and Taylor (2012) we study the long-run development of a financial system to understand if and how the

present financial practices are the result of historical processes. In particular we investigate one of the key components of a financial system, i.e., the interactions between firms and banks and its role for the corporate leveraging.

Long-run analysis provides us with a unique opportunity to test the validity of various relationship banking theories and their relevancy for the corporate leveraging in a new and unexplored context. Our analysis suggests that the transition to multiple banking coincided with a period of liberalization of the banking sector in the UK that greatly increased the level of competition among financial institutions and that may have contributed to the dramatic surge in the corporate leveraging.

The reasons for studying the financial system in Britain are straightforward. Its financial markets had a preeminent role in the world for many decades and banks played a notable role in its performance. Yet Britain's financial system was subject to many changes in its economic and legal environment. Crucial for our purposes financial information was always readily available in Britain. We can therefore collect a unique dataset that contains consistent financial records of all publicly listed firms during a 90-year period from 1896 to 1986, including key firm-bank relationship information.

We first document a remarkable transition from single to multiple bank relationship in the second half of the Twentieth century. Many firms had only one bank relationship prior to this change, demarcating a clean differentiation and possible transition from bilateral to multilateral banking during the sample years. Indeed, about 85% of companies in our sample were involved in a single bank relationship between 1906 and 1966. This figure considerably declines to 71% in 1976 and to 60% in 1986. The transition from single to multiple bank relationships is even more pronounced for larger companies: 65% of the top 200 companies

(in terms of share capital issued) for example had a single relationship between 1906 and 1966. By 1986 this percentage almost halved to 38%. We also find that throughout the Twentieth century larger firms and firms with bigger administration boards were more likely to engage with multiple banks. Around and after the Second World War also leverage starts determining relationship multiplicity.

Our detailed data allows us to more precisely date the acceleration of the transition to multiple banking in the 1970s. The duration analyses we perform document that especially larger, global, more transparent, or more levered companies that are not controlled by a parent company have a higher need for multiple bank relationships. The result on transparency is especially robust and consistent across various specifications. In particular, we find that firms with better governance (i.e., in terms of applying the one share - one vote principle), officially listed firms (i.e., with securities that have direct access to a large market), and firms with outstanding arms' length debt (i.e., already under close scrutiny of financial markets) were more likely to switch to multiple banking after 1966. Transparent firm headquartered in local banking markets that became less concentrated were even more likely to switch.

In order to obtain additional insights on the drivers of the transition we group the banks that are added in three groups: clearing banks (which are large banks headquartered in London, Scotland or Ireland), other British banks, and foreign banks. Most firms maintain one relationship with a clearing bank and during the transition simply add another one. This finding *per se* may suggest that during this period market competition between banks intensified. Large firms located in the UK were more likely to add a clearing bank, whereas small firms were more likely to engage another secondary British bank. These results lend support to Stein (2002) and Berger, Miller, Petersen, Rajan and Stein (2005) for example who

suggest that large (hierarchical) banks are better in dealing with hard information transmitted via formal documents obtainable from large firms, whereas small banks perform better in processing soft information acquired informally when dealing with small firms (that often do not have audited statements for example). Our results also show that transparency and good governance appear to be important drivers for firms to establish a relationship with a foreign bank Berger, Klapper, Martinez Peria and Zaidi (2008)).

We therefore think that it is a secular increase in firm size and international presence coupled with a reduction in firm opaqueness through - for instance - the official listing, and high leverage without access to parent financing that pushed firms to seek multiple banking. As during this period market competition between banks intensified, the banks' response almost inevitably involved boosting their loan to asset ratio by drawing down their security and cash to asset ratios (Saunders and Wilson (1999)).

Having established the most prominent and likely cause of the striking transition to multiple banking in the UK during the 1970s, we investigate its effects on the corporate leveraging. Identifying a causal relationship that runs from multiple relationships to financial policies is difficult, as unobservable variables that may lead firms to approach an additional bank may also have a direct effect on firms' borrowing and leverage ratios. Our identification strategy relies on a difference-in-difference analysis.

First, we control for time-invariant factors and compare outcomes of the same firm before and after it adds a bank to the existing relationship. As a result, any unobserved factor that drives both the decision to switch to multilateral relationship and firms' borrowing policies would have to explain both variables before and after a new bank is added.

Second, we compare the outcome variable of "adders" with the outcomes of observationally equivalent "stayers" that maintained a single relationship. In this way, we control for environmental and regulatory changes that may have an impact on similar firms beyond the decision of switching to multiple banks.

Third, we exploit the theoretical predictions of relationship lending models which imply that when the degree of competition in the banking market is fiercer, the adding of a (so-called "inside") bank will have a stronger impact on borrowing conditions (Rajan (1992), von Thadden (2004), see also Fischer (1990), Sharpe (1990)). As a result, we expect that adders *post*-1970 will display larger changes of their debt composition and leverage ratios.

Our analysis finds that adders subsequently increase their leverage and bank debt <u>more</u> and also decrease their trade (and other) credit <u>more</u> than other firms that did not add banks. Leverage increased by 4 percentage points more, which given a mean leverage of the matched firms prior to the event of 46 percent implies a semi-elasticity of 7 percent. Bank debt to total debt ratio increased by 4 percentage points, a 17 percent increase with respect to the matched firms prior to the event, while trade credit to total debt contracted by 3 percentage points, corresponding to a decline of 5 percent vis-à-vis the matched firm prior to the event.

In this way we uncover an additional explanation for the increase in corporate leverage, i.e., one that runs from banking sector deregulation and intensifying competition between banks, over firm-bank relationship multiplicity, to corporate leverage and bank debt usage.

We discuss these historical developments more in detail in the next section and summarize all relevant related empirical findings in Section III. Section IV introduces the data. Section V discusses the variables and results of our empirical analysis of the determinants of multiple firm-bank relationships prior to the transition. Section VI presents the duration analyses of the

determinants of the transition to multiple banking. Section VII analyses the effects of multiple banking on corporate leverage. Section VIII concludes.

## II. UK Banking in the Twentieth Century

A. <u>Consolidation and Cartelization Prior to the 1970s</u>

In 1870 a total of 387 banks were operating in the U.K. (Capie and Rodrik-Bali (1982)). 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. Towards the end of the Nineteenth century the British banking industry experienced considerable growth in merger activity. Between 1870 and 1921 there were 264 bank mergers. By 1920 only 75 banks were left in the U.K., of which just 20 were English or Welsh public banks (Capie and Rodrik-Bali (1982), Braggion, Dwarkasing and Moore (2012)).

While the consolidation process in its beginning may have increased efficiency and contributed to the development of a national branching network, in the last years and especially after 1915 it greatly curbed competition in the industry, and gave to the surviving bank great monopoly power (Braggion, Dwarkasing and Moore (2012)). The result of this process was the emergence of the `Big Five' banks in Britain by 1918: Barclays, Lloyds, Midland, National Provincial, and Westminster. These five banks constituted the core of the so called London Clearing Banks which starting in the 1920 they dominated retail banking in various parts of the UK.

Despite the concerns of the contemporaries about the lack of competition in the banking sector, throughout the 1920s and the 1930s the London clearing banks continued to effectively

operate a price cartel. London banks fixed the rate on deposits and advances in relation to the bank rate. For instance, from 1920 the deposit rate was set at 2% below the Bank rate (Collins (1988), p. 211). A similar price cartel operated also in Scotland.

The government did not interfere with these arrangements. On the one hand, lobbying activities of the representatives of the banking industry were particularly effective in keeping the government from trying to break up the cartel (Collins (1988), p. 211). On the other hand, the management of the UK national debt led British policy makers to actually promote and defend the existence of a cartel also beyond War World 2 until the 1970s.[2] The rise of public debt during the two wars in fact increased the government's reliance on banks for the maintenance of a market in such debt and Treasury bills constituted a large share in banks portfolios. The authorities also benefitted in the conduct of their monetary policies by being able to channel policy changes through a small number of large banks who acted in concert. After 1965, an increasing range of controls over bank lending, interest rates and asset ratios was applied to the clearing banks.

### B. Deregulation and Intensifying Competition in the 1970s

In the late 1970s, the government and the Bank of England recognized the inadequacy of this arrangement. From 1971 on, the cartel was progressively dismantled and the UK

---

[2] Most of these agreements were informal. The major agreements were: (a) No interest was to be paid by the clearing banks on current accounts and the rate on deposit accounts was to be fixed at 2% below the level of the Bank rate. (b) The minimum rate charged by the clearing banks on advances to 'blue-chip' borrowers was to be fixed at a given margin above the Bank rate. (c) A tacit agreement determined the prices charged for operating current accounts. (d) Uniform opening hours were adopted. (e) Clearing banks lent a certain proportion of call money to the discount houses at a rate of 4% below the Bank rate which was also the minimum rate at which they would buy bills. (f) Clearing banks did not compete on their own account with the discount houses by tendering for Treasury bills at the weekly tender but bought them from the discount houses after they had been held for more than seven days. (g) The clearing banks maintained cash and liquid assets ratios of 8% and 28% respectively. See Saunders and Ward (1976) for further details.

authorities promoted greater competition among financial institutions. In particular, both ceilings on interest rates and direct credit controls were lifted. Such a change in policy generated strong competition between banks and other financial intermediaries both on the deposit and loan market. The by-product was a rapid increase of money supply in the first years of the 1970s. The Bank of England reacted by sharply raising interest rates.

The sharp increase of the money supply together with the sudden rise of short term interest rates created severe liquidity problems for the small banks (known as secondary banks), particularly for those involved in the property market (Saunders and Ward (1976)). Although these banks were relatively small in respect to the rest of the UK financial market, they had a sizable number of outstanding loans from the London Clearing banks, with the National Westminster bank being particularly exposed (Reid (1982), Saunders and Ward (1976)). The Bank of England and the Treasury reacted to the crisis by organizing, with the cooperation of the clearing banks, a rescue scheme and by reintroducing some forms of control of credit. In particular lending restrictions were temporarily re-introduced, although such constraints were especially focused on loans to consumers, property developers and financial firms rather than the industrial sector. In 1979, a system of statutory bank supervision was established for the first time in the UK (Saunders and Wilson (1999)).

The 1960s and 1970s also witnessed the rise of London as a centre of international banking. Especially after 1958, with the return to external convertibility of most Western currencies, London emerged as the hub for the market in "Eurodollars", i.e., the practice of trading time deposits denominated in foreign currency (especially US dollars) (Battilossi (2009)). As a result, many foreign banks established branches and activities in the City of London. These movements were reinforced by the abolition of exchange controls in 1979.

To conclude, following deregulation and intensifying competition, the UK banking sector in 1970s started to supply the opportunities for corporations to seek more bank relationships. This corporate demand is discussed and investigated in the next sections.

## III.    Related Empirical Findings

Multiple firm-bank relationships are a common feature in many financial systems, but there is large variation in the average number of bank relationships across firms within a country and across countries (see Degryse, Kim and Ongena (2009) for a review). Small firms tend to maintain fewer bank relationships than large firms. For example, US studies using the NSSBF (National Survey of Small Business Finance) data estimate the mean number of banks per firm to be two and the median to be one, while the mean for the large US firms in Houston and James (1996) equals five. The firm size - number of relationships correspondence has been further documented for France by Dietsch (2003), for Italy by Guiso (2003), for Germany by Hommel and Schneider (2003), and for Thailand by Menkhoff and Suwanaporn (2007) for example.

Many studies regress a bilateral/multilateral relationship dummy or the number of relationships as the dependent variable on a variety of relation, loan, firm, bank, and/or market characteristics. Though the specifications differ rather dramatically across the many studies that have been published, a few results seem robust.

As already indicated larger, but also older firms have more bank relationships *ceteris paribus*. Less profitable, distressed, low cash flow, intangible and leveraged firms also maintain more relationships. These findings broadly fit models for example in which firms signal their low quality through a multilateral financing arrangement, either because multiple

creditors have less bargaining power in bankruptcy (Bris and Welch (2005)) or because multilateral borrowing ensures the firms' low quality is revealed resulting in accommodation by their product market competitors for example potentially attracting high-quality and R&D intensive firms to opt for a single bank (Bhattacharya and Chiesa (1995), Yosha (1995), von Rheinbaben and Ruckes (2004)).

Of course, these findings could also be due to the lack of willingness of the banks to bear all the risk of these borrowers (D'Auria, Foglia and Reedtz (1999) for example) and as such characteristics of the bank that are part of the bank-firm relationship are also often included in the regressions. An engagement with an older, larger, state, or foreign bank is more likely to be part of a multilateral arrangement, potentially to reduce the hold-up problem of repeated borrowing from this type of bank (Rajan (1992), von Thadden (1992)).

One particular aspect in this line of empirical investigation is the strong country effect, comprehensively documented in Ongena and Smith (2000) and Qian and Strahan (2007). Firms in the UK, Norway and Sweden maintain relatively few bank relationships - less than three on average - while firms in Italy, Portugal, and Spain for example maintain on average ten or more bank relationships. Ongena and Smith (2000) show that these rankings of the European countries hold after controlling for firm characteristics such as size. In general, firms located countries with a French or German legal origin, with a lower degree of judicial efficiency or shareholder protection, have more bank relationships.

One interesting question, which has received only recently some attention, is whether and how the number of bank relationships varies over the business cycle or over an even longer time period. The few studies, that do have access to the necessary data, come to interesting conclusions. There seems some tantalizing evidence of variation, at a business cycle

frequency, in the number of relationships maintained by large firms (Lefilliatre (2002), Sterken and Tokutsu (2003), D'Auria, Foglia and Reedtz (1999)). But overall the number of relationships seems quite stable, especially for small firms Proust and Cadillat (1996), without any clear trend emanating. The number of firm-bank relationships actually trends down in Hommel and Schneider (2003) and up in Dietsch (2003) for example.

But all of these studies have access to only a few decades of relationship information. Hence such short time windows may be inadequate to investigate the effect of structural changes – such as changes in legislation, monitoring technology or banking market conditions – on the number of bank relationships. It is this gap in the literature this paper addresses by studying a century-long comprehensive dataset of firm-bank relationships of publicly listed firms in the UK, to subsequently establish its impact on corporate financing.

Leary (2009), Sufi (2009), Lemmon and Roberts (2010) and Rice and Strahan (2010) also investigate how crucial developments in credit markets alter the tightness of credit supply constraints and consequently corporate borrowing. Leary (2009) shows that the 1961 emergence of the market for certificates of deposit and the 1966 Credit Crunch expands, respectively contracts the leverage ratios of bank-dependent firms relative to firms with bond market access. Sufi (2009) studies if the introduction of syndicated bank loan ratings in 1995 in the US affected corporate financial and investment policies. He finds that the introduction led to an increase of debt finance, cash acquisitions and investment in working capital by firms that obtain a rating. Lemmon and Roberts (2010) investigate how the collapse of Drexel Burnham Lambert, Inc., the passage of the Financial Institutions Reform, Recovery, and Enforcement Act of 1989, and the regulatory changes in the insurance industry which acted as an exogenous contraction in the supply of below-investment-grade credit after 1989 preceded

an almost one-for-one decline in net investment and therefore mostly unaffected corporate leverage ratios. Rice and Strahan (2010) exploit differences in US states' branching restrictions and find that in states more open to branching small firms borrow at lower interest rates and relatively more from banks, though not necessarily in larger amounts. We contribute to this literature by investigating how salient changes in the U.K. banking market through its impact on the number of bank relationships that were maintained by corporations affected corporate leverage.

## IV.     Firm-Bank Relationships during the Twentieth Century

### A. Data Source

The main data source is an annual publication known as *The Stock Exchange Official Yearbook*. The Yearbook was published first in 1875 with the purpose of providing information on joint stock limited liability companies quoted at the London Stock Exchange and it is regarded as the most authoritative source of information on the matter. Between 1896 and 1966 we retrieve our data from nine issues, in particular from the 1896, 1906, 1916, 1920, 1924, 1934, 1938, 1948, and 1958 issues. Starting in 1966 and ending in 1986 we accessed eleven issues on a bi-annual basis. We will refer to the 1896 – 1986 period as "the Twentieth century", and shorthand the 1966 – 1986 period as "the transition period" (because during that period multiple firm-bank relationships become more common). We collected data for all companies listed in the yearbook in the sections "Commercial and Industrial" and "Iron and

Steel". With the exception of 1896, we believe we retrieved information for whole the population of firms quoted in London and belonging to these sectors.[3]

For each company the Yearbook provides information on the name of the company and its location; the name of the directors; the total amount of nominal share capital issued by the company; and various information related to the company's corporate governance arrangements such as: Voting rights, directors borrowing powers and amount of share capital required to be appointed as directors. In some cases also dividend payments information is provided. After 1948, the Yearbook provides also a summary of the last available balance sheet. Crucial for our study, the Yearbook also reports the name of the banks trading with the company. Unfortunately, the Yearbook does not report the nature of the business relationship between the firm and the bank(s). In other words, we do not know whether the bank granted a loan to the firm, or the just bank assists the firm with cash management or both.

We complement the data available in the Yearbook with the information provided by two other data sources: The Cambridge/DTI Databank and the London Share Price Database (henceforth, LSPD). The Cambridge/DTI Databank offers a wide range of accounting data for many U.K. publicly quoted companies covering from 1948 to 1990. Like the dataset we constructed from the Stock Exchange Yearbook, the Databank provides data for firms in the commercial and industrial sector. It contains detailed balance sheet information, including tangible and intangible fixed assets, long term debt, trade credit and –very important for our analysis- the amount of bank debt. The London Share Price database contains information on share returns since 1955, a piece of information not available in the Stock Exchange

---

[3] Before 1905, the Yearbook provides a sufficient amount of information only for a selection of firms. Usually, the largest and the most traded firms are included. As a result, we suspect our 1896 sample is biased towards large and liquid companies.

Yearbook. The LSPD provide returns data for the largest firms quoted at the London Stock Exchange plus a random 33% of the remaining firms.

We also collect data on the location of bank branches from the Bankers' Almanac. Each year, the Bankers' Almanac lists the location and the address of the branches of each bank located in the UK. We collect this information at a biannual basis starting in 1964 until 1986.

### B. Multiple Firm-Bank Relationships

Using the *Yearbook* information we create a variable labelled *Multiple Firm-Bank Relationships* that equals one if the company maintains multiple firm-bank relationships, and equals zero otherwise. This is our main dependent variable. We first discuss its relevant characteristics.

The upper panel in Table 1 presents the number of firm-bank relationships for each year in our sample. Relationships with a single bank prevail over the period 1900-1966. In these years, the average number of banks servicing a company is about 1.2, whereas the median is 1. At least 82% firms maintain a single bank relationship between 1906 and 1966. In 1948 and 1950 the percentage of firms with a single bank relationship stands as high as 87%. The figure looks quite different in 1976: the percentage of firms having only one bank relationships drops to 71%, whereas 18% of the companies have two relationships and about 11% more than one relationship. The shares of firms having only one bank relationships further decreases to 63.6% in 1986, with 20% of the companies displaying two relationships and about 16% more than one relationship.


[Table 1 around here]


15

These results are similar to the figures presented by Ongena and Smith (2000) for the year 1996. They investigate the number of bank relationship by sampling 138 large companies in the U.K and they find that only 23% of firms in their sample maintained a single bank relationship. Moreover, they show that the average number of bank relationship is 2.9 and the median number is 2; both figures indicate that maintaining multiple bank relationships is more prevalent during the 1990s. In sum, the number of bank relationships has increased since 1966.

To provide more detail on the transition from bilateral to multilateral banking Table 1 Panel B reports the number of firm-bank relationships bi-annually for the 1966 – 1986 period for 599 firms that are reporting their relationships during the entire transition period. This selection of firms ensures that the average number of relationships the table reports is not affected by changes in the composition of firms on the stock exchange. For example like Rossi, Franks and Mayer (2009) we observe a decrease of the number of companies quoted on the London Stock Exchange from 1966 onwards. This can be partially explained by the increase in merger and acquisition (M&A) activity that took place on the stock exchange since then. M&As may increase for example the age and size of the firms listed on the stock exchange, corporate characteristics that are commonly found to positively affect the number of bank relationships a firm has (Degryse, Kim and Ongena (2009)).[4]

Either way, the results basically confirm Panel A (but because of selection the statistics in level differ somewhat from Panel A). The average number of relationships increases in twenty

---

[4] On the other hand, the group of 599 firms will on average get older during the sample period by one year each sample year. Limiting the group of firms to a specific age cohort of 40-50 years (30-40 years) for example, the percentage of the firms that have a bilateral relationship still decreases from 83% (79%) in 1966 to 62.5% (66%) in 1986.

years from 1.3 to 1.8. In 1966 84% of firms engage one bank, in 1986 only 61% do. The decrease in the percentage single-bank firms is especially pronounced in 1972, 1974 and 1976 when the percentage point drop exceeds 2.5% percentage points in absolute value (3.2, 4.0 and 2.8 percentage points, respectively). In sum, there is a fundamental shift from bilateral to multilateral banking that takes places around the mid-seventies that our subsequent analysis aims to explain first by analysing the determinants of multiple banking observed during the Twentieth century prior to the transition period and then by focusing on the determinants of the switching to multiple firm-bank relationships during the transition period itself.

## V. Firm-Bank Relationships Prior to the Transition Period

### A. Independent Variables

We now discuss the firm characteristics that we will employ as independent variables in our analyses of multiple banking prior to the transition period. The upper panel of Table 2 lists all variable names, units and definitions. As a proxy of size we employ the amount of share *Capital Issued*. The *Age* of a company, and the first independent variable, is defined as a particular data year minus the company's registration year.

We proxy the quality of a company's corporate governance mechanisms with the size of the board of the directors, labelled *Board Size*, a variable *Borrowing Limit* that is defined as the borrowing limit for the companies officers divided by the book value of assets, and a dummy variable, *One Share - One Vote (0/1)*, that takes the value of one if company complies with the one share - one vote principle and zero otherwise. The size of the board is both a proxy for the monitoring abilities of the boards over the manager (in principle, bigger boards should monitor better), and the degree of bureaucracy and a board's lengthy decision making

(bigger boards are more bureaucratic), while the relative limit of borrowing by the company's officers is a management perk that may the outcome of management self-serving actions.

The one share – one vote dummy is a measure of the quality of governance that also directly enhances firm transparency. Another variable that captures firm transparency is the dummy variable *Officially Listed (0/1)*, that equals one if the company had any class of its outstanding shares officially listed in London and traded on the floor, and equals zero otherwise. Being officially listed and traded should make a significant difference in the amount and quality of information that is available about the corporation, especially in the early years of the Twentieth century (Braggion (2011)).

In some specifications we also include *Arm's Length Debt (0/1)* that takes the value of one if the company has bonds or any other form of arm's length debt outstanding, and equals zero otherwise, and *Arm's Length Leverage which* equals the amount of bonds or any other form of arm's length debt outstanding divided by the book value of assets.

[Table 2 around here]

Finally, the Stock Exchange Yearbook does not provide any direct information on earnings. Following Kaplan and Reishus (1990), we proxy corporate performance with a dummy variable, *Past Dividends (0/1)*, that takes the value of one if the company paid dividends in all the previous five years in respect to particular data year and 0 otherwise (i.e. the company did not pay a dividend in at least one of the previous five years). We don't have this variable for all companies.

B.  <u>Descriptive Statistics</u>

The nine columns in Table 3 present descriptive statistics for the independent variables for the nine selected Twentieth century years prior to the transition period. From 1896 until 1958 companies became larger and older, from an average total amount of capital issued of 238,591 pounds and an average of 12 years old in 1896, to 1,083,000 pounds in capital and 39 years in 1958. Table 3 presents the nominal amounts of issued capital but this result holds even in real terms.


[Table 3 around here]


The size of the board increased somewhat throughout the Twentieth century from an average of 5.1 members in 1896 to an average of 5.7 in 1986. Interesting is the behaviour of the dummy variable *One Share – One Vote*. While in earlier years of the Twentieth century about half of the companies applied the one share – one vote principle this figure declines in the 1930s, in 1948 and in 1958. This result possibly suggests that the quality of the corporate governance declined throughout first half of the Twentieth century (it improved again in the second half it turns out). The borrowing limit for officers declined from 21% in 1896 to only 3% in 1958. Less than one third of the firms were officially listed in 1896, more than two thirds were in 1958.

The percentage of firms with arm's length debt decreased from 58% in 1896 to 12% in 1948, but then more than doubled to 26% in 1958. Arm's length leverage followed a similar pattern. According to our proxy of companies' performance, companies registered the second worst performance in 1924 where only 73% of firms paid a dividend in each of the two

19

previous years. Performance improved towards the transition period: in 1958 90% had paid dividends.

C. Results

The nine panels Table 4 present the first set of regression results. We treat each year as a different sample and for each year we run probit models where the dependent variable takes the value of one if a company displays multiple bank relationships and zero otherwise.[5] We run various specifications where data allowing we control for firm size, age, board size, one share – one vote, borrowing limit, listing, leverage, and profitability. We also control for an industry dummy that takes the value of one if the company operated in the Iron and Steel sector and equals zero otherwise.


[Table 4 around here]


Throughout the years two results appear to be persistent. First, firms' size is strongly associated with a higher probability of multiple banks relationships. The coefficient on the logarithm of capital issued is positive and highly statistically significant in all the years and all the specifications. Also the economic significance of the variable is quite persistent throughout the years. Between 1906 and 1950, a company that increases its size by two standard deviations around the mean increases by almost 15 percentage points the probability of having multiple relationships. This increase corresponds to a doubling in the probability of multiple relationships for the average firm (which ranges between 17.6% in 1906 and 12.5%

---

[5] Results are very similar if we run equivalent Poisson count models with the number of firm-bank relationships as the dependent variable.

in 1950). Second, companies with larger boards of directors are more likely to have multiple firm-bank relationships, which is maybe also partly due to the combination of individuals' bank preferences and consensus decision-making (Ongena, Tümer-Alkan and Vermeer (2011)).[6] The economic significance of the variable, however, also declines somewhat over time.

The impact of firm age is ambiguous. Young companies are more likely to have multiple relationships in 1916 and 1920, whereas in the other years older companies are more likely to have multiple relationships. Other measures of corporate governance quality, transparency, firm leverage and profitability appear to have no robustly significant impact on firms' choices of the number of bank; with the possible exception of the positive coefficients (which are significant at the ten or lower percent level in at least one specification) for official listing in 1896, 1906, 1924, 1934, and 1938, and arm's length debt in 1938, 1948 and 1958. However, overall, firm and board size are the main drivers of relationship multiplicity but seemingly with a decreasing effect over time (possibly because firm and board size themselves increase).

## VI.   The Transition to Multiple Banking between 1966 and 1986

### A.   Duration Analysis of the Transition to Multiple Banking

We now investigate the possible drivers of the transition from single to multiple firm-bank relationships using a duration analysis on the observed relationships between 1966 and 1986. As in Farinha and Santos (2002) we define each single relationship as a spell and the transition to multiple banking as a switch (at which stage the spell ends and the firm exits the

---

[6] We leave a further investigation of the change in board size and composition, and of the presence and the role of bankers on boards (as in Dittmann, Maug and Schneider (2010) for example) for future research.

sample). All spells start in 1966 or later and end before or in 1986, because this is the period for which we collect the bi-annual readings from the Yearbook. Single relationships that do not change into multiple banking are therefore right-censored in 1986 (or prior to that if the firm delists). To provide correct inferences the estimator will have to be right-censoring robust (see Kiefer (1988), Ongena and Smith (2001), and Degryse, Kim and Ongena (2009) for example for details).

Tables 5 and 6 provide the first glance at the likelihood of the transition to multiple banking. Table 5 reports the number, percentage and cumulative percentage of single firm-bank relationships that turn to multiple firm-bank relationships for all single relationships, those that are observed and initiated prior to or in 1966 and those that are observed and initiated after 1966. The distributions reported in the table are not adjusted for right-censoring (i.e., every exit from the spell is considered a transition to multiple banking) and its effect is especially pronounced for those spells that are initiated after 1966 and for which the right-censoring boundary in 1986 (or the individual firm delisting) is much more binding.

[Table 5 around here]

In contrast, the Kaplan-Meier survivor function that is calculated in Table 6 is adjusted for right-censoring. The function suggests that within this transition period after 20 years 41 percent of all firms have made the transition to multiple banking (and not 100 percent as a non-adjusted function would imply). Hence, the transition to multiple banking is wide-spread and pursued by many firms that start the transition period with a single relationship.

22

B. Independent Variables

The determinants of the transition to multiple banking can be multiple. Firm size, complexity and international presence can lead to larger, more complex and geographically diverse corporate credit and service demands, necessitating multiple bank relationships. To proxy for size we employ the logarithm of the firm's *Book Value of Assets*. For complexity we field the logarithm of one plus the *Age at Start* (we take the age of the firm at the start of the spell because otherwise firm age may spuriously determine the duration of the spell as deterministically the longer the spell, the higher the age). For international presence, we feature the dummy variable *British (0/1)* that equals one if the headquarters of the firm is located in Britain, and equals zero otherwise. We expect positive coefficients on all three variables.

Despite the fact that the bankruptcy legislation was left unchanged for most of the Twentieth century, it is possible that the liquidation value of companies' assets may have increased making multiple bank relationships more desirable. In other words, the increased liquidation value of the companies, decreased the bankruptcy cost for managers, making strategic defaults more likely and a higher number of creditors more optimal (Bolton and Scharfstein (1996)). To proxy for the quality of governance we therefore include again the logarithm of one plus *Board Size*.

Firms that are more levered may also need to add bank relationships. A variable *Leverage* equals the total amount of mortgages plus debentures plus short-term debt divided by the book value of the assets.

23

As before we also include two dummy variables capturing firm transparency, i.e., *One Share - One Vote (0/1)*, *Officially Listed (0/1)*. In the survival analysis we also consider the dummy *Arm's Length Debt (0/1)* as a valid measure of a firm's transparency. Since our specifications control for total leverage, in principle, this variable should capture only that firms with outstanding arm's length debt are already under the close scrutiny of capital markets (Rajan (1992), Faulkender and Petersen (2006)). A higher degree of firm's transparency should reduce banks' monitoring costs making multiple bank relationships more desirable (von Thadden (1992)). When monitoring costs are lower, banks find profitable to lend in multilateral agreements, and, as a result the hold-up problem is alleviated. We therefore expect positive coefficients on these three dummy variables.

We also include a dummy variable *Subsidiary (0/1)* that equals one if the company is controlled by another company, and equals zero otherwise, because internal capital market financing obtainable through the parent company may alleviate some of the firm's financing needs. We expect positive signs on the leverage variable and a negative sign on the subsidiary dummy.

R&D intensive but high-quality firms may opt for a single bank (Bhattacharya and Chiesa (1995), Yosha (1995), von Rheinbaben and Ruckes (2004)). *Tangibility* is property, plant and equipment divided by the book value of assets, while firm profitability is measured as *Past Returns* which is the returns on the firm's stock in the previous two years.

Firms may seek to diversify bank liquidity risk (Detragiache, Garella and Guiso (2000)). We introduce a dummy variable *Relationship Bank is National Westminster in 1974 or 1976 (0/1)* which equals one if the firm had a relationship with a secondary bank particularly affected by the liquidity shortages in the mid-1970s, *Relationship Bank Liquidity Ratio* which

is the cash and marketable securities divided by the book value of assets of the relationship bank of the firm, and *Relationship Bank Capital Ratio* which is the total equity capital and reserves divided by the book value of assets of the relationship bank of the firm. If firms diversify, we would possibly expect a positive sign on the first variable and negative signs on the latter two.

Finally, firms are more likely to add a bank in areas where competition intensifies most. We therefore include a variable called *Change in Concentration of Banking Market Where Firm Has Headquarter*, which we calculate as the change in the sum of the banks' shares in terms of branch presence in the local banking market where the firm is headquartered (i.e., the change in the Herfindahl-Hirschman Index based on branch presence).

Table 7 tabulates the descriptive statistics for a maximum of 15,434 relationship – year observations. The mean (median) firm has 15 (3) million British Pound in book assets and is 62 (63) years old. 93 percent of the firms are headquartered in Britain. The average (median) firm fields 6 (6) board members, has a 48 percent chance of following a one share – one vote system, 84 percent are officially listed, 43 percent have arm's length debt outstanding, with an overall leverage ratio of 37 (37) percent. 14 percent of all firms are controlled by another company. The mean (median) firm has a tangibility ratio that equals 36 (33) percent, with a ROE that equals 24 (23) percent and past returns that equal 1 (1) percent.

Only 4 percent of the firm-years pertain to firms that had a relationship with National Westminster in 1974 or in 1976, while the liquidity ratio of the relationship bank of the average (median) firm equals 30 (28) percent while its capital ratio equals 16 (6) percent.[7]

---

[7] We collected and cross-checked the data with most extensive care hence choose not to winsorize (despite the presence for example in the capital ratio series of one potential outlier). The main results are unaffected however if we do.

Finally, one third of the firms have their headquarters in London, while the mean (and median) change in concentration is close to zero, but with a substantial dispersion across local banking markets.

[Table 7 around here]

C. Results

In Table 8 we investigate more closely what the determinants are of the transition to multiple banking.[8] The table reports results based on maximum likelihood estimations of the proportional hazard model using the Cox (1972) proportional hazard function as the baseline hazard (in unreported robustness exercises we also employ Weibull and exponential distributions but results are very similar). The independent variables are defined in Table 1. The number of observations varies between 14,635 and 4,684 according the combination of variables that is included.

---

[8] In unreported estimations we alternatively define each relationship as a spell and relationship termination as a switch at which stage the relationship spell ends but the firm remains in the sample with other and new relationships as in Ongena and Smith (2001). Consequently, spells start in 1966 or later and end before or in 1986, and relationships that do not terminate are right-censored in 1986 (or prior to that if the firm delists). Our estimates can be summarized as follows: The hazard rate averages around 3 percent per year and the median duration length is around 20 years, comparable in magnitude with findings for Argentina (Bebczuk (2004)), Italy (Castelli, Dwyer Jr. and Hasan (2006)), Norway (Ongena and Smith (2001)), Spain (Hernandez-Canovas and Martinez-Solano (2006)), or Sweden (Sjögren (1994)) for example during similar time periods. Larger or older firms are less likely to terminate a relationship, findings also documented for Belgium (Degryse, Masschelein and Mitchell (2011)), Denmark (Thomsen (1999)), Italy (Herrera and Minetti (2007)) and Norway (Ongena and Smith (2001)) for example. Firms that are British, with larger boards, or that are transparent are also less likely to terminate a relationship. More levered firms or those with more firm-bank relationships already are more likely to seek a new relationship. These results correspond to robust empirical findings for Belgium (Degryse, Masschelein and Mitchell (2011)) and Norway (Ongena and Smith (2001)) for example, and to reasonable priors (i.e., levered firms want to decrease lock-in by switching regularly and the value of each individual relationship should be lower when firms have multiple relationships). Overall, these results are complementary to those found analyzing the switching from single to multiple banking.

Firm size or having the headquarters outside of Britain has a positive impact on the likelihood of the transition to multiple banking as the estimated coefficients are all both statistically significant and economically relevant. For example, being a British firm almost halves the hazard rate in Model IV (i.e., $0.58 = e^{-0.538}$).

Transparency matters a great deal. One share - one vote, being officially listed, and arm's length debt all speed the transition. Being officially listed for example increases the hazard rate by more than half in Model IV (i.e., $1.63 = e^{0.493}$). More levered firms or firms without a controlling parent also are more likely to add another bank. Having an illiquid relationship bank decreases the likelihood of engaging an additional bank (in Model VIII), seemingly in pointed contrast to a diversification-of-bank-liquidity-risk argument; on the other hand, having National Westminster as a relationship bank in 1974 or 1976 increases this likelihood, consistent with the diversification argument.

In Models IX to XVI we add the change in concentration in the local banking market. Because of multicollinearity we replace British by Firm Has Headquarter in London, and in Models XIII to XVI also focus on firms outside London where changes in concentration may even be more meaningful in capturing the changes in the degree of local competition in banking markets dealing with corporate financing (as in London many foreign banks also entered to focus on euro dollar business). The estimated coefficient on the change in concentration in Model IX for example implies that a decrease in concentration by 0.10 increases the probability of adding a bank by 11 percent.

In Models X to XII and XIV to XVI we interact the change in concentration with the transparency variables one share - one vote, being officially listed, and arm's length debt. Consistent with our findings so far the estimated coefficients (on the first two variables) suggest that in local banking markets that become less concentrated it is especially the more transparent firms that add banks.

We also investigate which type of bank is added. We distinguish between clearing banks (mostly large London based banks), other British banks and foreign banks. Table 9 lists the number and percentage of relationship – year observations between 1966 and 1986 by the type of relationship bank and added bank. Clearing banks account for 96 percent of all relationship bank observations (85 percent are headquartered in London, 8 percent in Scotland and 3 percent in Ireland), while other British and foreign bank account for only 2 percent each.

Surprisingly, given these proportions, many firms add another clearing bank as a second bank, resulting in 62 percent of the added bank observations. Other (secondary) British banks account for 13 percent, while foreign banks for more than 25 percent (of which 8 percent to commonwealth banks and the remainder to other foreign banks). These percentages suggest that while many firms simply engage another clearing bank possible to increase access to credit, other firms "trade down" to a (secondary) British bank possibly to obtain a better size fit, or engage a foreign bank possibly to obtain better trade-related financial services.


[Table 9 around here]

In regressions we leave un-tabulated we also investigate more closely what the determinants are of the adding of a clearing bank, another British bank, or a foreign bank. Interestingly we find that larger, transparent, levered or independent firms are more likely to add a clearing bank. Smaller, non-British, listed or independent firms are more likely to add another British bank, while non-British, one-share-one-vote or listed firms are more likely to add a foreign bank. The higher the liquidity ratio of the current relationship bank the more likely a British bank is added.

In sum, it is a straightforward increase in firm size and international presence coupled with a reduction in firm opaqueness that made levered firms without access to parent financing to engage multiple banks: Larger and more levered firms simply add another clearing bank, while non-British or more transparent firms more likely add another British or foreign bank. Coinciding deregulation and intensifying banking competition therefore likely fostered the banks' supply.

D. Other Explanations

On the basis of the precise timing of the transition, we consider some other explanations to be less likely to be important drivers of the transition to multiple banking. First, it is improbable that the improvement of creditors' protections legislation, established with various Companies acts from 1929 onward, can alone explain our results.[9] Improvements in creditor

---

[9] The Twentieth century was characterized by a marked improvement in the U.K. in the legislation regarding investor protections and companies' disclosure requirements. Originally, the U.K. common law system did not provide minority shareholders and investors with an automatic right of protection. It was the 1948 company Act that established various provisions intended to protect creditors and minority shareholders from managers' expropriation. For instance, the Act set in voting by proxy, provisions for shareholders to force an EGM with 10% of the voting equity capital, and special resolutions to make it easier for shareholders to remove directors. Further progresses were made in the late 1960s by, for instance, considering managers liable of crimes if they communicate false corporate information.

protections and accounting standards may reduce banks' monitoring costs and increase the probability of observing multiple banks relationships (Rajan (1992), von Thadden (2004)).[10] In the UK, the bulk of the creditor protection and accounting reforms took place in 1948, twenty years before the transition to multiple relationships started. The improvement of investor protection makes also less likely that "soft budget constraint" problems and related strategic default issue are among the driver of the transition to multiple banking. According to these theories, the improvement of creditor protection should make multiple-relationship banking less desirable, but in our data we observe that the number of relationship banks increase during the Twentieth century

Second, we think it is unlikely that the transition from a single to multiple bank relationships is due to a firms' need to diversify increased bank liquidity risk (Detragiache, Garella and Guiso (2000)). British banks were liquid and since the crisis of 1890 (the so-called "Baring Crisis") did not experience any major crisis until 2007 (i.e., well beyond the end of our sample period), with the possible exception of liquidity problems that arose at the small, secondary banks during the mid-1970s. Duration analyses on bi-annual relationship data for the 1966 to 1986 time period, suggest that having a relationship in 1974 or 1976 with National Westminster for example, a bank that was particularly affected by these liquidity shortages, does not change the probability firms switches from single to multiple banking, while having a liquid and well capitalized bank in general actually increases the probability

---

[10] Asymmetric information problems between a borrowers and a single lender that get resolved over time in a relationship create an informational advantage for the inside lender that can be exploited to extract rents (Rajan (1992), von Thadden (2004)). Multiple bank relationships may reduce the hold-up problem of relationship lending. When banks' monitoring costs lower, it becomes more profitable for banks to lend in multilateral agreements with other banks and firms should be more likely to engage multiple banks (von Thadden (1992)).

the firm switches. Consequently also the diversification motive does not explain the remarkable transition to multiple relationships.

Finally, it is similarly implausible that the banks nudged their borrowers to maintain multiple relationships to diversify their own risk exposure (Carletti, Cerasi and Daltung (2007)). Investment diversification opportunities increased along the Twentieth century together with the process of economic development, making multiple lending less necessary. Moreover, Carletti, Cerasi and Daltung (2007) predicts that a decrease in the monitoring cost should lead to a decrease of multiple lending,[11] exactly the opposite of what we observe in our data (see also Carletti (2004), Fluet and Garella (2007)).

## VII.   Multiple Banking and Corporate Financing and Performance

### A.   Corporate Financing and Performance

We now investigate the impact of the transition to multiple banking on corporate financing, i.e., leverage, bank debt to total debt, long term debt to total debt, trade credit to total debt, and the growth in these measures, and on corporate performance, i.e., return on equity, during a fifteen-years period before and after 1970. Table 10 provides the descriptive statistics for these corporate characteristics for the entire 1955 – 1986 period, and for the shorter 1968 – 1973 period upon which a pertinent robustness check will be based.

---

[11] In terms of the quality of firm financial information, the Twentieth century was also characterized by constant and gradual improvements. The quality of information presented in published accounts at the turn of the Twentieth century was limited when compared to present day standards. The Companies Act, 1900 required auditors to certify that the accounts reflected a "true and correct view of the state of the Company's affairs". Annual balance sheets were required to be furnished by firms, and although usually provided, annual profit and loss statements were not mandatory by law until 1929 (see Hein (1963)). The 1948 Companies Act introduced disclosure rules for prospectuses and specific penalties for non-disclosure, detailed provisions regarding the content and form of both balance sheets and profit and loss accounts and a requirement that company accounts be prepared on a basis that gives a "true and fair" view of a company's financial position, a litmus test of company accounts that has been applied to the present day.

B. <u>Methodology</u>

We relate the changes in corporate financing and performance to multiple banking by judiciously investigating the difference between firms that add banks and otherwise observably similar firms that did not add banks. Following Angrist and Krueger (1999) and Lemmon and Roberts (2010), we adopt a difference in difference analysis to understand whether adding a bank to the existing relationship has an effect on firms' financial policies. We then see whether this effect is stronger for firms that added a bank after the 1971 bank liberalization. While performing the difference in difference analysis we make sure that the key identifying assumption behind this strategy, usually referred as "parallel trends assumption" is satisfied. Such an assumption requires similar trends in the outcome variable during the pre-shock era for both treatment and control groups. In the current context, this assumption translates into similar growth rates of firms' aggregates such as leverage or investment for the treatment and control groups prior to the year in which a firm added a new bank.

We start by generating a dummy variable which we label EVENT that takes the value of one if a firm adds a bank and equals zero otherwise. We generate this variable at the biannual frequency for which we collected the number of bank relationships for each firm.

At a biannual frequency, between 1956 and 1986, we compute the propensity score by running a probit model where the dependent variable is EVENT. The propensity score is computed using a comprehensive set of the following firm variables we have access to:

ln(1+Age), ln(Book Value of Assets), One Share - One Vote (0/1), Officially Listed (0/1), Arm's Length Debt (0/1), ), Tangibility, Net Investment (in Tangible + Intangible +Trade), Growth of Bank Debt, , Growth of Long Term Debt, Net Share Issues to Book Value of Assets, Return on Equity, and Industry affiliation. Age and the dummy variables are lagged for two periods because EVENT, i.e., the adding of a new bank to an existing firm-bank relationship, is recorded at a biannual basis. All continuous variables are the averages of the pre-adding period.

We select a matching firm by using the nearest-neighbor method. For each adding firm we select the nearest neighbor and we take the average values for leverage, bank debt to total debt, etc., of the matching firms.

Taking the example of leverage as an outcome variable, for both the treated and the (average) matched firm we compute the average leverage two years (or three years) before and after the EVENT:

(1) $$AvgLevPre_{i,t} = \sum_{t=-3}^{-1} lev_{i,t}, \text{ and}$$

(2) $$AvgLevPost_{i,t} = \sum_{t=0}^{2} lev_{i,t},$$

where $i = \{Treated, Matched\}$.

For both the treated and the matched firm take the difference between the average leverage before and after the event:

(3) $$DiffLev_{i,t} = AvgLevPost_{i,t} - AvgLevPre_{i,t}.$$

As a final step, we take the difference of:

$$(4) \qquad DDLev_t = DiffLev_{Treated,t} - DiffLev_{Matched,t}$$

The results we present (in Table 12) correspond to the average difference-in-difference analysis for the whole sample, the pre-1970 period (1970 included), and the post-1970 period. This procedure has two benefits. First, it controls for firm-specific time-invariant factors and compares the outcomes for the same firm before and after the event of adding a bank to the existing relationship bank. As a result, any unobserved factor that drives both the decision to switch to multilateral relationships and the firms' borrowing policies would have to explain both variables before and after a new bank is added. As noted by Sufi (2009) such an approach controls also for other factors related to firm's investment demand such as market to book ratio.

Second, the propensity score analysis controls for environmental and regulation changes that may have an impact on the borrowing of similar firms' beyond the decision of switching to multiple banks. For instance, the 1970 bank deregulation could have led large firms to increase their proportion of bank to total debt, independently of the decision of adding an extra-bank.

We also obtain additional identification power by exploiting the predictions of the theory of relationship banking: adding a bank should have a stronger impact on corporate borrowing when the degree of competition in the banking market is higher. As a result, we expect that post-1970 adders will display larger changes in their debt composition and leverage ratios.

C. Results

Table 11 first reports for the pre- and post-matching samples, the mean (and the standard deviation) of the matching variables for the firms that did not add banks ("the stayers") and the firms that add banks ("the adders"), and the difference between the two means. It also assesses the difference in means between the pre- and post-matching samples, reporting the t-statistic for a test of the equality of the means assuming equal variances, and the Kolmogorov-Smirnov test statistic. The testing confirms that matching does generate samples that are mostly equal in the matching variables (similar to Lemmon and Roberts (2010) and to match on individual firm growth we employ seven year growth rates or averages of continuous variables, as indicated; results are robust to further lengthening of this time period while shortening it decreases matching performance somewhat without affecting our main estimates of interest).

Table 12 reports the difference-in-difference analysis for the different samples. For the whole 1956 – 1986 period we find that leverage of firms that add a bank increases more than otherwise similar firms that did not add a bank. This difference is however only significant in the period after 1971, when these "adders" are observed to increase bank financing but decrease trade (and other) credit taken, but have a similar ROE.


[Table 12 around here]


The statistical differences we observe are also economically meaningful. Leverage increased for example by 3.1 percentage points, with a mean leverage of the matched firms prior to the event of 41 percent implying a semi-elasticity of 7.4 percent. Similarly, long term

35

leverage increases by 2.0 percentage points, a semi-elasticity of , bank debt to total debt increased by 3.5 percentage points, a semi-elasticity of 18.2 percent, while trade credit to total debt contracted by 3.4 percentage points, a semi-elasticity of 5.1 percent.

Finally, in Table 13, and as a set of robustness exercises, we run the corporate financing and performance variables on firm controls and interaction terms of Post 1970 (0/1), a dummy that equals one for years after 1970 and equals zero otherwise, with the three variables that explain the adding of banks, i.e., One Share - One Vote (0/1), Officially Listed (0/1), and Arm's Length Debt (0/1). We restrict the analysis here to the 1968-1973 period, in order to have as clean as possible an experiment. In 1967, the company law required businesses to publish annual information about sales, substantial participations in other companies and classes of business being carried on (see Cheffins (2008), p. 329). In 1973 the taxation of dividends was amended and the tax bias against dividends practically removed (Cheffins (2008), p. 325).

Results broadly confirm that firm transparency which corresponded to more banks being engaged also involves more corporate leverage and bank financing. The semi-elasticities of the impact of One Share - One Vote and Arm's Length Debt after 1970, respectively are on leverage 2.8 and 7.0 percent, on bank debt over total debt 10 and 13 percent, on long term debt over total debt 8.3 and 19.4 percent, and on trade credit over total debt -3.5 and -2.7 percent.


[Table 13 around here]


36

In sum, the multiplicity of bank relationships as the outcome of factors on the supply (deregulation) and demand (firm transparency) side is consistently reflected in higher leverage.

## VIII. Conclusions

In this paper we analyze how relationships between firms and banks have evolved during the Twentieth century in Britain. We document a remarkable shift from bilateral to multilateral relationship banking during this period. Our detailed data allows us to more precisely date the acceleration of the transition to multiple banking in the 1970s. On the basis of this more precise dating we can rule out a number of possible explanations, such as an improvement of creditors' protections legislation, the intended diversification of bank risk exposure, a variation in the cost of bankruptcy, or the deterioration in bank liquidity.

Using duration analyses on bi-annual relationship data for the 1966 to 1986 time period we document that larger, global or transparent companies, or companies in greater need of financing, or located in local banking markets that become less concentrated (especially so when transparent), have a higher propensity to switch to multiple firm-bank relationships.

Given that we are not aware of any alternative or additional theoretical explanations that fit the data, we think that it is simply this secular firm level increase in size, international presence, and transparency coupled with an enhanced financing need that led to multiple banking. This process of over-time increasing demand for more bank credit and more sophisticated services may eventually have found its supply during the 1970s because of the far-reaching deregulation and the intensification of competition in the banking sector that took place during that period.

More than suggestive on this account is the increase in leverage and bank debt taken by firms that added a bank compared to those that do not. Banking sector deregulation and intensifying competition may therefore be one of the factors explaining the dramatic increase in corporate leverage observed in the U.K. and throughout the world during the Twentieth Century.

# References

Angrist, J. D., and A. B. Krueger, 1999, "Empirical Strategies in Labor Economics," in O. Ashenfelter and D. Card, eds, *Handbook of Labor Economics*.

Battilossi, S., 2009, The Eurodollar Revolution in Financial Technology. Deregulation, Innovation and Structural Change in Western Banking in the 1960s-70s, Universidad Carlos III, Madrid.

Bebczuk, R. N., 2004, What Determines the Access to Credit by SMEs in Argentina?, Universidad Nacional de la Plata, Plata.

Berger, A. N., L. F. Klapper, M. S. Martinez Peria, and R. Zaidi, 2008, "Bank Ownership Type and Banking Relationships," *Journal of Financial Intermediation* 17, 37-62.

Berger, A. N., N. M. Miller, M. A. Petersen, R. G. Rajan, and J. C. Stein, 2005, "Does Function Follow Organizational Form? Evidence from the Lending Practices of Large and Small Banks," *Journal of Financial Economics* 76, 237-269.

Bhattacharya, S., and G. Chiesa, 1995, "Proprietary Information, Financial Intermediation, and Research Incentives," *Journal of Financial Intermediation* 4, 328-357.

Bizer, D. S., and M. DeMarzo, 1992, "Sequential Banking," *Journal of Political Economy* 100, 41-61.

Bolton, P., and D. S. Scharfstein, 1996, "Optimal Debt Structure and the Number of Creditors," *Journal of Political Economy* 104, 1-25.

Braggion, F., 2011, "Managers and (Secret) Social Networks: The Influence of the Freemasonry on Firm Performance," *Journal of the European Economic Association* Forthcoming.

Braggion, F., N. Dwarkasing, and L. Moore, 2012, From Competition to Cartel: Bank Mergers in the U.K. 1885 to 1925, Tilburg University, Tilburg.

Bris, A., and I. Welch, 2005, "The Optimal Concentration of Creditors," *Journal of Finance* 60, 2193 - 2212.

Capie, F., and G. Rodrik-Bali, 1982, "Concentration in British Banking, 1870-1920," *Business History* 24, 280-292.

Carletti, E., 2004, "The Structure of Bank Relationships, Endogenous Monitoring, and Loan Rates," *Journal of Financial Intermediation* 13, 58-86.

Carletti, E., V. Cerasi, and S. Daltung, 2007, "Multiple-Bank Lending: Diversification and Free-Riding in Monitoring," *Journal of Financial Intermediation* 16, 425-451.

Castelli, A., G. P. Dwyer Jr., and I. Hasan, 2006, Bank Relationships and Small Firms' Financial Performance, Federal Reserve Bank of Atlanta, Atlanta.

Chambers, D., and E. Dimson, 2009, "IPO Underpricing Over the Very Long-Run," *Journal of Finance* 64, 1407-1443.

Cheffins, B. R., 2008, *Corporate Ownership and Control: British Business Transformed*, Oxford University Press, Oxford.

Collins, M., 1988, *Money and Banking in the UK: A History*, Croom Helm, London.

Cox, D. R., 1972, "Regression Models and Life Tables," *Journal of the Royal Statistical Society* 24, 187-201.

D'Auria, C., A. Foglia, and P. M. Reedtz, 1999, "Bank Interest Rates and Credit Relationships in Italy," *Journal of Banking and Finance* 23, 1067-1093.

Degryse, H., M. Kim, and S. Ongena, 2009, *Microeconometrics of Banking: Methods, Applications and Results*, Oxford University Press.

Degryse, H., N. Masschelein, and J. Mitchell, 2011, "Staying, Dropping, or Switching: The Impacts of Bank Mergers on Small Firms," *Review of Financial Studies* 24 1102-1140.

Degryse, H. A., V. Ioannidou, and E. L. v. Schedvin, 2011, On the Non-Exclusivity of Loan Contracts: An Empirical Investigation, CentER - Tilburg University, Tilburg.

Detragiache, E., P. G. Garella, and L. Guiso, 2000, "Multiple versus Single Banking Relationships: Theory and Evidence," *Journal of Finance* 55, 1133-1161.

Dietsch, M., 2003, "Financing Small Businesses in France," *European Investment Bank Papers* 8, 93-119.

Dittmann, I., E. Maug, and C. Schneider, 2010, "Bankers on the Boards of German Firms: What They Do, What They Are Worth, and Why They Are (Still) There?," *Review of Finance* 14, 35-71.

Farinha, L. A., and J. A. C. Santos, 2002, "Switching from Single to Multiple Bank Lending Relationships: Determinants and Implications," *Journal of Financial Intermediation* 11, 124-151.

Faulkender, M., and M. A. Petersen, 2006, "Does the Source of Capital Affect Capital Structure?," *Review of Financial Studies* 44, 45-79.

Fischer, K., 1990, Hausbankbeziehungen als Instrument der Bindung zwischen Banken und Unternehmen - Eine Theoretische und Empirische Analyse, Universitat Bonn, Bonn.

Fluet, C., and P. G. Garella, 2007, Relying on the Information of Others: Debt Rescheduling with Multiple Lenders, Université du Québec, Montréal.

Frydman, C., and R. E. Saks, 2010, "Executive Compensation: A New View from a Long-Term Perspective," *Review of Financial Studies* 23, 2099-2138.

Graham, J. R., M. Leary, and M. Roberts, 2011, A Century of Capital Structure: The Leveraging of Corporate America, Duke University, Durham NC.

Guiso, L., 2003, "Small Business Finance in Italy," *European Investment Bank Papers* 8, 121-147.

Hein, L. W., 1963, "The Auditor and the British Companies Act," *Accounting Review* 508-520.

Hernandez-Canovas, G., and P. Martinez-Solano, 2006, "Banking Relationships: Effects on the Debt Terms of the Small Spanish Firms," *Journal of Small Business Management* 44, 315-333.

Herrera, A. M., and R. Minetti, 2007, "Informed Finance and Technological Change: Evidence from Credit Relationships," *Journal of Financial Economics* 83, 223-269.

Hommel, U., and H. Schneider, 2003, "Financing the German Mittelstand," *European Investment Bank Papers* 8, 53-90.

Houston, J., and C. James, 1996, "Bank Information Monopolies and the Mix of Private and Public Debt Claims," *Journal of Finance* 51, 1863-1889.

Kaplan, S. N., and D. Reishus, 1990, "Outside Directorships and Corporate Performance," *Journal of Financial Economics* 27, 389-410.

Kiefer, N. M., 1988, "Economic Duration Data and Hazard Functions," *Journal of Economic Literature* 26, 646-679.

Leary, M. T., 2009, "Bank Loan Supply, Lender Choice, and Corporate Capital Structure," *Journal of Finance* 64, 1143-1185.

Lefilliatre, D., 2002, La Multibancarite, Banque de France, Paris.

Lemmon, M., and M. R. Roberts, 2010, "The Response of Corporate Financing and Investment to Changes in the Supply of Credit," *Journal of Financial and Quantitative Analysis* 45, 555–587.

Menkhoff, L., and C. Suwanaporn, 2007, "The Rationale of Bank Lending in Pre-crisis Thailand," *Applied Economics* 39, 1077-1089.

Ongena, S., and D. C. Smith, 2000, "What Determines the Number of Bank Relationships? Cross-Country Evidence," *Journal of Financial Intermediation* 9, 26-56.

—, 2001, "The Duration of Bank Relationships," *Journal of Financial Economics* 61, 449-475.

Ongena, S., G. Tümer-Alkan, and B. Vermeer, 2011, "Corporate Choice of Banks: Decision Factors, Process and Responsibility – First Evidence," *Journal of Corporate Finance* 17, 326-351.

Proust, Y., and D. Cadillat, 1996, "La Multibancarisation de 1992 a 1995," *Bulletin de la Banque de France Supplement Etudes* 39-51.

Qian, J., and P. E. Strahan, 2007, "How Law and Institutions Shape Financial Contracts: The Case of Bank Loans," *Journal of Finance* 62, 2803-2834.

Rajan, R. G., 1992, "Insiders and Outsiders: the Choice between Informed and Arm's-Length Debt," *Journal of Finance* 47, 1367-1400.

Rajan, R. G., and L. Zingales, 2003, "The Great Reversals: The Politics of Financial Development in the 20th Century," *Journal of Financial Economics* 69, 5-50.

Reid, M., 1982, *The Secondary Banking Crisis, 1973-75. Its Causes and Courses*, MacMillan Press, London.

Rice, T., and P. E. Strahan, 2010, "Does Credit Competition Affect Small-Firm Finance?," *Journal of Finance* 65, 861-889.

Rossi, S., J. Franks, and C. Mayer, 2009, "Ownership: Evolution and Regulation," *Review of Financial Studies* 22, 4009-4056.

Saunders, A., and C. Ward, 1976, "Regulation, Risk and Performance of U.K. Clearing Banks 1965-75," *Journal of Industrial Economics* 25, 143-159.

Saunders, A., and B. Wilson, 1999, "The Impact of Consolidation and Safety-Net Support on Canadian, US and UK banks: 1893--1992," *Journal of Banking and Finance* 23, 537-571.

Schularick, M., and A. M. Taylor, 2012, "Credit Booms Gone Bust: Monetary Policy, Leverage Cycles, and Financial Crises, 1870–2008," *American Economic Review* 102 1029–1061.

Sharpe, S. A., 1990, "Asymmetric Information, Bank Lending and Implicit Contracts: a Stylized Model of Customer Relationships," *Journal of Finance* 45, 1069-1087.

Sjögren, H., 1994, "Long-Term Financial Contracts in the Bank-Orientated Financial System," *Scandinavian Journal of Management* 10, 315-330.

Stein, J., 2002, "Information Production and Capital Allocation: Decentralized versus Hierarchical Firms," *Journal of Finance* 57, 1891-1922.

Sterken, E., and I. Tokutsu, 2003, What Are the Determinants of the Number of Bank Relations of Japanese Firms?, CSOS Centre for Economic Research, Groningen.

Sufi, A., 2009, "The Real Effects of Debt Certification: Evidence from the Introduction of Bank Loan Ratings," *Review of Financial Studies* 22, 1659-1691.

Thomsen, S., 1999, The Duration of Business Relationships: Banking Relationships of Danish Manufacturers 1900-1995, Copenhagen Business School, Copenhagen.

von Rheinbaben, J., and M. Ruckes, 2004, "The Number and the Closeness of Bank Relationships," *Journal of Banking and Finance* 28, 1597-1615.

von Thadden, E.-L., 2004, "Asymmetric Information, Bank Lending, and Implicit Contracts: the Winner's Curse," *Finance Research Letters* 1, 11-23.

von Thadden, E. L., 1992, The Commitment of Finance, Duplicated Monitoring and the Investment Horizon, Centre for Economic Policy Research, London.

Yosha, O., 1995, "Information Disclosure Costs and the Choice of Financing Source," *Journal of Financial Intermediation* 4, 3-20.

TABLE 1
NUMBER OF FIRM-BANK RELATIONSHIPS THROUGHOUT THE 20TH CENTURY IN BRITAIN

| Year | Observations | Number of Bank Relationships | | | % Firms with N Bank Relationships | | |
|---|---|---|---|---|---|---|---|
| | | Average | Median | Maximum | N=1 | N=2 | N>2 |
| *Entire Sample* | | | | | | | |
| 1896 | 678 | 1.15 | 1 | 4 | 86.9 | 11.7 | 1.5 |
| 1906 | 1,790 | 1.22 | 1 | 5 | 83.4 | 12.9 | 3.7 |
| 1916 | 1,815 | 1.22 | 1 | 6 | 83.8 | 12.2 | 4.1 |
| 1920 | 1,908 | 1.22 | 1 | 8 | 83.4 | 12.6 | 3.9 |
| 1924 | 2,140 | 1.23 | 1 | 6 | 84.1 | 11.3 | 4.6 |
| 1934 | 2,432 | 1.24 | 1 | 7 | 82.9 | 12.6 | 4.4 |
| 1938 | 2,882 | 1.19 | 1 | 7 | 86.3 | 10.3 | 3.4 |
| 1948 | 3,236 | 1.19 | 1 | 7 | 86.9 | 9.7 | 3.4 |
| 1958 | 3,394 | 1.17 | 1 | 9 | 88.3 | 8.6 | 3.0 |
| 1966 | 3,116 | 1.20 | 1 | 9 | 86.2 | 9.5 | 4.2 |
| 1968 | 3,023 | 1.23 | 1 | 9 | 85.2 | 10.4 | 4.5 |
| 1970 | 2,687 | 1.28 | 1 | 7 | 80.9 | 13.0 | 6.1 |
| 1972 | 2,526 | 1.36 | 1 | 12 | 76.7 | 15.7 | 7.6 |
| 1974 | 2,295 | 1.45 | 1 | 10 | 72.5 | 17.4 | 10.1 |
| 1976 | 2,098 | 1.50 | 1 | 11 | 71.0 | 17.5 | 11.6 |
| 1978 | 1,876 | 1.59 | 1 | 11 | 68.0 | 18.6 | 13.4 |
| 1980 | 1,756 | 1.61 | 1 | 8 | 66.7 | 19.0 | 14.3 |
| 1982 | 1,948 | 1.68 | 1 | 11 | 64.7 | 18.7 | 16.5 |
| 1984 | 1,973 | 1.71 | 1 | 10 | 63.5 | 19.5 | 17.0 |
| 1986 | 2,004 | 1.69 | 1 | 10 | 63.6 | 20.1 | 16.3 |
| *Firms Followed from 1966 until 1986* | | | | | | | |
| 1966 | 599 | 1.30 | 1 | 8 | 84.0 | 9.4 | 6.7 |
| 1968 | 599 | 1.31 | 1 | 8 | 82.3 | 11.4 | 6.4 |
| 1970 | 599 | 1.32 | 1 | 6 | 80.8 | 12.2 | 7.0 |
| 1972 | 599 | 1.37 | 1 | 8 | 77.6 | 14.0 | 8.4 |
| 1974 | 599 | 1.44 | 1 | 10 | 73.6 | 17.2 | 9.2 |
| 1976 | 599 | 1.50 | 1 | 11 | 70.8 | 17.7 | 11.5 |
| 1978 | 599 | 1.62 | 1 | 11 | 68.3 | 17.9 | 13.9 |
| 1980 | 599 | 1.63 | 1 | 7 | 67.3 | 17.4 | 15.4 |
| 1982 | 599 | 1.70 | 1 | 9 | 65.9 | 15.2 | 18.9 |
| 1984 | 599 | 1.77 | 1 | 9 | 63.4 | 16.9 | 19.7 |
| 1986 | 599 | 1.78 | 1 | 8 | 61.4 | 18.9 | 19.7 |

NOTE. -- The table reports the number of firm-bank relationships during the 20th century in Britain. For each year the upper panel reports the number of observations, the average, median and maximum number of firm-bank relationships, and the percentage of sample firms that report one, two or more than two relationships. The lower panel reports the same statistics for 599 firms that can be followed from 1966 to 1986. In 1896 only data for a selection of the largest listed firms was reported.

TABLE 2
VARIABLE DEFINITIONS

| Variable Name | Unit | Variable Definition |
|---|---|---|
| *Variables Available for Years in the Period 1896 - 1986* | | |
| Multiple Firm-Bank Relationships | 0/1 | =1 if the company maintains multiple firm-bank relationships, =0 otherwise |
| Capital Issued | 000 BRP | Amount of total share capital issued by the company |
| Age | years | Age of the company in the sample year |
| Board Size | - | Number of members in the administration board |
| Borrowing Limit | - | The borrowing limit for the companies officers divided by the book value of assets |
| One Share - One Vote | 0/1 | =1 if the company applies the one share - one vote principal, =0 otherwise |
| Officially Listed | 0/1 | =1 if the company had any class of its outstanding shares officially listed in London and traded on the floor, =0 otherwise |
| Arm's Length Debt | 0/1 | =1 if the company has bonds or any other form of arm's length debt outstanding, =0 otherwise |
| Arm's Length Leverage | - | Bonds or any other form of arm's length debt outstanding divided by the book value of assets |
| Past Dividends | 0/1 | =1 if the company always paid a dividend in the previous two years, =0 otherwise |
| *Variables Available for the Period 1966 - 1986* | | |
| Book Value of Assets | mln. BRP | Firm book value of assets |
| British (0/1) | 0/1 | =1 if the headquarters of the firm is located in Britain, =0 otherwise |
| Leverage | - | Mortgages plus debentures plus short-term debt divided by the book value of the assets |
| Subsidiary (0/1) | 0/1 | =1 if the company is controlled by another company, =0 otherwise |
| Tangibility | - | Property, plant and equipment divided by the book value of assets |
| Past Returns | % | The returns on the firm's stock in the previous two years |
| Relationship Bank is National Westminster in 1974 or 1976 (0/1) | 0/1 | =1 if the relationship bank is National Westminster in 1974 or 1976, =0 otherwise |
| Relationship Bank Liquidity Ratio | - | Cash and marketable securities divided by the book value of assets of the relationship bank |
| Relationship Bank Capital Ratio | - | Total equity capital and reserves divided by the book value of assets of the relationship bank |

TABLE 3
DESCRIPTIVE STATISTICS FOR SELECTED YEARS DURING THE 20TH CENTURY

| Variable | Statistic | 1896 | 1906 | 1916 | 1920 | 1924 | 1934 | 1938 | 1948 | 1958 |
|---|---|---|---|---|---|---|---|---|---|---|
| Capital Issued | Mean | 239 | 325 | 355 | 492 | 623 | 1,095 | 659 | 669 | 1,083 |
| | Median | 138 | 150 | 158 | 180 | 215 | 241 | 225 | 213 | 305 |
| | St. Dev. | 382 | 902 | 798 | 1,403 | 2,042 | 11,530 | 2,242 | 2,404 | 4,541 |
| | N | 617 | 1,667 | 1,682 | 1,728 | 2,024 | 2,319 | 2,775 | 3,128 | 3,339 |
| Age | Mean | 11.51 | 12.65 | 19.76 | 21.87 | 23.32 | 25.69 | 26.15 | 34.49 | 39.24 |
| | Median | 7 | 9 | 18 | 22 | 25 | 26 | 25 | 30 | 37 |
| | St. Dev. | 11.59 | 10.64 | 12.28 | 12.89 | 14.37 | 17.75 | 18.6 | 19.54 | 23.18 |
| | N | 617 | 1,667 | 1,682 | 1,728 | 2,024 | 2,319 | 2,775 | 3,128 | 3,339 |
| Board Size | Mean | 5.11 | 4.80 | 4.89 | 5.45 | 5.64 | 5.29 | 5.29 | 5.44 | 5.65 |
| | Median | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| | St. Dev. | 1.82 | 2.95 | 2.56 | 2.59 | 2.44 | 2.31 | 2.25 | 2.25 | 2.35 |
| | N | 617 | 1,667 | 1,682 | 1,728 | 2,024 | 2,319 | 2,775 | 3,128 | 3,339 |
| Borrowing Limit | Mean | 0.21 | | | | | 0.10 | 0.08 | 0.07 | 0.03 |
| | Median | 0 | | | | | 0 | 0 | 0 | 0 |
| | St. Dev. | 0.41 | | | | | 0.30 | 0.27 | 0.25 | 0.17 |
| | N | 476 | | | | | 2,103 | 2,638 | 3,007 | 3,317 |
| One Share - One Vote (0/1) | Mean | 0.55 | 0.58 | 0.56 | 0.55 | 0.56 | 0.49 | 0.48 | 0.46 | 0.41 |
| | Median | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |
| | St. Dev. | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.54 | 0.50 | 0.49 |
| | N | 617 | 1,667 | 1,682 | 1,728 | 2,024 | 2,319 | 2,775 | 3,128 | 3,339 |
| Officially Listed (0/1) | Mean | 0.27 | 0.32 | | | | | | | 0.72 |
| | Median | 0 | 0 | | | | | | | 1 |
| | St. Dev. | 0.45 | 0.47 | | | | | | | 0.45 |
| | N | 617 | 1,667 | | | | | | | 3,339 |
| Arm's Length Debt (0/1) | Mean | 0.58 | 0.53 | 0.52 | 0.43 | 0.33 | 0.29 | 0.21 | 0.12 | 0.26 |
| | Median | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| | St. Dev. | 0.49 | 0.50 | 0.50 | 0.50 | 0.47 | 0.45 | 0.41 | 0.32 | 0.44 |
| | N | 617 | 1,667 | 1,681 | 1,728 | 2,024 | 2,319 | 2,775 | 3,128 | 3,339 |
| Arm's Length Leverage | Mean | 0.17 | 0.03 | 0.17 | 0.13 | 0.11 | 0.09 | 0.07 | 0.04 | 0.31 |
| | Median | 0.11 | 0 | 0.03 | 0 | 0 | 0 | 0 | 0 | 0.29 |
| | St. Dev. | 0.18 | 0.09 | 0.20 | 0.23 | 0.17 | 0.18 | 0.16 | 0.13 | 0.16 |
| | N | 617 | 1,667 | 1,682 | 1,728 | 2,024 | 2,319 | 2,775 | 3,128 | 3,339 |
| Past Dividends (0/1) | Mean | 0.73 | 0.83 | 0.80 | 0.93 | 0.74 | | 0.77 | | 0.90 |
| | Median | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 |
| | St. Dev. | 0.45 | 0.38 | 0.40 | 0.25 | 0.44 | 0 | 0.42 | 0 | 0.31 |
| | N | 338 | 1,034 | 1,156 | 1,110 | 1,366 | 0 | 1,942 | 0 | 3,001 |

NOTE. -- The table reports descriptive statistics of key firm variables for selected years during the 20th century. N is the number of observations.

TABLE 4
MULTIPLE FIRM-BANK RELATIONSHIPS: PROBIT ANALYSIS FOR SELECTED YEARS DURING THE 20TH CENTURY

| | Year 1896 | | | | Year 1906 | | | | Year 1916 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Model | I | II | III | IV | I | II | III | IV | I | II | III | IV |
| ln(Capital Issued) | 0.062*** | 0.061*** | 0.022 | 0.080*** | 0.061*** | 0.061*** | 0.072*** | | 0.081*** | 0.081*** | 0.078*** | |
| | [0.016] | [0.016] | [0.021] | [0.020] | [0.011] | [0.011] | [0.014] | | [0.011] | [0.011] | [0.014] | |
| ln(1 + Age) | -0.033** | -0.034** | -0.064** | -0.042** | -0.045*** | -0.045*** | -0.050*** | | -0.021 | -0.021 | -0.009 | |
| | [0.016] | [0.016] | [0.025] | [0.021] | [0.014] | [0.014] | [0.019] | | [0.013] | [0.013] | [0.019] | |
| ln(1 + Board Size) | 0.016 | 0.018 | -0.029 | 0.015 | 0.120*** | 0.120*** | 0.135*** | | 0.056* | 0.056* | 0.024 | |
| | [0.046] | [0.046] | [0.056] | [0.056] | [0.027] | [0.027] | [0.036] | | [0.030] | [0.030] | [0.038] | |
| Borrowing Limit | | | | 0.048 | | | | | | | | |
| | | | | [0.045] | | | | | | | | |
| One Share - One Vote (0/1) | -0.006 | -0.006 | -0.016 | -0.002 | 0.003 | 0.003 | 0.008 | | -0.009 | -0.009 | -0.022 | |
| | [0.027] | [0.027] | [0.034] | [0.032] | [0.018] | [0.018] | [0.023] | | [0.018] | [0.018] | [0.021] | |
| Officially Listed (0/1) | 0.048 | 0.050 | 0.070* | 0.033 | 0.042* | 0.042* | 0.012 | | 0.014 | 0.014 | 0.015 | |
| | [0.034] | [0.034] | [0.040] | [0.039] | [0.022] | [0.022] | [0.027] | | [0.020] | [0.020] | [0.024] | |
| Arm's Length Debt (0/1) | -0.002 | 0.022 | -0.016 | -0.015 | 0.003 | 0.003 | 0.020 | | 0.003 | 0.002 | 0.013 | |
| | [0.027] | [0.039] | [0.033] | [0.033] | [0.018] | [0.019] | [0.023] | | [0.018] | [0.029] | [0.022] | |
| Arm's Length Leverage | | -0.088 | | | | -0.004 | | | | 0.002 | | |
| | | [0.108] | | | | [0.141] | | | | [0.071] | | |
| Past Dividends (0/1) | | | 0.040 | | | | 0.024 | | | | -0.026 | |
| | | | [0.035] | | | | [0.028] | | | | [0.028] | |
| Chi2 | 34.53 | 34.05 | 12.61 | 28.79 | 130.50 | 130.52 | 89.71 | | 120.14 | 120.43 | 78.94 | |
| N | 617 | 617 | 338 | 476 | 1,667 | 1,667 | 1,034 | | 1,681 | 1,681 | 1,155 | |

| | Year 1920 | | | | Year 1924 | | | | Year 1934 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Model | I | II | III | IV | I | II | III | IV | I | II | III | IV |
| ln(Capital Issued) | 0.055*** | 0.053*** | 0.064*** | | 0.042*** | 0.042*** | 0.053*** | | 0.046*** | 0.047*** | 0.078*** | |
| | [0.011] | [0.011] | [0.014] | | [0.009] | [0.009] | [0.011] | | [0.008] | [0.008] | [0.014] | |
| ln(1 + Age) | -0.012 | -0.012 | -0.024 | | -0.002 | -0.002 | -0.020 | | 0.000 | 0.000 | -0.009 | |
| | [0.012] | [0.012] | [0.015] | | [0.011] | [0.011] | [0.015] | | [0.010] | [0.010] | [0.019] | |
| ln(1 + Board Size) | 0.095*** | 0.095*** | 0.065 | | 0.088*** | 0.088*** | 0.064* | | 0.049* | 0.049* | 0.024 | |
| | [0.032] | [0.032] | [0.040] | | [0.030] | [0.031] | [0.039] | | [0.028] | [0.008] | [0.038] | |
| One Share - One Vote (0/1) | 0.017 | 0.016 | 0.003 | | -0.026 | -0.026 | -0.009 | | 0.003 | 0.003 | -0.022 | |
| | [0.018] | [0.018] | [0.024] | | [0.016] | [0.016] | [0.020] | | [0.016] | [0.016] | [0.021] | |
| Officially Listed (0/1) | 0.011 | 0.012 | 0.008 | | 0.043** | 0.044** | 0.035 | | 0.050** | 0.049** | 0.015 | |
| | [0.021] | [0.021] | [0.027] | | [0.020] | [0.020] | [0.023] | | [0.020] | [0.020] | [0.024] | |
| Arm's Length Debt (0/1) | -0.019 | -0.009 | -0.033 | | 0.011 | 0.028 | 0.022 | | 0.000 | -0.011 | 0.013 | |
| | [0.018] | [0.023] | [0.022] | | [0.017] | [0.033] | [0.021] | | [0.017] | [0.028] | [0.022] | |
| Arm's Length Leverage | | -0.039 | | | | -0.051 | | | | 0.035 | | |
| | | [0.052] | | | | [0.084] | | | | [0.074] | | |
| Past Dividends (0/1) | | | 0.063 | | | | 0.041** | | | | -0.026 | |
| | | | [0.039] | | | | [0.021] | | | | [0.028] | |
| Chi2 | 89.83 | 93.32 | 67.20 | | 117.96 | 119.49 | 95.45 | | 103.45 | 103.58 | 78.94 | |
| N | 1,727 | 1,727 | 1,109 | | 2,024 | 2,024 | 1,366 | | 2,319 | 2,319 | 1,155 | |

| | Year 1938 | | | | Year 1948 | | | | Year 1958 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Model | I | II | III | IV | I | II | III | IV | I | II | III | IV |
| ln(Capital Issued) | 0.035*** | 0.036*** | 0.034*** | 0.041*** | 0.050*** | 0.050*** | 0.050*** | 0.050*** | 0.041*** | 0.042*** | 0.040*** | 0.041*** |
| | [0.007] | [0.007] | [0.009] | [0.007] | [0.005] | [0.005] | [0.005] | [0.006] | [0.005] | [0.005] | [0.006] | [0.005] |
| ln(1 + Age) | 0.019*** | 0.019*** | 0.029** | 0.023*** | 0.014* | 0.014* | 0.014* | 0.016* | 0.020** | 0.022** | 0.026*** | 0.019** |
| | [0.007] | [0.007] | [0.011] | [0.007] | [0.008] | [0.008] | [0.008] | [0.009] | [0.009] | [0.009] | [0.010] | [0.009] |
| ln(1 + Board Size) | 0.091*** | 0.091*** | 0.109*** | 0.095*** | 0.072*** | 0.072*** | 0.072*** | 0.075*** | 0.020 | 0.018 | 0.022 | 0.019 |
| | [0.024] | [0.024] | [0.029] | [0.025] | [0.021] | [0.021] | [0.021] | [0.022] | [0.019] | [0.019] | [0.020] | [0.019] |
| Borrowing Limit | | | | -0.007 | | | | -0.024 | | | | 0.027 |
| | | | | [0.025] | | | | [0.023] | | | | [0.038] |
| One Share - One Vote (0/1) | 0.006 | 0.006 | 0.008 | 0.008 | 0.012 | 0.012 | 0.012 | 0.015 | 0.016 | 0.017 | 0.009 | 0.015 |
| | [0.012] | [0.012] | [0.017] | [0.012] | [0.012] | [0.012] | [0.012] | [0.013] | [0.012] | [0.012] | [0.012] | [0.012] |
| Officially Listed (0/1) | 0.029* | 0.029* | 0.020 | | | | | | -0.002 | -0.005 | 0.003 | 0.000 |
| | [0.017] | [0.017] | [0.020] | | | | | | [0.014] | [0.014] | [0.014] | [0.014] |
| Arm's Length Debt (0/1) | 0.033** | 0.003 | 0.024 | 0.031* | 0.044** | 0.045 | 0.044** | 0.040** | 0.030** | 0.021 | 0.027** | 0.031** |
| | [0.017] | [0.033] | [0.020] | [0.017] | [0.019] | [0.042] | [0.019] | [0.020] | [0.013] | [0.013] | [0.013] | [0.013] |
| Arm's Length Leverage | | 0.08 | | | | -0.001 | | | | 0.068* | | |
| | | [0.081] | | | | [0.091] | | | | [0.035] | | |
| Past Dividends (0/1) | | | 0.004 | | | | | | | | 0.023 | |
| | | | [0.018] | | | | | | | | [0.018] | |
| Chi2 | 152.34 | 151.65 | 100.48 | 147.53 | 205.85 | 205.86 | 205.85 | 200.73 | 135.71 | 135.50 | 135.92 | 135.89 |
| N | 2,773 | 2,773 | 1,941 | 2,638 | 3,128 | 3,128 | 3,128 | 3,007 | 3,340 | 3,340 | 3,002 | 3,318 |

NOTE. -- The estimates in this table come from probit models. The dependent variable is Multiple Firm-Bank Relationships (0/1) which equals one if the number of firm-bank relationships equals more than one and equals zero otherwise. The independent variables are defined in Table 1. When possible every specification also controls for an industry dummy that takes the value of one if the company operated in the Iron and Steel sector and equals zero otherwise. Marginal effects are listed in the first row, standard errors are reported in the second row between brackets, and the corresponding significance levels are in the first row adjacent to the estimated marginal effects. For dummy (0/1) variables the marginal effect indicates the effect of a change from zero to one in the variable. *** Significant at 1%, ** significant at 5%, * significant at 10%.

TABLE 5

GOING FROM SINGLE TO MULTIPLE FIRM-BANK RELATIONSHIPS DURING THE 1966-1986 TRANSITION PERIOD

| Period | All | | | Observed / Initiated =< 1966 | | | Observed / Initiated > 1966 | | |
|---|---|---|---|---|---|---|---|---|---|
| | Count | Percentage | Cumulative | Count | Percentage | Cumulative | Count | Percentage | Cumulative |
| [2,4) | 150 | 20.46% | 20.46% | 42 | 10.10% | 10.10% | 108 | 34.07% | 34.07% |
| [4,6) | 94 | 12.82% | 33.29% | 31 | 7.45% | 17.55% | 63 | 19.87% | 53.94% |
| [6,8) | 85 | 11.60% | 44.88% | 53 | 12.74% | 30.29% | 32 | 10.09% | 64.04% |
| [8,10) | 98 | 13.37% | 58.25% | 65 | 15.63% | 45.91% | 33 | 10.41% | 74.45% |
| [10,12) | 82 | 11.19% | 69.44% | 51 | 12.26% | 58.17% | 31 | 9.78% | 84.23% |
| [12,14) | 63 | 8.59% | 78.04% | 42 | 10.10% | 68.27% | 21 | 6.62% | 90.85% |
| [14,16) | 55 | 7.50% | 85.54% | 44 | 10.58% | 78.85% | 11 | 3.47% | 94.32% |
| [16,18) | 29 | 3.96% | 89.50% | 21 | 5.05% | 83.89% | 8 | 2.52% | 96.85% |
| [18,20) | 26 | 3.55% | 93.04% | 19 | 4.57% | 88.46% | 7 | 2.21% | 99.05% |
| [20,22) or >= 20 | 25 | 3.41% | 96.45% | 22 | 5.29% | 93.75% | 3 | 0.95% | 100.00% |
| >= 22 | 26 | 3.55% | 100.00% | 26 | 6.25% | 100.00% | | | |

NOTE. -- The table reports the number, percentage and cumulative percentage of single firm-bank relationships that turn to multiple firm-bank relationships for all single relationships, those that are observed and initiated prior to or in 1966 and those that are observed and initiated after 1966.

TABLE 6

SURVIVORSHIP FUNCTION ADJUSTED FOR RIGHT-CENSORING:
GOING FROM SINGLE TO MULTIPLE FIRM-BANK RELATIONSHIPS
DURING THE 1966-1986 TRANSITION PERIOD

| Year | Survivor Function | 95% Confidence Interval | |
|---|---|---|---|
| | | Lower Bound | Upper Bound |
| 0 | 1 | 1 | 1 |
| 2 | 0.96 | 0.96 | 0.97 |
| 4 | 0.93 | 0.93 | 0.94 |
| 6 | 0.90 | 0.89 | 0.91 |
| 8 | 0.86 | 0.84 | 0.87 |
| 10 | 0.81 | 0.80 | 0.83 |
| 12 | 0.77 | 0.75 | 0.79 |
| 14 | 0.73 | 0.71 | 0.75 |
| 16 | 0.71 | 0.68 | 0.73 |
| 18 | 0.68 | 0.65 | 0.70 |
| 20 | 0.64 | 0.61 | 0.67 |
| >20 | 0.59 | 0.56 | 0.62 |

NOTE. -- The table reports the survivorship function and the lower and upper bound for its 95% confidence interval for single firm-bank relationships that turn into multiple firm-bank relationships.

TABLE 7
DESCRIPTIVE STATISTICS FOR 1966-1986 TRANSITION PERIOD

| Variable | N | Mean | Median | Std. Dev. |
|---|---|---|---|---|
| Book Value of Assets | 15,434 | 14.910 | 2.881 | 46.500 |
| Age at Start | 15,434 | 61.910 | 63 | 32.150 |
| British (0/1) | 15,434 | 0.931 | 1 | 0.253 |
| Board Size | 15,434 | 6.263 | 6 | 2.541 |
| One Share - One Vote (0/1) | 15,434 | 0.482 | 0 | 0.5 |
| Officially Listed (0/1) | 14,583 | 0.835 | 1 | 0.371 |
| Arm's Length Debt (0/1) | 15,434 | 0.428 | 0 | 0.495 |
| Leverage | 15,434 | 0.368 | 0.370 | 0.195 |
| Subsidiary (0/1) | 15,434 | 0.143 | 0 | 0.35 |
| Tangibility | 15,434 | 0.358 | 0.326 | 0.199 |
| Return on Equity | 6,128 | 0.237 | 0.231 | 0.155 |
| Past Returns | 4,673 | 0.011 | 0.010 | 0.028 |
| Relationship Bank is National Westminster in 1974 or 1976 (0/1) | 15,434 | 0.042 | 0 | 0.201 |
| Relationship Bank Liquidity Ratio | 11,382 | 0.300 | 0.279 | 0.111 |
| Relationship Bank Capital Ratio | 11,382 | 0.158 | 0.056 | 1.308 |
| Firm Has Headquarter in London (0/1) | 12,003 | 0.341 | 0 | 0.474 |
| Change in Concentration of Banking Market Where Firm Has Headquarter | 7,936 | 0.006 | 0 | 0.063 |

   NOTE. -- The table reports descriptive statistics of key firm variables for N relationship - year observations between 1966 and 1986.

TABLE 8

SURVIVAL ANALYSIS OF GOING FROM SINGLE TO MULTIPLE FIRM-BANK RELATIONSHIPS DURING THE 1966-1986 TRANSITION PERIOD

| Model | I | II | III | IV | V | VI | VII | VIII |
|---|---|---|---|---|---|---|---|---|
| ln(Book Value of Assets) | 0.150*** | 0.129*** | 0.128*** | 0.119*** | 0.111** | 0.135*** | 0.075* | 0.119*** |
| | (0.022) | (0.022) | (0.023) | (0.024) | (0.052) | (0.046) | (0.039) | (0.027) |
| ln (1 + Age at Start) | -0.013 | -0.004 | -0.015 | 0.002 | -0.053 | 0.053 | 0.079 | 0.056 |
| | (0.098) | (0.100) | (0.099) | (0.097) | (0.172) | (0.154) | (0.137) | (0.106) |
| British (0/1) | -0.458*** | -0.510*** | -0.443*** | -0.538*** | -0.331 | -0.135 | -0.394 | -0.420*** |
| | (0.138) | (0.140) | (0.138) | (0.140) | (0.413) | (0.408) | (0.385) | (0.163) |
| ln(1 + Board Size) | 0.070 | 0.058 | 0.040 | 0.050 | -0.213 | -0.198 | -0.112 | 0.071 |
| | (0.115) | (0.115) | (0.116) | (0.116) | (0.221) | (0.220) | (0.189) | (0.129) |
| One Share - One Vote (0/1) | 0.140* | | | 0.152* | 0.263* | 0.163 | 0.084 | 0.141 |
| | (0.083) | | | (0.084) | (0.140) | (0.133) | (0.128) | (0.093) |
| Officially Listed (0/1) | | 0.493*** | | 0.485*** | 0.881* | 0.950** | -0.177 | 0.607*** |
| | | (0.154) | | (0.154) | (0.458) | (0.426) | (0.302) | (0.188) |
| Arm's Length Debt (0/1) | | | 0.244*** | 0.244*** | 0.315* | 0.413*** | 0.152 | 0.219** |
| | | | (0.089) | (0.089) | (0.162) | (0.155) | (0.134) | (0.099) |
| Leverage | 0.818*** | 0.798*** | 0.667*** | 0.642*** | 0.910** | 0.729** | 0.264 | 0.794*** |
| | (0.204) | (0.205) | (0.210) | (0.209) | (0.373) | (0.341) | (0.304) | (0.223) |
| Subsidiary (0/1) | -0.420*** | -0.405*** | -0.447*** | -0.382*** | -0.890 | -0.734* | -0.187 | -0.483*** |
| | (0.139) | (0.137) | (0.137) | (0.139) | (0.612) | (0.405) | (0.224) | (0.160) |
| Tangibility | -0.062 | -0.032 | -0.145 | -0.101 | -0.437 | -0.578 | -0.256 | 0.069 |
| | (0.219) | (0.221) | (0.221) | (0.222) | (0.505) | (0.421) | (0.344) | (0.243) |
| Return on Equity | | | | | | 0.220 | | |
| | | | | | | (0.379) | | |
| Past Returns | | | | | | | 3.639* | |
| | | | | | | | (1.951) | |
| Relationship Bank is National Westminster in 1974 or 1976 (0/1) | | | | | | | | 0.363* |
| | | | | | | | | (0.194) |
| Relationship Bank Liquidity Ratio | | | | | | | | 1.253** |
| | | | | | | | | (0.515) |
| Relationship Bank Capital Ratio | | | | | | | | 0.082 |
| | | | | | | | | (0.476) |
| Industry Dummies | No | No | No | No | Yes | No | No | No |
| Number of Observations | 14,635 | 14,635 | 14,635 | 14,635 | 5,265 | 6,089 | 4,684 | 11,394 |

| | Model | IX | X | XI | XII | XIII | XIV | XV | XVI |
|---|---|---|---|---|---|---|---|---|---|
| | Sample | UK | UK | UK | UK | Outside London | Outside London | Outside London | Outside London |
| ln(Book Value of Assets) | | 0.103*** | 0.101*** | 0.103*** | 0.103*** | 0.160*** | 0.158*** | 0.160*** | 0.160*** |
| | | (0.030) | (0.030) | (0.030) | (0.030) | (0.042) | (0.042) | (0.042) | (0.042) |
| ln (1 + Age at Start) | | 0.025 | 0.025 | 0.025 | 0.025 | 0.088 | 0.087 | 0.087 | 0.088 |
| | | (0.119) | (0.118) | (0.119) | (0.119) | (0.161) | (0.160) | (0.161) | (0.161) |
| Firm Has Headquarter in London (0/1) | | 0.011 | 0.007 | 0.012 | 0.010 | | | | |
| | | (0.107) | (0.107) | (0.107) | (0.107) | | | | |
| ln(1 + Board Size) | | -0.169 | -0.171 | -0.168 | -0.171 | -0.067 | -0.068 | -0.066 | -0.068 |
| | | (0.149) | (0.149) | (0.149) | (0.149) | (0.194) | (0.193) | (0.194) | (0.193) |
| One Share - One Vote (0/1) | | 0.081 | 0.088 | 0.081 | 0.080 | -0.072 | -0.064 | -0.073 | -0.073 |
| | | (0.103) | (0.102) | (0.103) | (0.103) | (0.125) | (0.125) | (0.126) | (0.125) |
| Officially Listed (0/1) | | 0.812*** | 0.807*** | 0.829*** | 0.816*** | 1.070*** | 1.065*** | 1.119*** | 1.074*** |
| | | (0.253) | (0.253) | (0.254) | (0.254) | (0.326) | (0.328) | (0.329) | (0.328) |
| Arm's Length Debt (0/1) | | 0.238** | 0.241** | 0.237** | 0.236** | 0.199* | 0.204* | 0.197 | 0.198 |
| | | (0.109) | (0.109) | (0.109) | (0.109) | (0.134) | (0.134) | (0.139) | (0.139) |
| Leverage | | 0.416* | 0.421* | 0.416* | 0.410* | 0.709** | 0.707** | 0.710** | 0.701** |
| | | (0.244) | (0.244) | (0.244) | (0.244) | (0.316) | (0.314) | (0.316) | (0.315) |
| Subsidiary (0/1) | | -0.648*** | -0.648*** | -0.647*** | -0.648*** | -0.572** | -0.573** | -0.571** | -0.572** |
| | | (0.186) | (0.186) | (0.186) | (0.186) | (0.246) | (0.246) | (0.246) | (0.246) |
| Tangibility | | -0.091 | -0.081 | -0.092 | -0.089 | 0.112 | 0.122 | 0.112 | 0.116 |
| | | (0.272) | (0.273) | (0.272) | (0.272) | (0.362) | (0.362) | (0.362) | (0.362) |
| *Change in Concentration of Banking Market Where Firm Has Headquarter* | | -1.090* | -0.535 | 0.134 | -1.716* | -1.105* | -0.704 | 1.364 | -1.617* |
| | | (0.655) | (0.900) | (1.152) | (0.883) | (0.631) | (0.788) | (1.335) | (0.937) |
| *Change in Concentration * One Share - One Vote (0/1)* | | | -3.095* | | | | -2.978* | | |
| | | | (1.660) | | | | (1.871) | | |
| *Change in Concentration * Officially Listed (0/1)* | | | | -1.346 | | | | -2.623* | |
| | | | | (1.348) | | | | (1.483) | |
| *Change in Concentration * Arm's Length Debt (0/1)* | | | | | 1.001 | | | | 0.788 |
| | | | | | (1.338) | | | | (1.312) |
| Number of Observations | | 7,963 | 7,963 | 7,963 | 7,963 | 5,256 | 5,256 | 5,256 | 5,256 |

NOTE. -- The estimates in this table are based on ML estimations of the proportional hazard model using the Cox (1972) proportional hazard function as the baseline hazard. The independent variables are defined in Table 1 and are lagged one period of two years, except Age at Start which is taken in 1966. Coefficients are listed in the first row, standard errors are reported in the second row between brackets, and the corresponding significance levels are in the first row adjacent to the estimated coefficients. *** Significant at 1%, ** significant at 5%, * significant at 10%.

TABLE 9

TYPE OF BANKS THAT WERE ENGAGED AND ADDED DURING THE
1966-1986 TRANSITION PERIOD

| Bank Type | Relationship Bank | | Added Bank | |
|---|---|---|---|---|
| | N | % | N | % |
| *Clearing Bank* | *19,928* | *95.8* | *1,073* | *61.6* |
| London Clearer | 17,682 | 85.0 | 908 | 52.2 |
| Scottish Clearer | 1,627 | 7.8 | 93 | 5.3 |
| Irish Clearer | 619 | 3.0 | 72 | 4.1 |
| *Other British Bank* | *489* | *2.4* | *222* | *12.8* |
| *Foreign Bank* | *379* | *1.8* | *446* | *25.6* |
| Commonwealth Bank | 301 | 1.4 | 142 | 8.2 |
| Other Foreign Bank | 78 | 0.4 | 304 | 17.5 |

NOTE. -- The table reports descriptive statistics of the number and percentage of relationship - year observations between 1966 and 1986, by the type of relationship bank and added bank.

TABLE 10
DEPENDENT VARIABLE DEFINITIONS AND DESCRIPTIVE STATISTICS

| Variable Name | Variable Definition | 1955 - 1986 (N=32,400) | | | 1968 - 1973 (N=4,666) | | |
|---|---|---|---|---|---|---|---|
| | | Mean | Median | St.Dev. | Mean | Median | St.Dev. |
| Leverage | Total debt divided by total book value of assets | 0.335 | 0.318 | 0.187 | 0.415 | 0.418 | 0.176 |
| Long Term Leverage | Bank and long term debt over assets | 0.157 | 0.117 | 0.162 | 0.215 | 0.204 | 0.169 |
| Bank Debt to Total Debt | Bank overdrafts and loans divided by total debt | 0.172 | 0.106 | 0.196 | 0.191 | 0.174 | 0.163 |
| Long Term Debt to Total Debt | Long term liabilities divide by total debt | 0.107 | 0.000 | 0.179 | 0.149 | 0.085 | 0.174 |
| Trade Credit to Total Debt | Trade and other credit divided by total debt | 0.721 | 0.730 | 0.246 | 0.660 | 0.637 | 0.216 |
| Share Issuance | Net issue of ordinary and preferrred shares divided by the book value of assets at the beginning of the year | 0.015 | 0 | 0.132 | 0.022 | 0 | 0.156 |
| Bank Debt Growth | Bank credit received divided by the book value of assets at the beginning of the year | 0.012 | 0 | 0.087 | 0.012 | 0.001 | 0.074 |
| Long Term Debt Growth | Issue of long term liabilities divided by the book value of assets at the beginning of the year | 0.005 | 0 | 0.046 | 0.009 | 0 | 0.049 |
| Trade Credit Growth | Trade and other credit received divided by the book value of assets at the beginning of the year | 0.020 | 0.014 | 1.181 | 0.043 | 0.028 | 0.109 |
| ROE | Total profits divided by total capital and reserves | 0.212 | 0.209 | 0.849 | 0.280 | 0.246 | 1.810 |

NOTE. -- The table reports the definitions and descriptive statistics of the dependent variables employed in the ensuing analysis is based. All variables are collected from the Cambridge DTI database. N is the number of firm-year observations. We miss one observation for ROE.

TABLE 11
DIFFERENCE BETWEEN FIRMS THAT ADD BANKS AND FIRMS THAT DID NOT, PRE- AND POST-MATCHING

| | Pre-Matching | | | | | Post-Matching | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | I | II | III | IV | V | I | II | III | IV | V |
| Firms That | Did Not Add Banks | Add Banks | | | | Did Not Add Banks | Add Banks | | | |
| | Mean | | Difference | T-statistic | Kolmogorov- | Mean | | Difference | T-statistic | Kolmogorov- |
| Matching Variables | (St. Dev) | | in Means | | Smirnov | (St. Dev) | | in Means | | Smirnov |
| ln(Book Value of Assets) | 7.835 | 9.054 | 1.219 | 16.325*** | 0.415*** | 8.916 | 9.010 | 0.094 | 0.662 | 0.084 |
| | (1.603) | (1.709) | | | | (1.567) | (1.600) | | | |
| ln (1 + Age) | 3.042 | 2.885 | -0.157 | -5.918*** | 0.156*** | 2.970 | 2.869 | -0.101 | -1.394 | 0.072 |
| | (0.831) | (0.876) | | | | (0.741) | (0.875) | | | |
| British (0/1) | 0.970 | 0.986 | 0.016 | 9.132*** | 0.208*** | 0.992 | 0.988 | -0.004 | -0.449 | 0.004 |
| | (0.170) | (0.117) | | | | (0.0891) | (0.109) | | | |
| One Share - One Vote (0/1) | 0.396 | 0.406 | 0.010 | 0.615 | 0.016 | 0.375 | 0.410 | 0.035 | 0.822 | 0.036 |
| | (0.489) | (0.492) | | | | (0.485) | (0.493) | | | |
| Officially Listed (0/1) | 0.827 | 0.931 | 0.104 | 9.698*** | 0.247*** | 0.960 | 0.928 | -0.032 | -1.557 | 0.032 |
| | (0.379) | (0.255) | | | | (0.196) | (0.259) | | | |
| Arm's Length Debt (0/1) | 0.381 | 0.705 | 0.324 | 11.080*** | 0.296*** | 0.729 | 0.705 | -0.024 | -0.594 | 0.024 |
| | (0.486) | (0.457) | | | | (0.445) | (0.457) | | | |
| Leverage Growth | 0.00452 | 0.0133 | 0.009 | 5.489*** | 0.173*** | 0.0120 | 0.0146 | 0.003 | 1.144 | 0.076 |
| | (0.0253) | (0.0287) | | | | (0.0217) | (0.0291) | | | |
| Subsidiary (0/1) | 0.0800 | 0.0278 | -0.052 | -8.144*** | 0.178*** | 0.0159 | 0.0279 | 0.012 | 0.914 | 0.012 |
| | (0.271) | (0.165) | | | | (0.125) | (0.165) | | | |
| Return on Equity | 0.226 | 0.232 | 0.006 | 2.213** | 0.090** | 0.237 | 0.242 | 0.005 | 0.522 | 0.076 |
| | (0.164) | (0.116) | | | | (0.0879) | (0.117) | | | |
| Net Investment Growth | 0.0739 | 0.113 | 0.039 | 6.867*** | 0.211*** | 0.0997 | 0.121 | 0.021 | 1.872* | 0.131** |
| | (0.113) | (0.141) | | | | (0.106) | (0.147) | | | |
| Share Issuance | 0.0136 | 0.0330 | 0.019 | 4.093*** | 0.362*** | 0.0198 | 0.0358 | 0.016 | 2.752*** | 0.203*** |
| | (0.0720) | (0.0732) | | | | (0.0515) | (0.0768) | | | |
| Long Term Debt Growth | 0.00444 | 0.0135 | 0.009 | 7.528*** | 0.280*** | 0.00947 | 0.0149 | 0.005 | 2.123** | 0.092 |
| | (0.0220) | (0.0315) | | | | (0.0240) | (0.0330) | | | |
| Bank Debt Growth | 0.00947 | 0.0175 | 0.008 | 4.068*** | 0.27*** | 0.0161 | 0.0186 | 0.003 | 1.225 | 0.072 |
| | (0.0391) | (0.0252) | | | | (0.0213) | (0.0255) | | | |
| Number of Observations | 23,438 | 288 | | | | 251 | 251 | | | |

NOTE. -- The table reports for the pre- and post-matching samples, in Columns I and II the mean and below the standard deviation of the matching variables for the firms that did not add banks ("the stayers") and the firms that add banks ("the adders"), in Column III the difference between the two means, in Column IV the t-statistic for a test of the equality of the means assuming equal variances, and in Column V the Kolmogorov-Smirnov test statistic. The continuous matching variables are seven year growth rates (Growth) or averages, as indicated.

TABLE 12

DIFFERENCE IN FIRM FINANCING AND PERFORMANCE BETWEEN FIRMS THAT ADDED A BANK AND MATCHED FIRMS THAT DID NOT BEFORE AND AFTER 1970

| Model / Dependent Variable | I | II | III | IV | V | VI | VII | VIII | IX | X |
|---|---|---|---|---|---|---|---|---|---|---|
| *Difference-in-Difference Coefficient for* | Leverage | Long Term Leverage | Bank Debt to Total Debt | Long Term Debt to Total Debt | Trade Credit to Total Debt | Share Issuance | Bank Debt Growth | Long Term Debt Growth | Trade Credit Growth | ROE |
| *1956 - 1986* | 0.022* | 0.001 | 0.012 | -0.008 | -0.014 | 0.004 | 0.000 | 0.000 | 0.003 | -0.014 |
|  | (0.012) | (0.009) | (0.010) | (0.011) | (0.014) | (0.008) | (0.004) | (0.004) | (0.006) | (0.012) |
| *1956 - 1970* | 0.012 | -0.025** | -0.013 | -0.011 | -0.001 | 0.009 | 0.001 | 0.001 | -0.005 | -0.006 |
|  | (0.018) | (0.012) | (0.013) | (0.017) | (0.021) | (0.014) | (0.005) | (0.007) | (0.009) | (0.010) |
| *1971- 1986* | 0.031* | 0.020* | 0.035** | 0.003 | -0.034* | -0.002 | -0.001 | -0.002 | -0.003 | -0.038* |
|  | (0.018) | (0.012) | (0.015) | (0.012) | (0.017) | (0.006) | (0.006) | (0.004) | (0.009) | (0.023) |

NOTE. -- The dependent variables are defined in Table 10. Coefficients are listed in the first row, standard errors are reported in the second row between brackets, and the corresponding significance levels are in the first row adjacent to the estimated coefficients. The number of observations for 1956 - 1986 equals 251; for 1956 - 1970 equals 127; and for 1971-1986 equals 124. *** Significant at 1%, ** significant at 5%, * significant at 10%.

TABLE 13

THE EFFECT OF FIRM GOVERNANCE ON FIRM FINANCING BEFORE AND AFTER 1970

| Model | I | II | III | IV | V | VI | VII | VIII | IX | X | XI | XII | XIII | XIV | XV |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dependent Variable | Leverage | Bank Debt to Total Debt | Long Term Debt to Total Debt | Trade Credit to Total Debt | Share Issuance | Leverage | Bank Debt to Total Debt | Long Term Debt to Total Debt | Trade Credit to Total Debt | Share Issuance | Leverage | Bank Debt to Total Debt | Long Term Debt to Total Debt | Trade Credit to Total Debt | Share Issuance |
| ln(Book Value of Assets) | 0.032*** | 0.007 | 0.067*** | -0.044*** | -0.005 | 0.032*** | 0.007 | 0.067*** | -0.044*** | -0.005 | 0.032*** | 0.007 | 0.067*** | -0.044*** | -0.005 |
| | (0.004) | (0.004) | (0.006) | (0.005) | (0.005) | (0.004) | (0.004) | (0.006) | (0.005) | (0.005) | (0.004) | (0.004) | (0.006) | (0.005) | (0.005) |
| ln (1+Age) | -0.007 | 0.015** | -0.016** | -0.005 | 0.004* | -0.008 | 0.015** | -0.016** | -0.004 | 0.004* | -0.007 | 0.015** | -0.016** | -0.005 | 0.004 |
| | (0.006) | (0.006) | (0.007) | (0.007) | (0.002) | (0.006) | (0.006) | (0.007) | (0.007) | (0.002) | (0.006) | (0.006) | (0.007) | (0.007) | (0.002) |
| One Share - One Vote (0/1) | -0.001 | -0.021 | 0.006 | 0.007 | -0.005 | 0.005 | -0.010 | 0.012 | -0.005 | 0.001 | 0.006 | -0.010 | 0.013 | -0.005 | 0.001 |
| | (0.011) | (0.013) | (0.016) | (0.014) | (0.008) | (0.010) | (0.011) | (0.013) | (0.012) | (0.005) | (0.010) | (0.011) | (0.013) | (0.012) | (0.005) |
| Officially Listed (0/1) | -0.023 | -0.008 | -0.049** | 0.031* | -0.019* | -0.020 | -0.006 | -0.050** | 0.029 | -0.022 | -0.023 | -0.009 | -0.050** | 0.031* | -0.019 |
| | (0.016) | (0.018) | (0.021) | (0.016) | (0.012) | (0.016) | (0.021) | (0.023) | (0.019) | (0.014) | (0.016) | (0.018) | (0.021) | (0.016) | (0.012) |
| Arm's Length Debt (0/1) | 0.069*** | 0.043*** | 0.188*** | -0.125*** | 0.004 | 0.069*** | 0.043*** | 0.188*** | -0.124*** | 0.004 | 0.054*** | 0.030** | 0.175*** | -0.116*** | 0.010 |
| | (0.010) | (0.011) | (0.013) | (0.011) | (0.006) | (0.010) | (0.011) | (0.013) | (0.011) | (0.006) | (0.011) | (0.013) | (0.015) | (0.013) | (0.009) |
| Subsidiary (0/1) | -0.059*** | -0.072** | -0.082** | 0.088*** | -0.006 | -0.060*** | -0.072** | -0.082** | 0.089*** | -0.006 | -0.058*** | -0.071** | -0.081** | 0.088*** | -0.007 |
| | (0.022) | (0.030) | (0.037) | (0.025) | (0.006) | (0.022) | (0.030) | (0.037) | (0.025) | (0.006) | (0.022) | (0.030) | (0.037) | (0.025) | (0.006) |
| Tangibility | -0.296*** | -0.105** | 0.235*** | -0.102** | -0.007 | -0.296*** | -0.105** | 0.235*** | -0.102** | -0.007 | -0.296*** | -0.105** | 0.235*** | -0.101** | -0.007 |
| | (0.041) | (0.043) | (0.048) | (0.041) | (0.017) | (0.041) | (0.043) | (0.048) | (0.041) | (0.017) | (0.041) | (0.043) | (0.048) | (0.041) | (0.017) |
| Intangibility | -0.029 | -0.058 | 0.422*** | -0.221* | 0.088** | -0.029 | -0.059 | 0.421*** | -0.221* | 0.088** | -0.027 | -0.057 | 0.424*** | -0.222* | 0.087** |
| | (0.098) | (0.098) | (0.127) | (0.115) | (0.043) | (0.098) | (0.098) | (0.127) | (0.115) | (0.043) | (0.098) | (0.098) | (0.128) | (0.115) | (0.044) |
| Market Index | -0.441*** | -0.464*** | 0.886*** | -0.321*** | 0.208 | -0.438*** | -0.459*** | 0.889*** | -0.326*** | 0.211 | -0.446*** | -0.465*** | 0.884*** | -0.322*** | 0.214 |
| | (0.056) | (0.093) | (0.100) | (0.088) | (0.143) | (0.056) | (0.093) | (0.100) | (0.088) | (0.143) | (0.055) | (0.092) | (0.099) | (0.088) | (0.143) |
| GDP Growth | -0.005*** | -0.002 | 0.000 | 0.000 | 0.003 | -0.005*** | -0.002 | 0.000 | 0.000 | 0.003* | -0.005*** | -0.002* | 0.000 | 0.000 | 0.003* |
| | (0.001) | (0.001) | (0.001) | (0.001) | (0.002) | (0.001) | (0.001) | (0.001) | (0.001) | (0.002) | (0.001) | (0.001) | (0.001) | (0.001) | (0.002) |
| Post 1970 (0/1) | 0.001 | -0.007 | -0.060*** | 0.048*** | -0.019*** | 0.012 | 0.006 | -0.055*** | 0.035* | -0.018 | -0.009 | -0.012 | -0.072*** | 0.047*** | -0.007 |
| | (0.005) | (0.008) | (0.008) | (0.007) | (0.006) | (0.013) | (0.020) | (0.020) | (0.018) | (0.026) | (0.007) | (0.011) | (0.013) | (0.010) | (0.008) |
| Post 1970 (0/1) * One Share - One Vote (0/1) | 0.012* | 0.020* | 0.012 | -0.023** | 0.013 | | | | | | | | | | |
| | (0.007) | (0.012) | (0.012) | (0.011) | (0.009) | | | | | | | | | | |
| Post 1970 (0/1) * Officially Listed (0/1) | | | | | | -0.006 | -0.004 | 0.000 | 0.003 | 0.005 | | | | | |
| | | | | | | (0.013) | (0.021) | (0.020) | (0.019) | (0.026) | | | | | |
| Post 1970 (0/1) * Arm's Length Debt (0/1) | | | | | | | | | | | 0.030*** | 0.026* | 0.028* | -0.018 | -0.012 |
| | | | | | | | | | | | (0.010) | (0.013) | (0.016) | (0.013) | (0.010) |
| F | 18.703 | 4.610 | 24.519 | 18.588 | 1.565 | 19.623 | 4.573 | 24.486 | 18.505 | 1.558 | 18.692 | 4.484 | 24.528 | 18.348 | 1.563 |
| R-squared | 0.243 | 0.856 | 0.688 | 0.242 | 0.010 | 0.243 | 0.847 | 0.687 | 0.241 | 0.010 | 0.245 | 0.863 | 0.689 | 0.242 | 0.010 |

NOTE. -- The estimates in this table are based on ordinary least squares estimations. The dependent variables are defined in Table 10. The independent variable Post 1970 (0/1) takes the value of one for the years 1971, 1972 and 1973 and equals zero otherwise. Coefficients are listed in the first row, standard errors clustered at the firm level are reported in the second row between brackets, and the corresponding significance levels are in the first row adjacent to the estimated coefficients. The time period is 1968 - 1973 and the number of firm - year observations equals 4,666. *** Significant at 1%, ** significant at 5%, * significant at 10%.