

A Century of Firm – Bank Relationships:

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

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Abstract

We study how corporate financing evolved during the Twentieth century in Britain. We document a remarkable transition from single to multiple firm-bank relationships. Larger, global, or transparent companies with greater needs for bank credit were more likely to add a bank, especially when located in more competitive local banking markets. Deregulation and intensifying competition in the banking sector during the 1970s spurred banks to supply credit through multilateral arrangements. Firms that added a bank following deregulation borrowed more than similar firms that did not add a bank, and their bank debt expanded while their trade credit and share issuance contracted.

Keywords: banking sector, competition, multiple banking.

JEL: G21, N23, N24.

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 firm-bank relationships. 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 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 Schoemaker 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 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 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 this self-evident endogeneity problem by matching firms that add banks to otherwise (observably) similar firms, and by performing a difference-in-difference analysis (explained below). We will also argue that the 1970 banking deregulation was an exogenous shock to the supply of capital to firms and that it was unlikely to be driven by factors related to the firms' investment demand.

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. Black and Strahan (2002), Stiroh and Strahan (2003), Bertrand, Schoar and Thesmar (2007), and Huang (2008), among others, investigate the relevance of banking deregulation for credit and real growth, while Leary (2009), Sufi (2009), Lemmon and Roberts (2010) and Rice and Strahan (2010), among others, investigate if the relaxation of credit supply constraints affect corporate borrowing. Complementing their work we analyse ninety years of pertinent corporate information, including vital (for the identification of the deregulation's impact) information on 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 on corporate leveraging.

Second, we contribute to the growing literature that studies the evolution of finance over a very long period of time. Like Rajan and Zingales (2003), Chambers and Dimson (2009), Frydman and Saks (2010) 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 relationships 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 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. Transparent firm headquartered in local banking markets that became less concentrated were even more likely to switch. Finally we find that

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.

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.

Having established banking sector deregulation in 1970 as 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. This exercise is particularly meaningful in our context as the historical evidence suggests that banking deregulation was exogenous to firms' demand, making it very likely that we identify changes in the supply of capital conditions. Such deregulation was driven by the need of the Bank of England to have a more effective way to conduct monetary policy rather than aimed at accommodating specific needs of the corporate sector.

Our analysis finds that adders subsequently increase their leverage and bank debt more and also decrease their trade (and other) credit more 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. Consolidation and Cartelization Prior to the 1970s

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 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

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.

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.

We explore almost a hundred years of British financial history until 1986. Our sample period ends in 1986 because by then the transition to multiple relationships appears to be concluded (see the UK numbers in Ongena and Smith (2000) for example). We also do not study the so-called “Big Bang”, the effects of the liberalization of the London Stock Exchange undertaken in October 1986. In principle, we consider this to be outside the scope of our study as it involved more the structure of trading and ownership of the London Stock Exchange rather than the bilateral relationships between firms and banks.

C. A Banking Deregulation Exogenous to Corporate Borrowers’ Demand

We document that the deregulation of the banking sector was an exogenous shock to the supply of credit to firms. It is unlikely that deregulation reflected factors related to firms’ demand of external finance. In particular, it is unlikely that deregulation was introduced expecting firms to have more investment opportunities and a higher demand for financial capital after 1970. If this was the case, the policy change would be endogenous to firms’ behavior, undermining the validity of our experiment.

The historical evidence provides two complementary explanations for the deregulation of the banks’ cartel. Both explanations are unrelated to firms’ demand and support a supply side interpretation. First, the cartel provisions applied only to the clearing banks. While clearing banks could have enjoyed such an arrangement in the aftermath of World War 2, technological developments allowed foreign banks to operate within the UK already in the 1960s. Foreign banks could work outside the restrictions imposed by the cartel and they became an important threat to the business of the large British banks. Lifting the cartel, constituted a response to this threat: clearing banks could have had “free hands” to compete with foreign credit institutions. Second, with more and new financial institutions operating in

the UK, the Bank of England could no longer control monetary policy by relying only on a specific arrangement with the clearing banks. As a result, it was decided to abandon the cartel, and use different instruments such as open market operations to regulate money supply. Both explanations are plainly exogenous to firms' demand for investment.

It is also important to emphasize that the deregulation was followed by the oil shocks and recessions, events that should have led to a decline, rather than a rise, in investment and in the demand for external finance, alleviating concerns that deregulation is endogenous to firms' behavior. And in 1973 the taxation of dividends was amended and the tax bias against dividends practically removed (Cheffins (2008), p. 325), which *ceteris paribus* decreases the demand for external debt finance.

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.

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 interesting question, which has received only recently some attention, is whether 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. 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, earnings, long term debt, trade credit and –very important

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.

for our analysis- the amount of bank debt. The Cambridge DTI databanks also provides data on the number of corporate acquisition undertaken by firms between 1948 and 1990. The London Share Price database contains information on share returns since 1955, a piece of information not available in the Stock Exchange 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.

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

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.

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 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). Both Table 1 Panels A and B show that a transition to multiple relationships was already in place between 1966 and 1970, before the deregulation of the banking system was actually introduced. Panel B however shows that about half of pre-1970 transition is determined by the composition of the sample: many of the firms dropping out with our sample were single relationship firms. Panel B reinforces the idea that the bulk of the transition towards multiple banking took place after 1970, the period of bank deregulation.

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 be 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.

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. Descriptive Statistics

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.

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 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.

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

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

multiple relationships for the average firm (which ranges between 17.6% in 1906 and 12.5% 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

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.

transition to multiple banking as a switch (at which stage the spell ends and the firm exits the 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.

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.

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*.

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.

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. 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 *Return on Equity* which is total profits divided by total capital and reserves, or as *Past Returns* which is the returns on the firm's stock in the previous two years.

Mergers between firms may also result in bank multiplicity if the merged firm has a tendency to maintain the extant bank relationships of the two (or more) merged units (Degryse, Masschelein and Mitchell (2011)) or if the merger leads to a much larger firm size and especially complexity. The *Number of Acquisitions in the Past Two Years* captures both effects and we expect a positive sign on this variable.

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 return on equity that equals 24 (23) percent and past returns that equal 1 (1) percent. The mean number of acquisitions in the past two years equals 0.11.

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

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.

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.

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.

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.

The number of observations varies between 14,634 and 4,673 according the combination of variables that is included.

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., $0.59 = e^{-0.522}$).

Transparency matters a great deal. One share - one vote, being officially listed, and arm's length debt all speed the transition, and do so quite consistently across many specifications. Being officially listed for example increases the hazard rate by more than half in Model IV (i.e., $1.56 = e^{0.448}$).

More levered firms or firms without a controlling parent also are more likely to add another bank. Profitability matters only marginally, while an acquisition by the firm in the past two years almost doubles the hazard rate (i.e., $1.83 = e^{0.603}$). Having an illiquid relationship bank decreases the likelihood of engaging an additional bank (in Model IX), 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 X to XVII 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 XIV to XVII 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 X for example implies that a decrease in concentration by 0.10 increases the probability of adding a bank by 11 percent.

In Models XI to XIII and XV to XVII 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.

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 protections and accounting standards may reduce banks' monitoring costs and increase the

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.

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

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)).

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. Methodology

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 equity issuance 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: $\ln(\text{Book Value of Assets})$, $\ln(1+\text{Age})$, British (0/1), One Share - One Vote (0/1), Officially Listed (0/1), Arm's Length Debt (0/1), Subsidiary (0/1), and the growth rates (over the last seven years) of Leverage, Bank Debt, Long Term Debt, Trade Credit, Share Issuance and

Return on Equity. 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:

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

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

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

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

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

As a final step, we take the difference of:

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

The results we present (in Table 12) correspond to the average difference-in-difference analysis for two periods, i.e., 1966 – 1976 and 1956 – 1986, with in both cases a pre-1970 period (1970 included), and a 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 banking 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 undertake the propensity score analysis employing a one-to-one nearest neighbour matching and we run several diagnostics to evaluate the quality of the matching procedure.

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 (the Kolmogorov-Smirnov test statistic yields qualitatively similar results). 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 two periods and the different subsamples. For both periods we find that both overall and long-term 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 debt, yet leave long-term debt issuance unaltered and decrease trade credit taken and equity share issuance.

The statistical differences we observe are also economically meaningful. For the 1966 – 1976 (1956 – 1986) period, leverage increases in the period after 1971 by 4.2 (3.5) percentage points, for a mean leverage of firms equal to 39.3 (33.5) percent implying a semi-elasticity of 10.7 (10.4) percent. Leverage does not increase statistically significantly before 1971. Similarly, long term leverage increases by 2.5 (4.4) percentage points, a semi-elasticity of

12.3 (28.0) percent, bank debt to total debt increased by 4.2 (4.1) percentage points, a semi-elasticity of 20.6 (23.8) percent, while trade credit to total debt contracted by 3.8 (4.1) percentage points, a semi-elasticity of 5.6 (5.7) percent, and share issuance by 1.7 (1.2) percentage points, implying it more than halves.

Important to note is that in none of the periods “little happens” to long term debt to total debt. This finding is consistent with the similarity in the estimated coefficients on long-term leverage and on bank debt to total debt. Firms that add banks alter leverage and its maturity only after deregulation, not before, and they do so with bank and not public debt.

Finally, in a set of robustness exercises (left unreported) we run the entire Table 12 for placebo dates of 4 and 6 years, respectively, prior to deregulation. In these placebo tests there are no differences between the adders and stayers before-versus-after. We also 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). 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.

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, the 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 explanation that fits the data, we think that secular firm level increases in size, international presence, and transparency coupled with an enhanced financing need 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 banking deregulation and the intensification of competition in the banking sector that took place then.

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

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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
<i>Entire Sample</i>							
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
<i>Firms Followed from 1966 until 1986</i>							
1966	602	1.30	1	8	83.9	9.8	6.3
1968	602	1.31	1	8	82.4	11.5	6.1
1970	602	1.32	1	6	80.9	12.2	6.9
1972	602	1.37	1	8	77.4	17.6	5.0
1974	602	1.44	1	10	73.6	17.2	9.2
1976	602	1.50	1	11	70.7	17.6	11.7
1978	602	1.62	1	11	68.1	17.9	14.0
1980	602	1.63	1	7	65.3	18.4	16.3
1982	602	1.70	1	9	66.1	15.3	18.6
1984	602	1.77	1	9	63.6	16.8	19.6
1986	602	1.78	1	8	61.5	18.8	19.8

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
<i>Variables Available for Years in the Period 1896 - 1986</i>		
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
<i>Variables Available for the Period 1966 - 1986</i>		
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
Return on Equity	-	Total profits divided by total capital and reserves
Past Returns	%	The returns on the firm's stock in the previous two years
Number of Acquisitions in the Past Two Years	-	Number of corporate acquisitions undertaken by a firm in the past 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
Firm Has Headquarter in London (0/1)	0/1	=1 if the firm has its headquarter in London, =0 otherwise
Change in Concentration of Banking Market Where Firm Has Headquarter	-	First differences of the Herfindhal Index of bank concentration. The Herfindhal index is constructed using the number of branches of the banks located in the town where the firm is headquartered

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

Model	Year 1896				Year 1906				Year 1916			
	I	II	III	IV	I	II	III	IV	I	II	III	IV
ln(Capital Issued)	0.062*** [0.016]	0.061*** [0.016]	0.022 [0.021]	0.080*** [0.020]	0.061*** [0.011]	0.061*** [0.011]	0.072*** [0.014]		0.081*** [0.011]	0.081*** [0.011]	0.078*** [0.014]	
ln(1 + Age)	-0.033** [0.016]	-0.034** [0.016]	-0.064** [0.025]	-0.042** [0.021]	-0.045*** [0.014]	-0.045*** [0.014]	-0.050*** [0.019]		-0.021 [0.013]	-0.021 [0.013]	-0.009 [0.019]	
ln(1 + Board Size)	0.016 [0.046]	0.018 [0.046]	-0.029 [0.056]	0.015 [0.056]	0.120*** [0.027]	0.120*** [0.027]	0.135*** [0.036]		0.056* [0.030]	0.056* [0.030]	0.024 [0.038]	
Borrowing Limit				0.048 [0.045]								
One Share - One Vote (0/1)	-0.006 [0.027]	-0.006 [0.027]	-0.016 [0.034]	-0.002 [0.032]	0.003 [0.018]	0.003 [0.018]	0.008 [0.023]		-0.009 [0.018]	-0.009 [0.018]	-0.022 [0.021]	
Officially Listed (0/1)	0.048 [0.034]	0.050 [0.034]	0.070* [0.040]	0.033 [0.039]	0.042* [0.022]	0.042* [0.022]	0.012 [0.027]		0.014 [0.020]	0.014 [0.020]	0.015 [0.024]	
Arm's Length Debt (0/1)	-0.002 [0.027]	0.022 [0.039]	-0.016 [0.033]	-0.015 [0.033]	0.003 [0.018]	0.003 [0.019]	0.020 [0.023]		0.003 [0.018]	0.002 [0.029]	0.013 [0.022]	
Arm's Length Leverage		-0.088 [0.108]				-0.004 [0.141]				0.002 [0.071]		
Past Dividends (0/1)			0.040 [0.035]				0.024 [0.028]				-0.026 [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	
Model	Year 1920				Year 1924				Year 1934			
	I	II	III	IV	I	II	III	IV	I	II	III	IV
ln(Capital Issued)	0.055*** [0.011]	0.053*** [0.011]	0.064*** [0.014]		0.042*** [0.009]	0.042*** [0.009]	0.053*** [0.011]		0.046*** [0.008]	0.047*** [0.008]	0.078*** [0.014]	
ln(1 + Age)	-0.012 [0.012]	-0.012 [0.012]	-0.024 [0.015]		-0.002 [0.011]	-0.002 [0.011]	-0.020 [0.015]		0.000 [0.010]	0.000 [0.010]	-0.009 [0.019]	
ln(1 + Board Size)	0.095*** [0.032]	0.095*** [0.032]	0.065 [0.040]		0.088*** [0.030]	0.088*** [0.031]	0.064* [0.039]		0.049* [0.028]	0.049* [0.008]	0.024 [0.038]	
One Share - One Vote (0/1)	0.017 [0.018]	0.016 [0.018]	0.003 [0.024]		-0.026 [0.016]	-0.026 [0.016]	-0.009 [0.020]		0.003 [0.016]	0.003 [0.016]	-0.022 [0.021]	
Officially Listed (0/1)	0.011 [0.021]	0.012 [0.021]	0.008 [0.027]		0.043** [0.020]	0.044** [0.020]	0.035 [0.023]		0.050** [0.020]	0.049** [0.020]	0.015 [0.024]	
Arm's Length Debt (0/1)	-0.019 [0.018]	-0.009 [0.023]	-0.033 [0.022]		0.011 [0.017]	0.028 [0.033]	0.022 [0.021]		0.000 [0.017]	-0.011 [0.028]	0.013 [0.022]	
Arm's Length Leverage		-0.039 [0.052]				-0.051 [0.084]				0.035 [0.074]		
Past Dividends (0/1)			0.063 [0.039]				0.041** [0.021]				-0.026 [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	
Model	Year 1938				Year 1948				Year 1958			
	I	II	III	IV	I	II	III	IV	I	II	III	IV
ln(Capital Issued)	0.035*** [0.007]	0.036*** [0.007]	0.034*** [0.009]	0.041*** [0.007]	0.050*** [0.005]	0.050*** [0.005]	0.050*** [0.005]	0.050*** [0.006]	0.041*** [0.005]	0.042*** [0.005]	0.040*** [0.006]	0.041*** [0.005]
ln(1 + Age)	0.019*** [0.007]	0.019*** [0.007]	0.029** [0.011]	0.023*** [0.007]	0.014* [0.008]	0.014* [0.008]	0.014* [0.008]	0.016* [0.009]	0.020** [0.009]	0.022** [0.009]	0.026*** [0.010]	0.019** [0.009]
ln(1 + Board Size)	0.091*** [0.024]	0.091*** [0.024]	0.109*** [0.029]	0.095*** [0.025]	0.072*** [0.021]	0.072*** [0.021]	0.072*** [0.021]	0.075*** [0.022]	0.020 [0.019]	0.018 [0.019]	0.022 [0.020]	0.019 [0.019]
Borrowing Limit				-0.007 [0.025]				-0.024 [0.023]				0.027 [0.038]
One Share - One Vote (0/1)	0.006 [0.012]	0.006 [0.012]	0.008 [0.017]	0.008 [0.012]	0.012 [0.012]	0.012 [0.012]	0.012 [0.012]	0.015 [0.013]	0.016 [0.012]	0.017 [0.012]	0.009 [0.012]	0.015 [0.012]
Officially Listed (0/1)	0.029* [0.017]	0.029* [0.017]	0.020 [0.020]						-0.002 [0.014]	-0.005 [0.014]	0.003 [0.014]	0.000 [0.014]
Arm's Length Debt (0/1)	0.033** [0.017]	0.003 [0.033]	0.024 [0.020]	0.031* [0.017]	0.044** [0.019]	0.045 [0.042]	0.044** [0.019]	0.040** [0.020]	0.030** [0.013]	0.021 [0.013]	0.027** [0.013]	0.031** [0.013]
Arm's Length Leverage		0.08 [0.081]				-0.001 [0.091]				0.068* [0.035]		
Past Dividends (0/1)			0.004 [0.018]								0.023 [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)	14,593	0.521	1	0.5
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
Number of Acquisitions in the Past Two Years	5,180	0.112	0	0.765
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	IX
ln(Book Value of Assets)		0.149*** (0.021)	0.128*** (0.022)	0.108*** (0.023)	0.101*** (0.024)	0.097* (0.052)	0.123*** (0.045)	0.065* (0.038)	0.086 (0.053)	0.099*** (0.027)
ln(1 + Age at Start)		-0.012 (0.098)	-0.003 (0.100)	-0.009 (0.098)	0.007 (0.097)	-0.042 (0.170)	0.058 (0.151)	0.080 (0.137)	0.048 (0.169)	0.049 (0.105)
British (0/1)		-0.457*** (0.138)	-0.510*** (0.140)	-0.435*** (0.138)	-0.522*** (0.139)	-0.354 (0.409)	-0.134 (0.404)	-0.398 (0.383)	-0.061 (0.469)	-0.421*** (0.162)
ln(1 + Board Size)		0.069 (0.115)	0.057 (0.115)	0.029 (0.115)	0.040 (0.115)	-0.232 (0.222)	-0.219 (0.219)	-0.126 (0.188)	-0.358 (0.230)	0.069 (0.128)
One Share - One Vote (0/1)		0.139* (0.083)			0.151* (0.083)	0.268* (0.139)	0.171 (0.133)	0.078 (0.128)	0.232* (0.142)	0.131 (0.092)
Officially Listed (0/1)			0.492*** (0.154)		0.448*** (0.154)	0.847* (0.457)	0.912** (0.425)	-0.189 (0.300)	0.699 (0.463)	0.557*** (0.186)
Arm's Length Debt (0/1)				0.523*** (0.098)	0.508*** (0.098)	0.574*** (0.182)	0.657*** (0.171)	0.324** (0.146)	0.616*** (0.189)	0.467*** (0.108)
Leverage		0.817*** (0.204)	0.797*** (0.205)	0.549*** (0.209)	0.536** (0.208)	0.835** (0.371)	0.659* (0.338)	0.214 (0.299)	0.694* (0.371)	0.698*** (0.221)
Subsidiary (0/1)		-0.422*** (0.139)	-0.406*** (0.137)	-0.414*** (0.136)	-0.354** (0.138)	-0.838 (0.610)	-0.682* (0.402)	-0.171 (0.223)	-0.743 (0.605)	-0.469*** (0.159)
Tangibility		-0.060 (0.219)	-0.031 (0.221)	-0.209 (0.222)	-0.161 (0.222)	-0.528 (0.503)	-0.655 (0.417)	-0.297 (0.347)	-0.965** (0.464)	-0.005 (0.243)
Return on Equity							0.222 (0.372)			
Past Returns								3.594* (1.942)		
Number of Acquisitions in the Past Two Years									0.603*** (0.198)	
Relationship Bank is National Westminster in 1974 or 1976 (0/1)										0.363* (0.193)
Relationship Bank Liquidity Ratio										1.199** (0.509)
Relationship Bank Capital Ratio										0.042 (0.477)
Industry Dummies		No	No	No	No	Yes	No	No	No	No
Number of Observations		14,634	14,634	14,630	14,630	5,242	6,063	4,673	5,132	11,528

	Model	X	XI	XII	XIII	XIV	XV	XVI	XVII
	Sample	UK	UK	UK	UK	Outside London	Outside London	Outside London	Outside London
In(Book Value of Assets)		0.093*** (0.030)	0.092*** (0.030)	0.093*** (0.030)	0.093*** (0.030)	0.152*** (0.042)	0.151*** (0.042)	0.152*** (0.042)	0.152*** (0.042)
In (1 + Age at Start)		0.028 (0.119)	0.030 (0.119)	0.028 (0.119)	0.029 (0.119)	0.091 (0.161)	0.092 (0.160)	0.090 (0.161)	0.092 (0.161)
Firm Has Headquarter in London (0/1)		0.001 (0.107)	-0.005 (0.107)	0.001 (0.107)	-0.000 (0.107)				
In(1 + Board Size)		-0.175 (0.148)	-0.179 (0.147)	-0.175 (0.148)	-0.175 (0.148)	-0.073 (0.191)	-0.078 (0.190)	-0.072 (0.191)	-0.073 (0.191)
One Share - One Vote (0/1)		0.084 (0.103)	0.092 (0.102)	0.083 (0.103)	0.083 (0.103)	-0.068 (0.125)	-0.058 (0.124)	-0.069 (0.126)	-0.069 (0.126)
Officially Listed (0/1)		0.783*** (0.254)	0.779*** (0.255)	0.801*** (0.255)	0.784*** (0.254)	1.043*** (0.327)	1.041*** (0.329)	1.095*** (0.330)	1.047*** (0.329)
Arm's Length Debt (0/1)		0.396*** (0.120)	0.401*** (0.120)	0.396*** (0.120)	0.395*** (0.120)	0.331** (0.149)	0.338** (0.150)	0.330** (0.149)	0.328** (0.149)
Leverage		0.393 (0.243)	0.403* (0.243)	0.394 (0.243)	0.393 (0.243)	0.687** (0.312)	0.693** (0.311)	0.687** (0.312)	0.686** (0.312)
Subsidiary (0/1)		-0.623*** (0.185)	-0.623*** (0.185)	-0.622*** (0.185)	-0.623*** (0.185)	-0.555** (0.245)	-0.555** (0.245)	-0.554** (0.245)	-0.555** (0.245)
Tangibility		-0.153 (0.274)	-0.143 (0.274)	-0.153 (0.274)	-0.153 (0.274)	0.072 (0.362)	0.081 (0.362)	0.072 (0.362)	0.070 (0.362)
<i>Change in Concentration of Banking Market Where Firm Has Headquarter</i>		-1.065* (0.654)	-0.470 (0.908)	0.276 (1.227)	-1.415 (1.251)	-1.080* (0.632)	-0.643 (0.801)	1.555 (1.362)	-1.620 (1.356)
<i>Change in Concentration * One Share - One Vote (0/1)</i>			-3.382** (1.644)				-3.301* (1.832)		
<i>Change in Concentration * Officially Listed (0/1)</i>				-1.468 (1.412)				-2.791* (1.509)	
<i>Change in Concentration * Arm's Length Debt (0/1)</i>					0.440 (1.471)				0.659 (1.547)
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	%
<i>Clearing Bank</i>	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
<i>Other British Bank</i>	489	2.4	222	12.8
<i>Foreign Bank</i>	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	1966 - 1976 (N=9,028)			1955 - 1986 (N=32,400)		
		Mean	Median	St.Dev.	Mean	Median	St.Dev.
Leverage	Total debt divided by total book value of assets	0.393	0.395	0.184	0.335	0.318	0.187
Long Term Leverage	Bank and long term debt over assets	0.202	0.185	0.172	0.157	0.117	0.162
Bank Debt to Total Debt	Bank overdrafts and loans divided by total debt	0.203	0.179	0.186	0.172	0.106	0.196
Long Term Debt to Total Debt	Long term liabilities divide by total debt	0.121	0.020	0.169	0.107	0.000	0.179
Trade Credit to Total Debt	Trade and other credit divided by total debt	0.676	0.657	0.232	0.721	0.730	0.246
Share Issuance	Net issue of ordinary and preferred shares divided by the book value of assets at the beginning of the year	0.013	0	0.102	0.015	0	0.132
Return on Equity	Total profits divided by total capital and reserves	0.255	0.233	1.478	0.212	0.209	0.849

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

Matching Variables	Pre-Matching				Post-Matching			
	Firms That Did Not Add Banks	I Add Banks	III Difference in Means	IV T-statistic	Firms That Did Not Add Banks	II Add Banks	III Difference in Means	IV T-statistic
In(Book Value of Assets)	8.401 (1.283)	9.111 (1.249)	0.710	7.299***	9.018 (1.174)	9.184 (1.255)	0.166	1.193
In (1 + Age)	2.881 (0.833)	2.709 (0.892)	-0.172	-2.648***	2.834 (0.744)	2.688 (0.898)	-0.146	-1.553
British (0/1)	0.967 (0.178)	0.982 (0.134)	0.015	0.98	0.980 (0.139)	0.980 (0.139)	0.000	0
One Share - One Vote (0/1)	0.410 (0.492)	0.398 (0.491)	-0.012	-0.358	0.366 (0.483)	0.386 (0.488)	0.020	0.353
Officially Listed (0/1)	0.874 (0.332)	0.952 (0.215)	0.078	3.313***	0.974 (0.160)	0.954 (0.210)	-0.020	-0.92
Arm's Length Debt (0/1)	0.473 (0.499)	0.747 (0.436)	0.274	7.077***	0.739 (0.441)	0.752 (0.433)	0.013	0.262
Subsidiary (0/1)	0.0469 (0.211)	0.0120 (0.109)	-0.035	-2.82***	0.00654 (0.0808)	0.0131 (0.114)	0.007	0.579
Leverage growth	0.0104 (0.0288)	0.0176 (0.0326)	0.007	2.903***	0.0168 (0.0223)	0.0186 (0.0319)	0.002	0.584
Bank Debt Growth	0.0150 (0.0611)	0.0203 (0.0294)	0.005	1.048	0.0181 (0.0288)	0.0215 (0.0281)	0.003	1.043
Long Term Debt Growth	0.00891 (0.0307)	0.0196 (0.0406)	0.011	4.337***	0.00886 (0.0193)	0.0204 (0.0415)	0.012	3.108***
Trade Credit Growth	0.0295 (0.0479)	0.0427 (0.0478)	0.013	3.46***	0.0390 (0.0321)	0.0451 (0.0486)	0.006	1.296
Share Issuance Growth	0.00608 (0.0965)	0.00588 (0.0307)	0.000	-0.033	0.00484 (0.0382)	0.00638 (0.0319)	0.002	0.383
Return on Equity Growth	0.0626 (0.123)	0.0758 (0.114)	0.013	0.918	0.0551 (0.0955)	0.0770 (0.117)	0.022	1.801*
Number of Observations	7,657	166			153	153		

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, and in Column IV the t-statistic for a test of the equality of the means assuming equal variances.

TABLE 12
DIFFERENCE IN FIRM FINANCING AND PERFORMANCE BETWEEN FIRMS THAT ADDED A BANK AND MATCHED FIRMS THAT DID NOT BEFORE
AND AFTER 1970

Panel A: 1966 - 1976	I	II	III	IV	V	VI	VII
Dependent Variable:	Leverage	Long Term Leverage	Bank Debt to Total Debt	Long Term Debt to Total Debt	Trade Credit to Total Debt	Share Issuance	Return on Equity
1966 - 1976	0.034** (0.016)	0.012 (0.011)	0.020 (0.013)	-0.011 (0.014)	-0.023 (0.017)	-0.023*** (0.008)	-0.018 (0.012)
1956 - 1970	0.028 (0.028)	-0.016 (0.021)	-0.026 (0.021)	-0.022 (0.028)	-0.006 (0.030)	-0.039*** (0.013)	-0.009 (0.023)
1971- 1976	0.042** (0.021)	0.025* (0.014)	0.042** (0.019)	-0.004 (0.015)	-0.038* (0.021)	-0.017* (0.010)	-0.051** (0.021)
Panel B: 1956 - 1986	I'	II'	III'	IV'	V'	VI'	VII'
Dependent Variable:	Leverage	Long Term Leverage	Bank Debt to Total Debt	Long Term Debt to Total Debt	Trade Credit to Total Debt	Share Issuance	Return on Equity
1956 - 1986	0.020** (0.008)	0.030*** (0.010)	0.026** (0.012)	-0.001 (0.010)	-0.025* (0.013)	-0.012 (0.008)	-0.005 (0.012)
1956 - 1970	0.004 (0.012)	0.003 (0.012)	0.003 (0.019)	0.000 (0.017)	-0.004 (0.021)	-0.027** (0.013)	0.024** (0.012)
1971- 1986	0.025** (0.012)	0.044*** (0.016)	0.041** (0.018)	0.000 (0.012)	-0.041** (0.018)	-0.012* (0.007)	-0.036 (0.022)

NOTE. -- The dependent variables are defined in Table 10. The difference-in-difference 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 each period: 1966 - 1976: 153; 1966 - 1970: 66; 1971-1976: 87; 1956 - 1986: 251; 1956 - 1970: 127; and 1971-1986: 124. *** Significant at 1%, ** significant at 5%, * significant at 10%.