

DEPARTMENT OF ACCOUNTING AND FINANCE

**The value of bank relationships: Evidence from
Belgium at the start of the Great Depression**

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RESEARCH PAPER 2011-021
DECEMBER 2011

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D/2011/1169/021

**The value of bank relationships: Evidence from Belgium at the start of the
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This version: September 6, 2010

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We are grateful to Jan Annaert, Stefano Battilossi, Frans Buelens, Erik Buyst, Annelies Renders and Wouter Van Overfelt for helpful comments and suggestions. The paper has also benefited from presentations at the EuroHISTOCKII conference in Cambridge, the KUL/UCL Finance Research workshop in Brussels, the workshop on 'Intermediaries and intermediation in capital markets: a global historical approach' in Utrecht and the Norges Bank Summer School on 'Finance, Institutions and History' in Venice.

The value of bank relationships: Evidence from Belgium at the start of the Great Depression

Abstract

We analyze the impact of bank relationships on the performance of Belgian firms listed on the Brussels stock exchange at the start of the Great Depression, in 1929–1931. Most of these firms were affiliated with one or more banks via interlocking directorships. Taking into account the number of affiliated banks and their size, the proportion of bank directors on the board, and the number of board seats held by bank directors, we find that bank affiliations did not affect stock returns in 1929. On the other hand, firm value was positively related to the number of board seats held by the firm directors before 1929, but not after 1929. This result holds for both bank directors and other directors. Combined, our results suggest that firms did not derive any benefits from bank affiliations at the start of the Great Depression.

JEL classification: G21; G30; G24

Keywords: Bank relationships; Interlocking directorships; Busy directors; Firm value; Great Depression; Belgium

1. Introduction

Research on bank–firm relationships has generated an extensive empirical and theoretical literature that considers two opposing viewpoints (e.g., Boot, 2000; Fohlin, 1999). On the one hand, it is argued that relationship banking is beneficial to firms. It reduces agency problems and information asymmetries and it yields economies of scale and scope, whereby access to capital is facilitated. On the other hand, banks can abuse the information advantage they obtain via relationship banking to extract rents from their client firms.

The impact of relationship banking during times of normal economic activity, has been repeatedly examined, with mixed results (e.g., Elsas and Krahen, 1998, for Germany; Fohlin, 1997, for pre-World War I, hereafter WWI, Germany; Hoshi et al., 1990, for Japan; Kroszner and Strahan, 2001, and Petersen and Rajan, 1994, for the United States; and Weinstein and Yafeh, 1998, for Japan). Other studies focus on the value of bank–firm relationships during a banking crisis (e.g., Bae et al., 2002, for the 1997 East Asian crisis; Ferri et al., 2001, for the 1997 Korean crisis; Gokcen, 2009, on the 2008 financial crisis; and Ongena et al., 2003, for the 1988 Norwegian crisis). This paper analyzes the impact of relationship banking on firm performance during a negative systemic economic shock: the start of the Great Depression, in 1929–1931. Our analysis is based on a hand-collected data set for the 220 largest Belgian firms that were listed on the Brussels Stock Exchange in the period 1927–1931.

Belgium during this period provides a very interesting environment in which to investigate the value of bank relationships for several reasons. By the late 1920s, Belgium had a strongly developed banking sector (e.g., Chlepner, 1943; Durviaux, 1947; van der Valk, 1932; Vanthemsche, 1991). Rajan and Zingales (2003) find that the ratio of commercial and savings deposits to the gross domestic product (GDP) in 1929 was higher in Belgium (0.48) than in the

United States (0.33), Germany (0.27), or Japan (0.22). The Belgian banking sector was dominated by a limited number of banks with close ties to the Belgian industry via director interlocks and equity stakes (e.g., Chlepner, 1943). Belgium also combined a powerful banking sector with an active stock market. In 1929, the ratio of stock market capitalization to the GDP in Belgium (1.31) was similar to that in the United Kingdom (1.38) and Japan (1.20), and much higher than in Germany (0.35) or the United States (0.75). Belgium also had a much higher fraction of gross fixed capital formation raised via equity (0.85) than the United Kingdom (0.35), the United States (0.38), or Japan (0.13) (Rajan and Zingales, 2003).

The period 1929–1931 is interesting because the economic downturn in 1929 marked the start of the Great Depression. The impact of bank relationships on firm performance should be especially pronounced during a negative shock if firms rely on affiliated banks for financial support. Since most Belgian banks were able to bear the strain of the depression from 1929 to 1931 (Chlepner, 1943; Durviaux, 1947; van Meerten, 1992), they might have been able to support affiliated firms during this period. On the other hand, affiliated banks might have used their privileged position in the firm to insulate themselves from trouble and shift the burden to other creditors (e.g., Kroszner and Strahan, 2001). An additional advantage of focusing on an unexpected economic shock is that it allows us to avoid potential causality problems in the relationship between bank affiliations and firm performance.

We find that at the start of the Great Depression bank affiliations were widespread in Belgium. A total of 87% of the firms in our sample had at least one interlocking directorship with a bank, while 58% of the firms had at least one director of the two dominant Belgian banks (Société Générale de Belgique and Banque de Bruxelles) on their board. Firms were often affiliated with more than one bank and had several bank directors on their board. Taking into account the number of affiliated banks and their size, the proportion of bank directors on the

board, and the number of directorships held by bank directors, we find that these bank affiliations did not affect stock returns in 1929. These results are largely confirmed when we consider the impact of bank affiliations on firm value in the period 1928–1931. However, firm value is positively related to the number of directorships held by the firm’s directors before 1929, but not after 1929. This result holds for both bank directors and other directors. Combined, our results suggest that firms did not derive any benefits from bank affiliations at the start of the Great Depression.

The remainder of the study is organized as follows. Section 2 discusses the benefits and costs of bank–firm relationships. Section 3 provides a brief overview of the economy and the banking sector in interwar Belgium. The construction of the sample and the measurement of bank affiliations are discussed in Sections 4 and 5, respectively. Section 6 reports empirical findings on bank affiliations and stock returns in 1929, while Section 7 reports results on bank affiliations and firm value in 1928–1931. Section 8 presents our conclusions.

2. The value of bank relationships

Boot (2000) defines relationship banking as the provision of financial services by a financial intermediary that (i) invests in obtaining customer-specific information, often proprietary in nature; and (ii) evaluates the profitability of these investments through multiple interactions with the same customer over time and/or across products. Customer-specific information is obtained by screening and monitoring the customer. Furthermore, this information can be reused for other products for the same customer, such that banks can benefit from intertemporal information reusability (Greenbaum and Thakor, 1995).

Research on the impact of relationship banking has generated an extensive but often contradictory literature. On the one hand, relationship banking can have a positive impact on

credit availability and firm value. Relationship banking can mitigate *information asymmetries* between a lender and a client firm by the close and successive monitoring of the client firm so that the availability of credit is increased and its cost reduced (e.g., Hoshi et al., 1990; Petersen and Rajan, 1994; Weinstein and Yafeh, 1998). Relationship banking can also mitigate *conflicts of interest* between shareholders and debt holders, which arise because shareholders can prefer riskier projects than lenders (e.g., Diamond, 1984). Furthermore, banks may have an incentive to monitor firms because of their role as certifiers of the quality of shares they sell to investors. Relationship banking can *signal* quality to outside investors, which makes it easier and thus cheaper for firms to attract additional capital (e.g., Fohlin, 1999; Gande et al., 1997; Konishi, 2002; Kroszner and Strahan, 2001). Offering various financial services can also generate *economies of scale* and *scope*. Information that is gathered for one service can be reused for other services with the same customer and can thus yield cost advantages over specialized systems (e.g., Greenbaum and Thakor, 1995; Petersen and Rajan, 1994).

On the other hand, relationship banking can have a negative effect on firm value. Relationship banking allows the bank to create an information monopoly so that banks can *extract rents* from the borrowing firm in the course of the relationship (Agarwal and Elston, 2001; Rajan, 1992; Weinstein and Yafeh, 1998). Switching banks can become too costly, such that banks *hold up* related firms. The extraction of rents by the related bank can also make a firm reluctant to borrow from it, so that the firm could lose valuable investment opportunities (Rajan, 1992).

The value of relationship banking should be especially pronounced during an economic downturn. In the absence of a close bank–firm relationship, the free rider problem can reduce the incentive of creditors to grant financial relief or extend credit to financially distressed firms. Hoshi et al. (1990) find that during the 1980s in Japan, financially distressed firms affiliated with

keiretsu—groups of firms centered around financial institutions—were able to invest more. The costs borne by firms to overcome episodes of financial distress are significantly lower for firms with long-standing relationships with a main bank. Elsas and Krahen (1998) find that relationship banking provides liquidity insurance in situations where borrower ratings unexpectedly deteriorated in Germany. Ferri et al. (2001) provide evidence that relationship banking increased credit availability for financially distressed small and medium enterprises in Korea during the financial crisis of 1997–1998.

Bank affiliations can also negatively affect stock returns during an economic downturn. A close relationship with a firm provides a bank with an unfair information advantage compared to the other creditors, such that in times of financial distress the bank can extract rents, take actions to insulate itself from trouble, and shift the burden to other creditors (e.g., Kroszner and Strahan, 2001). Banks can, for example, issue the equity of financially distressed firms to recoup frozen loans, or they can exploit the information advantage they have vis-à-vis other providers of capital by trading in the stock market. In sum, the impact of a strong bank relationship on firm performance during a systemic economic downturn is a priori unclear.

3. Interwar Belgium

3.1. The economy of interwar Belgium

In Belgium, as in other European countries, the imperatives of war finance during WWI created unbalanced budgets and rocketing inflation rates (Chlepner, 1943). At the outbreak of the war the gold standard was abandoned. Belgium joined the gold exchange standard in October 1926 and devalued the Belgian franc to one-seventh its prewar value. After this devaluation, the Belgian franc was estimated to be considerably undervalued compared to the British pound and American dollar (Aldcroft, 1997; Chlepner, 1943). This undervaluation stimulated Belgian

exports and strongly boosted the Belgian economy. However, the Belgian industry's rigidity and low productivity levels led to an economic downturn by the beginning of 1929.

By 1929, the international financial and economic situation was also deteriorating, mainly due to the rigid international monetary system, with unrealistic parities, budget deficits, and excess capacity in heavy industry and agriculture (e.g., Bernanke and James, 1990). The market crash in the United States in October 1929 seriously aggravated the emerging international crisis. The British abandonment of the gold exchange standard in September 1931 was especially harmful for Belgium, since Great Britain was one of the main customers and principal competitor of Belgian industries in foreign markets (Chlepner, 1943). After the British abandonment, the Belgian government introduced a deflationary policy to counterbalance the cheap British pound, but this policy failed because fiscal revenues were disappointing, and government expenditures rose as unemployment compensations increased (Buyst, 2005, Chlepner, 1943). In March 1935 the government devalued the Belgian franc by 28% (Baudhuin, 1944; Chlepner, 1943), after which the Belgian economy started to recover.

3.2. The banking sector in interwar Belgium

After WWI, the Belgian industry was in great need of capital to rebuild infrastructure and resume activities (e.g., Durviaux, 1947). Belgian banks were able to match the enormous demand for capital with an increasing supply, since more people could save and savings were increasingly invested in stocks (e.g., Chlepner, 1943). Banks were also able to enlarge their clientele thanks to the development of an extensive network of branches all over the country (Chlepner, 1943; Durviaux, 1947). During the 1920s, the Société Générale reinforced its prewar supremacy, while the Banque de Bruxelles, although remaining significantly smaller, emerged as its main competitor. After 1927 the number of merged or liquidated banks began to exceed the number of

newly created banks, manifesting a strong trend toward concentration (Chlepner, 1943; Durviaux, 1947; van der Valk, 1932).

By the end of the 1920s, most Belgian banks had a significant industrial portfolio, which allowed them to control selected industries (e.g., van der Valk, 1932). Furthermore, their controlling power was reinforced by the use of holding companies and the issuance of multiple voting shares. Lamal (1930) calculated that 47% of the votes of limited liability companies were controlled by groups/individuals owning merely 3.5% of the quoted equity value. A large number of these shares were held by the large banks.

Contrary to, for example, the Italian banking sector (Battilossi, 2009), up until 1932 the Belgian banking sector did not experience severe adverse shocks, and it could endure the strain of the first phase of depression without major problems for several reasons.¹ During the period of high inflation preceding the stabilization of the Belgian franc in 1926, banks were forced to increase their own equity, while many of their assets, mainly equity stakes, did not lose value. This created hidden reserves (Chlepner, 1930; Durviaux, 1947). Between 1927 and 1929 banks also used favorable capital market conditions to issue new equity (Chlepner, 1943). After 1929, when many firms became unable to repay their bank debts because of the deflationary policy that lowered the value of their assets relative to nominal bank debts, Belgian banks could convert this bad debt into equity stakes rather than write off loans (Durviaux, 1947). Only from 1932 onward did some Belgian banks become financially distressed. In 1934 two mid-sized Flemish banks, the

¹ The Banque Chaudoir, a mid-sized bank that went bankrupt in the beginning of 1930, was an exception. This bank was created in 1921 and engaged in speculative activities in a major British industrial group that went bankrupt near the end of 1929 due to fraudulent operations (van Meerten, 1992).

Bank van den Arbeid and the Algemeene Bankvereniging, had to close down, and in 1935 the Belgian government created a public institution to rescue the banking sector.

The introduction of a system of legal regulation and official control in 1935 radically changed the organization and workings of the Belgian banking sector. Before 1935 Belgian banks had enjoyed almost complete freedom. There was no special legislation for any kind of banking, except for the issuance of bank notes, and banks were subjected to the provisions of general, lenient corporate law (e.g., Chlepner, 1943).

4. Sample

Our study is based on a sample of non-financial Belgian firms listed on the Brussels stock exchange during the period 1929–1931. The data were collected from the *Recueil Financier*, a financial annual containing firm-specific information, including members of boards of directors, and from a database constructed at the University of Antwerp by the StudieCentrum voor Onderneming en Beurs (SCOB), which contains data on all stocks listed on the Brussels Stock Exchange. These stock data were hand-collected by the SCOB and double-checked from various sources, including the official quotation list and firm correspondence with the exchange. Since most of the information needed for this study had to be hand-collected, we restricted our sample to the 220 largest firms based on market capitalization. For 185 firms we were able to find all the necessary information on the board of directors and financial statements in the *Recueil Financier*. To be included in the sample, a firm also had to be listed on the Brussels Stock Exchange in 1927 and 1928, to allow us to calculate beta coefficients (discussed further below). After excluding 20 financial firms, 11 firms with missing accounting data, one firm with insufficient stock return data, and three firms that had listed bonds but no listed stocks, our final sample consisted of 150 firms.

5. Measuring bank affiliations

We use interlocking directorships between firms and banks as a measure of bank affiliation. A relationship at the board level represents continuous interaction and information exchange between the firm and the bank. Bank directors on the board of a firm are commonly perceived as evidence of a close bank–firm relationship and are often used in the literature to define a strong bank relationship (e.g., Becht and Ramírez, 2003; Fohlin, 1997; Van Overfelt et al., 2009). A firm is assumed to be bank affiliated if it has an interlocking directorship with a bank. We identify interlocking directorships by the names of the directors. If a director held directorships with more than one bank, we attribute the largest of these banks (in terms of its industrial portfolio) to this director. We consider the directors of 41 banks based on a list of banks drawn up by Durviaux (1947) for 1930. At the time, the two most important banks in Belgium were the Société Générale de Belgique and the Banque de Bruxelles. Furthermore, we consider four other banks separately because of their importance to industry (they each had an industrial portfolio of more than 200 million Belgian francs): the Mutuelle Solvay, the Banque Belge pour l’Etranger, the Algemeene Bankvereniging, and the Crédit Anversois.

**** Table 1 about here ****

*** Table 2 about here ***

Table 1 reports the number of firms’ bank affiliations in our sample in 1928. Belgian bank directors were omnipresent on the board of non-financial firms. In our sample, 87% of the firms had at least one bank director. This is remarkable, since Van Overfelt et al. (2009) found that in 1905 only 36% of Belgian listed firms in capital-intensive industries had a bank director on their board. Table 2 reports the number of bank-affiliated firms by industry. The industry classification is taken from the SCOB, but we double-checked the industries with a description of the firm’s

activities in the *Recueil Financier*. Belgian firms with mainly colonial or foreign activities are considered separately. All bank affiliations in this table are *primary* bank affiliations: We consider firms to be affiliated with the Banque de Bruxelles only if they are not affiliated with the Société Générale. Similarly, we consider firms to be affiliated with “other major banks” if the firms are primarily affiliated with one of the four other large banks, and affiliated with “other banks” if primarily affiliated with one of the remaining banks from Durviaux’s list. The remainder of this study focuses on primary bank affiliations.

*** Figure 1 about here ***

6. Bank affiliations and cumulative stock returns in 1929

6.1. Empirical model

First, we focus on the impact of bank affiliation on stock returns in the “economic shock” year 1929, when the economy gradually slid into depression. Figure 1 shows the cumulative stock returns of banks (panel A) and firms listed on the Brussels Stock Exchange (panel B) in the period 1927–1931. Indices are Laspeyres market cap weighted return indices calculated by linking monthly returns through a chain index. The weight of each firm’s return is given by its relative market capitalization. The vertical line on the charts depicts January 1929, the month in which the Brussels Stock Exchange peaked. In panel A of Figure 1, the cumulative returns of the Société Générale, the Banque de Bruxelles, and other banks are presented separately. The cumulative return of the Société Générale increases considerably from January 1927 to January 1929 (+485%) and then falls back strongly. However, the overall increase from January 1927 to December 1931 is still +75%. The stock returns of smaller banks remain much more stable, varying only between -20% and +30%. The stock return of the Banque de Bruxelles follows the general stock market trend and falls overall by 38% over the five-year period. Panel B of Figure 1

shows only a minor difference between the stock performance of firms affiliated with the dominant banks at the time (Société Générale de Belgique and Banque de Bruxelles) and other firms.

To investigate the effect of relationship banking on a firm's cumulative stock return during the period considered, in line with previous studies (e.g., Barton and Waymire, 2004; Lemmon and Lins, 2003; Mitton, 2002), we estimate the following ordinary least squares (OLS) model:

$$\text{Cumulative Return}_i = a_1 \times \text{Affiliation}_i + a_2 \times \text{Beta}_i + a_3 \times \text{Size}_i + a_4 \times \text{Age}_i + a_5 \times \text{Debt ratio}_i + b \times \text{Industry effects}$$

For all firms except one, pre-crisis betas are calculated based on 60 monthly pre-crisis observations in 1924–1928, with a minimum of 24 observations. As additional potential determinants of stock returns during the crisis year, we consider firm size, leverage, firm age, and industry affiliations. Firm size is measured by the natural logarithm of total assets at the beginning of the fiscal year. As a measure of leverage, we use the book value of total debt divided by the book value of total assets measured at the beginning of the fiscal year. Age is measured by the difference between 1929 and the year the firm was first listed.² Furthermore, we include eight industry dummies as well as a dummy for firms with their main activities abroad and a dummy for firms with mainly colonial activities.

*** Table 3 about here ***

² If a firm had different kinds of stock outstanding with a different period of listing, we use the age of the oldest stock.

Panel A of Table 3, which reports descriptive statistics, confirms that firms, on average, performed poorly during the crisis, with mean (median) cumulative returns of -24% (-23%) in 1929. Panel B of Table 3, which distinguishes between all bank-affiliated firms, firms affiliated with the Société Générale, and non-affiliated firms, shows that affiliated firms were significantly larger than non-affiliated firms. However, there is no statistically significant difference in cumulative returns between affiliated and non-affiliated firms. Panel B of Table 3 also provides information on the number of affiliated banks, the proportion of bank directors on the boards of affiliated firms, as well as the number of board seats held by bank directors and other directors. “Directorships per bank director” is the total number of directorships of the bank directors of a firm (including directorships on the board of banks) divided by the number of bank directors of that firm. “Directorships per non-bank director” is the total number of directorships of the non-bank directors of a firm divided by the total number of non-bank directors of that firm.

Affiliated firms were, on average, interlocked with 2.58 banks, while the median firm was affiliated with two banks, confirming that firms generally had a relationship with more than one bank. One out of four directors on the board of a typical affiliated firm also held a directorship at a bank. Table 3 also shows that bank directors on the boards of affiliated firms held on average 5.87 directorships, whereas non-bank directors held only 2.40 directorships. However, a t-test suggests that non-bank directors on the boards of affiliated firms still held, on average, significantly more board seats than the directors of non-affiliated firms (1.66 directorships).

*** Table 4 about here ***

6.2. Results

Table 4 reports regression results. The dependent variable is the cumulative stock return in 1929. In regression (1) of Table 4, affiliation is measured by a simple dummy, *bank affiliated*,

that equals one if the firm has a bank director on its board, and zero otherwise. Having a bank director on the board does not seem to have affected cumulative returns in 1929: The coefficient of the dummy *bank affiliated* is insignificant. As for the other variables, the coefficient of *beta* is significantly negative at the 1% level, which is in line with what can be expected during a systemic economic downturn (e.g., Baek et al., 2004; Lemmon and Lins, 2003). In regression (2) of Table 4, we differentiate between affiliations with the Société Générale, the Banque de Bruxelles, the four other important banks, and the remaining banks. Again, we find no effect whatsoever of bank affiliation on cumulative returns.

One reason why we find no significant effect of bank affiliation may be that the simple affiliation measures do not take into account that the firms in our sample were often affiliated with more than one bank. Multiple bank affiliations reduce the incentive of individual banks to monitor a firm: While the costs are borne by just one bank, the benefits are enjoyed by the other banks as well (e.g., Foglia et al., 1998). In regression (3) of Table 4, we therefore include the number of affiliated banks, as well as a quadratic variable to capture any nonlinear relationships. However, the results suggest that the number of affiliated banks did not affect the cumulative return in 1929. In regression (4) of Table 4 we include the proportion of bank directors on the board. Firms with more bank directors on their board may be more important to the bank(s) and therefore receive more support. Again, the coefficient is insignificant.

The bank directors in our sample tend to hold board seats in several firms (see Table 3). Several studies have examined the effect of “busy” directors on firm performance, but the results are ambiguous (e.g., Ferris et al., 2003; Fich and Shivdasani, 2006; Loderer and Peyer, 2002; Richardson, 1987). On the one hand, directors with multiple board seats can become overcommitted, rendering them unable to provide good managerial monitoring. As a result, this can lead to lower firm value (e.g., Fich and Shivdasani, 2006; Shivdasani and Yermack, 1999).

On the other hand, holding multiple seats can enhance a director's experience and can facilitate information flows between the firms of which he or she is a director. Furthermore, the recruitment of prominent and well-placed outsiders to the board can allow a firm to accumulate relevant business and political information and enhance its standing (e.g., Haunschild and Beckman, 1998; Jiraporn et al., 2009; Loderer and Peyer, 2002). To capture any busy director effect on performance, we include the number of directorships per bank director in regression (5) of Table 4. In regression (6) of Table 4, we add the number of directorships per non-bank director. However, neither factor affected stock returns in 1929.

6.3. Robustness checks

We perform a battery of robustness checks (results available from the authors upon request). First, we take into account *indirect* affiliations with the Société Générale or the Banque de Bruxelles by considering director interlocks with the holding companies controlled by these banks. This does not change the number of bank affiliated firms in our sample. Second, 35 of the 150 firms in our sample have different classes of stock outstanding. For the regressions reported in Table 4, cumulative returns are weighted average returns based on the market capitalization of the different classes of stock of each firm. We re-estimate all regressions with cumulative returns for common stocks only, but again the bank affiliation measure is not statistically significant.³ Third, since our sample includes both listed banks and privately held banks, we check for a performance difference between firms affiliated with listed banks (121 firms) and firms affiliated with privately held banks (nine firms), but we find none. Fourth, in the period considered in this study, the boards of Belgian firms had a dual structure, consisting of an executive board

³ We recalculate betas based on a market index with listed common stocks only (provided by the SCOB).

(*administrateurs*) and a supervisory board (“*commissaires*”).⁴ Since both the executive and supervisory board members of banks held multiple directorships in non-financial firms, we do not distinguish between the two boards. Following Van Overfelt et al. (2009), we define a firm as bank affiliated if an *executive* board member of the bank is on the *executive* board of that firm, but again the bank affiliation coefficient is not statistically significant. Fifth, we not only take into account banks from Durviaux’s list, but also check the *Recueil Financier* for affiliations with any other bank or financial institution. This raises the number of affiliated firms in our sample by 11. However, this again does not alter our results. Sixth, as a proxy for stock liquidity, we include the percentage of months in which there was trading on the last day of the month (information available in the SCOB database), but again this does not change our results. Seventh, since stock illiquidity can cause beta estimates to be biased downward, we calculate an aggregated beta based on a regression of the monthly firm return against three lagged monthly returns, the matching monthly return, and one leading monthly return (Dimson, 1979), but we find no difference in means (based on a two-tailed t-test) between this beta and the standard beta. Eighth, we assign a -100% return to stocks that delisted in 1930 and 1931 to correct for a potential *delisting bias*. Again, this does not influence our results.

Finally, we apply Fama and MacBeth’s (1973) methodology to measure the influence of bank relationships on the cumulative return. We run a cross-sectional regression in each month. For each month, the regression produces a set of coefficients related to all the independent variables. A t-test of the time series values for each coefficient is then used to test whether each

⁴ The executive board members acted on behalf of and for the account of the firm, whereas supervisory board members were charged with supervising the executive board and had to approve the firm's annual accounts.

independent variable has a significant impact on stock returns. The results confirm that bank affiliation has no influence on stock returns.

7. Bank affiliations and firm value in 1928–1931

The previous section considers the impact of bank affiliations on stock returns in the economic shock year 1929. The results suggest that bank affiliations did not affect stock returns at all. This section investigates the impact of bank affiliations on firm value in the period 1928–1931. By extending the analysis to the year prior to the economic shock year 1929 and the two years after 1929, we should be able to capture any changes in the value of bank affiliations as the crisis deepened over 1929–1931. Firm value is measured by the market-to-book ratio (MTB) of the equity. The MTB is calculated as the average market value of equity over a calendar year divided by the book value of the equity at the start of the fiscal year.⁵ The analysis is based on an unbalanced panel of 576 firm–year observations for 151 firms from 1928 to 1931.⁶ The following OLS model is estimated⁷:

$$\begin{aligned} \text{Ln(MTB)}_{i,t} = & a_1 \times \text{Affiliation}_i + a_3 \times \text{Size}_{i,t} + a_4 \times \text{Age}_{i,t} + a_5 \times \text{Debt ratio}_{i,t} \\ & + b \times \text{Industry effects} + c \times \text{Year fixed effects} \end{aligned}$$

Size and the *debt ratio* are defined at the beginning of the fiscal year. *Age* is defined at the beginning of the calendar year. Year and industry dummies are included.

⁵ Since the calendar year and the fiscal year do not always match, we also use the market value of equity at the beginning of the calendar year to calculate the MTB. This does not alter the results.

⁶ This sample includes one additional firm, because in this analysis beta is not used.

⁷ We also estimated a random effects model, but the results are qualitatively the same. We could not estimate a fixed effects model because the affiliation variable is based on interlocking directors of 1928 and is time invariant.

*** Table 5 about here ***

Table 5 reports the mean and median values of the MTB in each of the four years for all bank-affiliated firms, firms affiliated with the Société Générale, and non-affiliated firms. The effect of the economic crisis is very pronounced. The mean (median) MTB decreases from 5.39 (2.86) in 1928 to 1.56 (0.82) in 1931 for bank-affiliated firms, and from 17.56 (2.99) in 1928 to 6.47 (1.21) in 1931 for non-affiliated firms.

*** Table 6 about here ***

Regression results are reported in Tables 6 and 7. The natural log of the MTB is the dependent variable in all regressions. In regression (7), we find no statistically significant relation between bank affiliation and firm value. *Size*, *age*, and *debt ratio* do seem to affect the MTB, confirming the findings of Van Overfelt et al. (2009) for Belgian firms in the period 1905–1909. The year dummy coefficients confirm that firm value strongly declined from 1929 to 1931. In regression (8), we interact the dummy *bank affiliated* with the year dummies to investigate whether the effect of bank affiliation changed as the crisis deepened in 1930 and 1931. However, affiliation does not seem to have had an effect in any of the years in this period. In regression (9), we differentiate between affiliation with the Société Générale, the Banque de Bruxelles, the four other important banks, and the remaining banks. Again we find no significant effect.⁸ The number of affiliated banks also does not affect firm value in any of the years considered, as shown in regressions (10) and (11).

*** Table 7 about here ***

⁸ If we interact each of these affiliation dummies with year dummies, the bank affiliation coefficients remain insignificant (results available from the authors upon request).

In regression (12) of Table 7, we consider the proportion of bank directors on the board. Again, we find no statistically significant effect on market value in any of the four years of our sample. Since the proportion of bank directors on the board is likely to be correlated with the number of affiliated banks, we add the number affiliated banks in regression (13) of Table 7, but the effect of bank directors remains insignificant.

Next we investigate the relationship between the number of directorships held by bank directors and firm value. As discussed in the previous section, the effect of busy directors on firm value is a priori unclear. Busy directors can be overcommitted and may therefore not be good monitors of firm managers; on the other hand, their connections can be valuable to the firm. Both effects can be more pronounced during an economic crisis. The results of regression (14) of Table 7 suggest that firms with busy bank directors on the board had a significantly higher value in 1928 and 1929, but not when the crisis deepened in 1930 and 1931. To investigate whether this effect is (to some extent) driven by multiple bank affiliations, we also include the number of affiliated banks in regression (15) of Table 7, but this does not affect the results for busy bank directors. Table 3 reveals that non-bank directors also often held more than one board seat. We therefore additionally investigate whether firms with busy *non*-bank directors affected firm value. In regression (16) we again find a significantly positive effect of the number of board seats held by non-bank directors on firm value before the crisis, but this effect already disappears in 1929. Both results suggest that the economic crisis made it more difficult for firms to derive any benefits from connections via interlocking directorships.

Overall, the insignificant impact of bank affiliations that we find is consistent with the findings of Weinstein and Yafeh (1998), that firms maintaining tight bank relationships before the liberalization of the Japanese capital market in the 1980s did not outperform their industry peers, even though they had better access to capital. We cannot directly test whether bank

affiliations provided the firms in our sample with better access to capital because there are no good data available on bank financing and the investment policies of the firms in our sample. In unreported regressions (results available from the authors upon request), we additionally investigated the impact of bank affiliations on dividend payouts and the overall debt ratio in the period 1928–1931. The results show no statistically significant relation between bank affiliations, dividend policy, and debt policy, which suggests that bank affiliations did not make it easier for firms to obtain additional debt or pay dividends as the economy slipped into depression.

8. Conclusion

This study investigates the impact of bank relationships on the performance of Belgian firms at the start of the Great Depression. On the one hand, bank relationships can reduce problems due to asymmetric information and agency conflicts related to financial intermediation, making it easier for firms to obtain (financial) support from these banks. On the other hand, a bank relationship can lead to rent extraction by the bank. Both effects are likely to be pronounced during a period of economic decline. However, our results suggest that bank affiliations did not affect firm performance in 1929–1931, even if we take into account the number of affiliated banks, their size, and the proportion of bank directors on the board. We do find a significantly positive impact of the number of directorships held by bank directors on firm value before the crisis, in 1928. However, this effect, which is found for bank directors as well as non-bank directors, disappears as the crisis deepened in 1930 and 1931.

The insignificant impact of bank affiliations found in this study is remarkable. Universal banks played a pivotal role in the development of Belgian industries during the 19th century (e.g., Cameron, (1967) and Van Overfelt et al. (2009)) finds evidence that relationship banking still had a positive effect on firm performance by the start of the 20th century. The statistically

insignificant results of this study indicate that by the end of the 1920s, affiliations with banks did not matter much anymore in Belgium.

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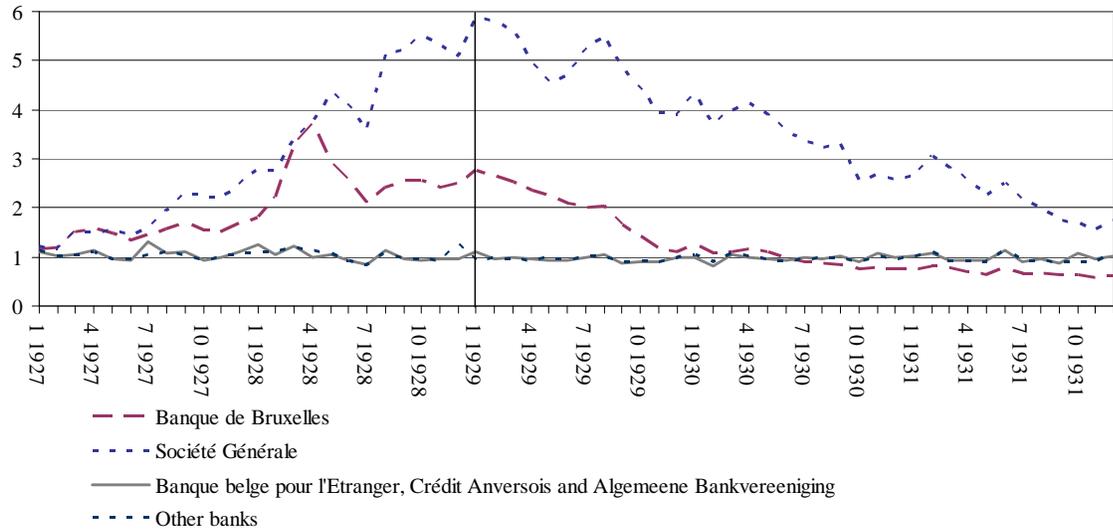
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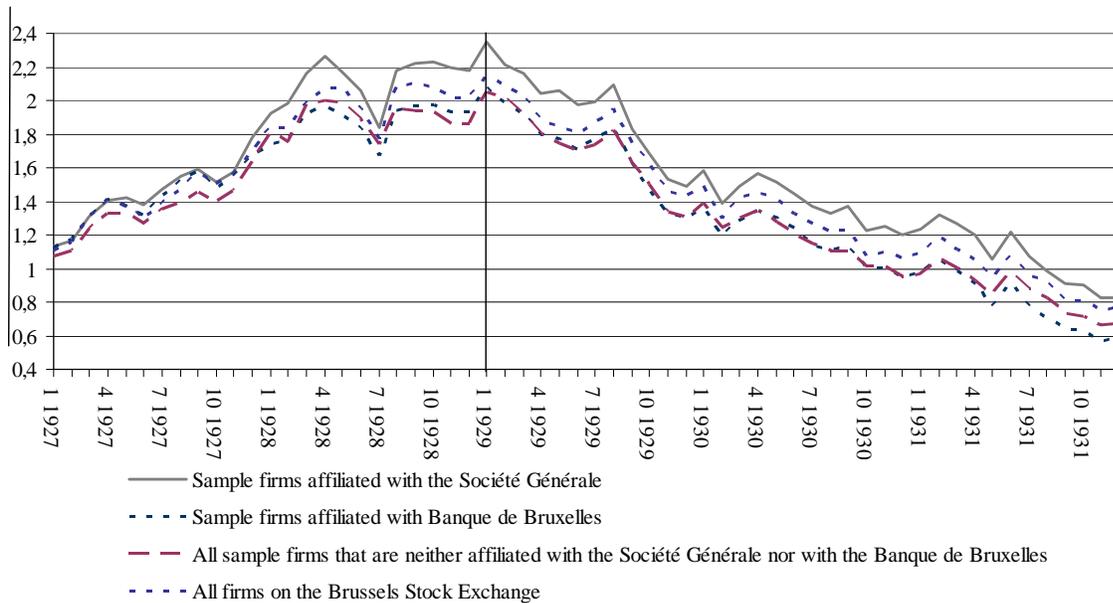
Figure 1

Cumulative stock returns in 1927–1931.

Panel A: Banks



Panel B: Non-financial firms



This figure shows the cumulative stock returns of Belgian banks (panel A) and Belgian (non-financial) firms listed on the Brussels Stock Exchange from January 1927 to December 1931. Cumulative returns are calculated by means of the Laspeyres market cap weighted return index. The financial sector is included in the market index, which considers all firms on the Brussels Stock Exchange, whereas in the other indices it is excluded.

Table 1. Bank affiliations of 150 non-financial Belgian firms in 1928.

| | No. of interlocking directorships | No. of interlocked firms |
|--|-----------------------------------|--------------------------|
| Société Générale de Belgique | 127 | 58 |
| Banque de Bruxelles | 111 | 52 |
| Banque Belge pour l'Etranger^a | 45 | 34 |
| Banque Générale Belge | 38 | 27 |
| Crédit Général de Belgique | 36 | 21 |
| Banque Industrielle Belge | 30 | 13 |
| Crédit Anversois^a | 27 | 20 |
| Banque Liégeoise et Crédit Général Liégeois Réunis | 17 | 12 |
| Banque de Flandre et de Gand | 17 | 11 |
| Banque Générale de Liège et de Huy | 17 | 12 |
| Banque d'Anvers | 12 | 9 |
| Mutuelle Solvay^a | 11 | 10 |
| Banque Josse Allard | 11 | 8 |
| Banque Centrale de Liège | 9 | 9 |
| Banque des Colonies | 8 | 5 |
| Banque Centrale de la Sambre | 8 | 7 |
| Société Nationale de Crédit à l'Industrie | 7 | 7 |
| Caisse Générale de Reports et de Dépôts | 7 | 7 |
| Banque de Commerce | 7 | 7 |
| Comptoir du Centre | 6 | 6 |
| Banque de Charleroi | 6 | 5 |
| Banque Coloniale de Belgique | 6 | 6 |
| Banque Centrale Anversoise | 5 | 3 |
| Banque Générale du Centre | 5 | 4 |
| Algemeene Bankvereniging^a | 4 | 2 |
| Banque H. Lambert | 4 | 4 |
| Banque de Crédit Commercial | 4 | 4 |
| Banque Centrale de la Dyle | 4 | 4 |
| Crédit National Industriel | 2 | 2 |
| Banque Générale de la Flandre Occidentale | 2 | 2 |
| Banque Centrale de Namur | 2 | 2 |
| Banque de Verviers | 2 | 2 |
| Banque Centrale de la Dendre | 1 | 1 |
| Banque Générale du Luxembourg | 1 | 1 |

Banks based on Durviaux (1947).

^a Other main banks (industrial portfolio >200 million Belgian francs).

Table 2. Bank-affiliated firms by industry.

| <i>Primary affiliation</i> | Société Générale | Banque de Bruxelles | Other major banks | Other banks | Non-affiliated | Total |
|----------------------------|------------------|---------------------|-------------------|-------------|----------------|-------|
| <i>Main activity</i> | | | | | | |
| Foreign activities | 8 | 6 | 6 | 7 | 4 | 31 |
| Colonial | 13 | 3 | 5 | 2 | 0 | 23 |
| Mining | 10 | 7 | 0 | 4 | 2 | 23 |
| Primary metal industries | 6 | 4 | 2 | 3 | 2 | 17 |
| Electricity and gas | 6 | 5 | 0 | 3 | 0 | 14 |
| Tramways and trainways | 3 | 3 | 0 | 1 | 2 | 9 |
| Stone, clay, and glass | 2 | 0 | 0 | 5 | 2 | 9 |
| Other industries | 10 | 1 | 2 | 3 | 8 | 24 |
| Total | 58 | 29 | 15 | 28 | 20 | 150 |

This table shows the number of bank-affiliated firms in the sample for different industries in 1928. The column labeled Société Générale refers to firms affiliated with the Société Générale; the column labeled Banque de Bruxelles refers to firms affiliated with the Banque de Bruxelles but not with the Société Générale; other major banks refers to firms affiliated with the Mutuelle Solvay, the Crédit Anversois, the Banque Belge pour l'Etranger, and/or the Algemeene Bankvereeniging, but not with the Société Générale or the Banque de Bruxelles; other banks refers to firms affiliated with any bank other than the six most important banks; and the non-affiliated column refers to firms without bank affiliation.

Table 3. Descriptive statistics (1929).

Panel A: Full sample (150 firms)

| | Mean | Median | St. Dev. |
|--------------------------------------|-------|--------|----------|
| Cumulative return in 1929 | -0.24 | -0.23 | 0.24 |
| Beta | 0.78 | 0.65 | 0.60 |
| Size (in millions of Belgian francs) | 1.90 | 0.95 | 2.90 |
| Age | 25.29 | 19.00 | 20.30 |
| Debt ratio | 0.37 | 0.34 | 0.19 |

Panel B: Affiliated firms versus non-affiliated firms

| | <i>All affiliated firms (130 firms)</i> | | <i>Société Générale affiliation (58 firms)</i> | | <i>Non-affiliated firms (20 firms)</i> | |
|--------------------------------------|---|--------|--|--------|--|--------|
| | Mean | Median | Mean | Median | Mean | Median |
| Cumulative return for 1929 | -0.25 | -0.24 | -0.26 | -0.27 | -0.19 | -0.19 |
| Beta | 0.80 | 0.70 | 0.86 | 0.79 | 0.63 | 0.53 |
| Size (in millions of Belgian francs) | 2.0 *** | 1.0 | 2.5 *** | 1.6 | 1.0 | 0.66 |
| Age | 24.85 | 18.00 | 27.12 | 19.50 | 28.15 | 20.50 |
| Debt ratio | 0.36 | 0.33 | 0.37 | 0.34 | 0.38 | 0.41 |
| No. of affiliated banks | 2.58 | 2.00 | 3.05 | 3.00 | / | / |
| Proportion of bank directors | 0.25 | 0.24 | 0.29 | 0.31 | / | / |
| Directorships per bank director | 5.87 | 5.50 | 7.47 | 7.00 | / | / |
| Directorships per non-bank director | 2.40*** | 2.00 | 2.67*** | 2.29 | 1.66 | 1.42 |

Firms are categorized as affiliated if a (Société Générale) bank director is on the board of the firm, and as non-affiliated otherwise. The cumulative stock returns are calculated using a Laspeyres market cap weighted return index over the year 1929; *beta* was calculated based on 60 monthly return observations in 1924–1928, with a minimum of 24 months; *size* is total assets; *age* is the number of years the firm has been listed; and the *debt ratio* is the book value of total debt divided by total assets. *Size*, *debt ratio*, and *age* are defined at the start of 1929; *No. of affiliated banks* is the number of banks of which the firm has a director on its board; *Proportion of bank directors* is the number of bank directors of a firm divided by the total number of directors of that firm; *Directorships per bank director* is the total number of directorships of the bank directors of a firm divided by the number of bank directors of that firm; and *Directorships per non-bank director* is the total number of directorships of the non-bank directors of a firm divided by the total number of non-bank directors of that firm. Here *, **, and *** indicate that the difference in means (based on a two-tailed t-test) between (Société Générale) affiliated firms and non-affiliated firms is significant at the 10%, 5%, and 1% levels, respectively.

Table 4. Bank affiliations and cumulative stock returns in 1929.

| | (1) | (2) | (3) | (4) | (5) | (6) |
|--------------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|---------------------|
| Bank affiliated | 0.015 (0.786) | | | | | |
| Société Générale | | 0.031 (0.603) | | | | |
| Banque de Bruxelles | | 0.021 (0.764) | | | | |
| Other major banks | | -0.017 (0.830) | | | | |
| Other banks | | 0.010 (0.883) | | | | |
| No. of affiliated banks | | | -0.021 (0.521) | | | |
| No. of affiliated banks ² | | | 0.002 (0.598) | | | |
| Proportion of bank directors | | | | -0.001 (0.991) | | |
| Directorships per bank director | | | | | -0.002 (0.700) | -0.002 (0.758) |
| Directorships per non-bank director | | | | | | -0.005 (0.745) |
| Beta | -0.136 (0.006)*** | -0.139 (0.005)*** | -0.132 (0.008)*** | -0.135 (0.006)*** | -0.132 (0.008)*** | -0.128 (0.011)** |
| ln(Size) | -0.023 (0.161) | -0.027 (0.133) | -0.018 (0.303) | -0.022 (0.186) | -0.020 (0.255) | -0.020 (0.253) |
| ln(Age) | 0.049 (0.073)* | 0.046 (0.098)* | 0.048 (0.084)* | 0.049 (0.074)* | 0.049 (0.074)* | 0.048 (0.079)* |
| Debt ratio | 0.062 (0.590) | 0.061 (0.607) | 0.051 (0.665) | 0.063 (0.587) | 0.070 (0.543) | 0.069 (0.547) |
| Industry dummies | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 150 | 150 | 150 | 150 | 150 | 150 |
| R-squared | 0.292 | 0.295 | 0.294 | 0.292 | 0.293 | 0.293 |

The table displays regression coefficients and robust p-values for OLS regressions. The dependent variable is the cumulative stock return (including capital gains and dividend returns) over 1929. *Bank affiliated* is a dummy equal to one if the firm has at least one bank director on its board, and zero otherwise; *Société Générale* is a dummy equal to one if the firm has at least one Société Générale director on its board, and zero otherwise; *Banque de Bruxelles* is a dummy equal to one if the firm has at least one Banque de Bruxelles director but no Société Générale director on its board, and zero otherwise; *Other major banks* is a dummy equal to one if the firm has at least one director of the Algemeene Bankvereeniging, the Banque Belge pour l'Etranger, the Crédit Anversoise, or the Mutuelle Solvay on its board but no director of Société Générale or the Banque de Bruxelles, and zero otherwise; *Other banks* is a dummy equal to one if the firm has at least one bank director on its board but no director from one of the six major banks, and zero otherwise; *No. of affiliated banks* is the number of banks of which the firm has a director on its board; *Proportion of bank directors* is the number of bank directors of a firm divided by the total number of directors of that firm; *Directorships per bank director* is the total number of directorships of the bank directors of a firm divided by the number of bank directors of that firm; *Directorships per non-bank director* is the total number of directorships of the non-bank directors of a firm divided by the total number of non-bank directors of that firm; *beta* is based on the firm's 60 monthly returns in 1924–1928, with a minimum of 24 returns; *ln(size)* is the natural logarithm of total assets at the beginning of the fiscal year; *ln(age)* is the natural logarithm of the number of years the firm has been listed; and *debt ratio* is the book value of total debt divided by total assets. Here ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 5. MTB in 1928–1931.

| | <i>All affiliated firms (130 firms)</i> | | <i>Société Générale affiliation (58 firms)</i> | | <i>Non-affiliated firms (20 firms)</i> | |
|----------|---|--------|--|--------|--|--------|
| | Mean | Median | Mean | Median | Mean | Median |
| MTB 1928 | 5.39 | 2.86 | 5.41 | 2.92 | 17.56 | 2.99 |
| MTB 1929 | 3.98 | 2.20 | 3.85 | 1.94 | 14.19 | 1.94 |
| MTB 1930 | 2.19 | 1.20 | 2.10 | 1.04 | 9.69 | 1.56 |
| MTB 1931 | 1.56 | 0.82 | 1.50 | 0.83 | 6.47 | 1.21 |

Firms are categorized as before. The MTB of equity is the average market value of equity over a calendar year divided by the book value of the equity at the start of the fiscal year. Here *, **, and *** indicate that the difference in means (based on a two-tailed t-test) between (Société Générale) affiliated firms and non-affiliated firms is significant at the 10%, 5%, and 1% levels, respectively.

Table 6. Bank affiliations and firm value in 1928–1931.

| | (7) | (8) | (9) | (10) | (11) |
|--------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Bank affiliated | -0.051 (0.761) | | | | |
| Bank affiliated * 1928 | | 0.020 (0.896) | | | |
| Bank affiliated * 1929 | | -0.020 (0.905) | | | |
| Bank affiliated * 1930 | | -0.145 (0.502) | | | |
| Bank affiliated * 1931 | | -0.076 (0.718) | | | |
| Société Générale | | | 0.077 (0.661) | | |
| Banque de Bruxelles | | | 0.077 (0.689) | | |
| Other major banks | | | -0.147 (0.583) | | |
| Other banks | | | -0.221 (0.258) | | |
| No. of affiliated banks | | | | 0.024 (0.567) | |
| No. of affiliated banks * 1928 | | | | | 0.062 (0.153) |
| No. of affiliated banks * 1929 | | | | | 0.007 (0.865) |
| No. of affiliated banks * 1930 | | | | | 0.011 (0.813) |
| No. of affiliated banks * 1931 | | | | | 0.015 (0.754) |
| ln(Size) | -0.423 (0.000)*** | -0.422 (0.000)*** | -0.458 (0.000)*** | -0.438 (0.000)*** | -0.437 (0.000)*** |
| ln(Age) | 0.203 (0.012)** | 0.203 (0.012)** | 0.199 (0.013)** | 0.210 (0.012)** | 0.211 (0.012)** |
| Debt ratio | 1.807 (0.000)*** | 1.810 (0.000)*** | 1.806 (0.000)*** | 1.812 (0.000)*** | 1.815 (0.000)*** |
| 1929 | -0.139 (0.000)*** | -0.104 (0.129) | -0.131 (0.000)*** | -0.136 (0.000)*** | -0.015 (0.764) |
| 1930 | -0.695 (0.000)*** | -0.552 (0.000)*** | -0.683 (0.000)*** | -0.693 (0.000)*** | -0.578 (0.000)*** |
| 1931 | -1.023 (0.000)*** | -0.940 (0.000)*** | -1.012 (0.000)*** | -1.019 (0.000)*** | -0.915 (0.000)*** |
| Industry dummies | Yes | Yes | Yes | Yes | Yes |
| Observations | 576 | 576 | 576 | 576 | 576 |
| R-squared | 0.581 | 0.582 | 0.591 | 0.582 | 0.583 |

This table displays the regression coefficients and robust p-values for OLS regressions. The results are based on clustered standard errors. The dependent variable is the natural logarithm of the MTB; 1929, 1930, and 1931 are year dummies; and all other variables are defined as before. Here ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 7. Bank affiliations, busy directors, and firm value in 1928–1931.

| | (12) | (13) | (14) | (15) | (16) |
|--|----------------------|----------------------|----------------------|----------------------|----------------------|
| Proportion of bank directors * 1928 | 0.523 (0.306) | -0.062 (0.910) | | | |
| Proportion of bank directors * 1929 | 0.094 (0.846) | -0.029 (0.954) | | | |
| Proportion of bank directors * 1930 | 0.093 (0.849) | -0.062 (0.906) | | | |
| Proportion of bank directors * 1931 | 0.172 (0.724) | 0.013 (0.981) | | | |
| Directorships per bank director * 1928 | | | 0.043 (0.016)** | 0.040 (0.031)** | |
| Directorships per bank director * 1929 | | | 0.037 (0.024)** | 0.041 (0.019)** | |
| Directorships per bank director * 1930 | | | 0.017 (0.291) | 0.018 (0.280) | |
| Directorships per bank director * 1931 | | | 0.020 (0.246) | 0.021 (0.240) | |
| Directorships per non-bank director * 1928 | | | | | 0.193 (0.003)*** |
| Directorships per non-bank director * 1929 | | | | | 0.083 (0.213) |
| Directorships per non-bank director * 1930 | | | | | 0.073 (0.268) |
| Directorships per non-bank director * 1931 | | | | | 0.068 (0.329) |
| No. of affiliated banks * 1928 | | 0.080 (0.174) | | 0.072 (0.161) | |
| No. of affiliated banks * 1929 | | 0.022 (0.696) | | 0.018 (0.726) | |
| No. of affiliated banks * 1930 | | 0.027 (0.634) | | 0.036 (0.487) | |
| No. of affiliated banks * 1931 | | 0.027 (0.670) | | 0.038 (0.476) | |
| Bank affiliated | -0.107 (0.604) | -0.125 (0.554) | -0.192 (0.298) | -0.282 (0.202) | -0.096 (0.573) |
| ln(Size) | -0.426 (0.000)*** | -0.435 (0.000)*** | -0.441 (0.000)*** | -0.455 (0.000)*** | -0.417 (0.000)*** |
| ln(Age) | 0.203 (0.011)** | 0.216 (0.012)** | 0.204 (0.011)** | 0.216 (0.011)** | 0.219 (0.008)*** |
| Debt ratio | 1.823 (0.000)*** | 1.827 (0.000)*** | 1.757 (0.000)*** | 1.776 (0.000)*** | 1.823 (0.000)*** |
| Year dummies | Yes | Yes | Yes | Yes | Yes |
| Industry dummies | Yes | Yes | Yes | Yes | Yes |
| Observations | 576 | 576 | 576 | 576 | 576 |
| R-squared | 0.583 | 0.584 | 0.591 | 0.594 | 0.592 |

This table displays the regression coefficients and robust p-values for OLS regressions. Results are based on clustered standard errors. The dependent variable is the natural logarithm of the MTB; 1929, 1930, and 1931 are year dummies; and all other variables are defined as before. Here ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.