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The value of corporate boards during the Great Depression in Belgium

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Abstract

We investigate how board characteristics were related to the value of listed Belgian firms in the 1928-1931 period, when investor protection was weak and firms were hit by the largest financial crisis of the 20th century. We find that firms typically had a large board and many directors held multiple directorships. Most boards included bank directors. While large, busy boards and bankers on the board were positively related to firm value before the crisis, their value significantly decreased from 1929 onwards, suggesting that these boards were less suited to face a crisis. Board busyness seems to be the main driver of negative board effects during the crisis. We also find that riskier firms which had busier and larger boards experienced a larger drop in value.

Keywords: Board busyness, board size, bank affiliation, director interlocks, firm value, Great Depression, Belgium

JEL classification: G21, G30, G34

1 Introduction

Do corporate boards matter? A large number of studies has investigated the relation between board composition and firm value, but these studies typically focus on steady-state economic conditions (e.g. Jensen 1993; Petersen & Rajan 1994; Yermack 1996; Weinstein & Yafeh 1998; Ferris *et al.* 2003; Fich & Shivdasani 2006; Coles *et al.* 2008). Few studies have considered the value of the board during a crisis, when the board of directors is likely to matter most (Francis *et al.* 2012). In this paper, we take a unique historical perspective by investigating the relation between board composition and firm value in Belgium during the Great Depression. Belgium in this period provides a very interesting environment to study the value of corporate boards. Despite weak investor protection, Belgium combined an active stock market (Rajan & Zingales 2003) with a powerful financial industry (e.g. van der Valk 1932; Chlepner 1943; Durviaux 1947; Vanthemsche 1991; Rajan & Zingales 2003), which 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). Furthermore, the Great Depression had a strong negative effect on the value of Belgian firms. Figure 1 shows an index of the cumulative stock returns of all firms listed on the Brussels Stock Exchange in the period 1920–1934.[1] The index rose from 100 to 721 in January 1929, after which it fell back to 176 in December 1934.

*** Figure 1 about here ***

It is difficult to establish a link between board characteristics and firm value during normal economic conditions, because firms chose their boards endogenously to maximize firm value (e.g. Boone *et al.* 2007; Linck *et al.* 2008). If firms maximize their value and board composition can be promptly adjusted without costs, there would be no reason to observe an empirical relation between board composition and firm value (e.g. Coles *et al.* 2008). However, the Great

[1] Indices are Laspeyres market cap weighted return indices (including dividend returns) calculated by linking monthly returns through a chain index. The weight of each firm's return is given by its relative market capitalization.

Depression was an unexpected event for firms to which firms were unable to instantly react by altering the composition of their boards. By considering the effect of board characteristics *prior to* the start of the Great Depression on firm value *during* the Great Depression, we ascertain that board characteristics are not affected by our firm performance measure. A crisis such as the Great Depression is also an interesting period to investigate the role of corporate boards because it puts pressure on a board that is potentially not composed to face such an exceptional situation. Even if it is composed to deal with crisis situations, a crisis asks for the full potential of those directors, which might otherwise not be the case (Mace 1986).

We focus on board characteristics that have been found to have an association with firm value: *board busyness*, i.e. the extent to which directors on the board held multiple directorships, and *board size*, i.e. the number of directors on the board. *Busy directors* may enhance the quality of the board's advice because they may be a source of valuable experience and they may enlarge a firm's network (e.g. Miwa & Ramseyer 2000; Ferris *et al.* 2003). However, board busyness may also hinder the advising and monitoring quality because of time limitations if directors become overcommitted resulting in lower firm value (e.g. Loderer & Peyer 2002; Fich & Shivdasani 2006). As *board size* increases, communication and coordination problems (e.g. Lipton & Lorsch 1992) can result in less effective advising and monitoring and lower firm value (e.g. Yermack 1996; Eisenberg *et al.* 1998). On the other hand, a large board adds experience and knowledge to the board and reduces environmental uncertainty (e.g. Dalton *et al.* 1999). This may be beneficial for firm value especially when advising needs are large (e.g. Coles *et al.* 2008; Faleye *et al.* 2011). Since banks played a crucial role in Belgian business during the period considered in this study, we also take into account the presence of *bankers on the board*. Bank representatives on the board can provide important industry-specific financial expertise (e.g. Kroszner & Strahan 2001) and they can mitigate information asymmetries between the bank and its client firm so that the availability of credit is increased and its cost reduced (e.g. Diamond

1984; Ramirez 1995; Becht & Ramírez 2003; Van Overfelt *et al.* 2009). However, a bank that has a representative on the board can also abuse its private information to extract rents from the firm (e.g. Rajan 1992). This cost has been found to offset the above-mentioned benefits of having a banker on the board (e.g. Fohlin 1997; Fohlin 1998; Guinnane 2002).

Using a sample of 150 large Belgian firms listed on the Brussels Stock Exchange in 1928-1931, we find that these firms typically had a large board, with directors holding multiple directorships in other firms and in banks. Busy boards and larger boards were associated with a higher firm value. However, the positive relationship between board busyness and firm value significantly decreased in the 1929-1931 period. We also find a significant decrease in the association between firm value, board size and bankers on the board in 1929. When we include measures of board busyness, board size and bankers on the board in the same regression, the effects of bankers on the board disappear. This suggests that our findings are not driven by bank-firm relations. Our results also indicate that the negative crisis effects of busy and large boards are partially driven by firm risk. This is consistent the with resource dependence theory, which predicts that risky firms prefer large and busy boards to reduce environmental uncertainties.

Our paper provides a unique contribution to the literature by investigating the value of corporate boards during the most important crisis of the 20th century. It contributes to an extended literature that investigates the value of corporate governance mechanisms during a crisis (Johnson *et al.* 2000; Mitton 2002; Lemmon & Lins 2003; Baek *et al.* 2004; Barton & Waymire 2004; Graham *et al.* 2011; Nguyen *et al.* 2015), but also to a small but growing literature that investigates the value of corporate boards in a historical context (Van Overfelt *et al.* 2009; Campbell & Turner 2011; Graham *et al.* 2011; Braggion & Moore 2012; Foreman-Peck & Hannah 2013).

2 Interwar Belgium

2.1 Economy

In Belgium, as in other European countries, the imperatives of war finance during WWI created unbalanced budgets and rocketing inflation rates (Chlepner 1943). In order to regain monetary stability, in October 1926, Belgium rejoined the gold standard in a modified form: the gold exchange standard. The Belgian franc was devaluated to one-seventh of its prewar value which resulted in a considerable undervaluation compared to the British pound and American dollar (Aldcroft 1997) and gave a strong boost to Belgian exports and the Belgian economy.

By 1929, the international financial and economic situation was deteriorating (e.g. Bernanke & James 1990). In Belgium, industry's rigidity and low productivity levels led to an economic downturn by the beginning of 1929. The market crash in the United States in October 1929 and the British abandonment of the gold exchange standard in September 1931 seriously aggravated the Belgian and international economic situation (Chlepner 1943). After the British abandonment, the Belgian government introduced a deflationary policy, but this policy failed because fiscal revenues were disappointing, and government expenditures rose as unemployment compensation increased (Chlepner 1943; Buyst 2005). In March 1935 the government devalued the Belgian franc by 28% after which the Belgian economy started to recover (Chlepner 1943; Baudhuin 1944).

2.2 Corporate boards

The board of directors ("conseil général") of Belgian firms had a dual structure with executive directors ("administrateurs") in the "conseil d'administration" and supervising directors ("commissaries") in the "collège des commissaires". Executive and supervising directors met each other only occasionally in the "conseil général". The executive directors acted on behalf of and for the account of the company and were appointed by the articles of incorporation or by the general meeting of shareholders. Their responsibilities were confined by

the company's articles of incorporation. A firm needed to have at least three executive directors and their mandate could not exceed six years. However, they were eligible for re-election and their mandate was revocable at all times (Wauwermans 1933). Supervising directors were charged with the supervision of the executive directors and had to approve the company's annual accounts. They were also appointed by the general meeting of shareholders. The number of supervising directors was set by the general meeting of shareholders with a minimum of one and their mandate could not exceed six years but they were eligible for re-election (Wauwermans 1933).

Investor protection in Belgium significantly improved since the laws of May 25th 1913 and October 30th 1919 (following other European countries such as Britain, Germany and France). Conflicts of interests between shareholders and executive directors had to be reported and executive directors with conflicting interest were not allowed to attend board meetings (e.g. Gilis 1929; Wauwermans 1933). Furthermore, names of all directors, both executive and supervising, had to be made public and all directors were obliged to deposit shares of the firm ("cautionnement") to make sure that directors would act according to the articles of incorporation and to the law (e.g. Wauwermans 1933).

Nevertheless, corporate governance was still in its infancy. For example, rules to impose board independence, which is today generally considered as a requirement for good corporate governance (e.g. Sarbanes-Oxley Act of 2002 in the US and the Principles of Corporate Governance of 1999/2004 of the OECD), were lacking: the law actually allowed supervising directors to be employees of the firm and they were also allowed to be family members or other relatives of the executive directors of the firm (Wauwermans 1933; Centre d'étude des Sociétés 1956). Several studies have shown that board independence is positively related to the effectiveness of monitoring because of the independent directors' perceived objectivity (e.g. Adams & Ferreira 2007; Hwang & Kim 2009; Faleye *et al.* 2011). Therefore, the lack of rules to

enforce board independence may have hampered monitoring efficiency in the 1920s. This is confirmed by Gilis (1929), a contemporary accountant, who points to the fact that, *de facto*, the rules for supervising directors were not complied with. Supervising directors mostly limited their monitoring activities to some random checks of the annual accounts.

2.3 Banking industry

As of the creation of Belgium in 1830, the Belgian banking sector was characterized by a close links with industrial firms via loans, equity stakes and shared directorships which strongly supported the economic development of Belgium before WWI (e.g. Chlepner 1943; Van Nieuwerburgh *et al.* 2006). After the war, banks were able to further enlarge their influence on industry thanks to the enormous demand for capital that was matched with an increasing supply. By the end of the 1920s, most Belgian banks had a portfolio of equity stakes in industrial firms which allowed them to control a significant part of Belgian industry, directly and indirectly via holding companies and subsidiary banks (e.g. van der Valk 1932). Their controlling power was reinforced by the use of multiple voting shares. The largest Belgian firms were connected by dense networks of interlocking directorships which were often centered around banks (Ghita 2011). The banks provided substantial credits and were typically the sole underwriter of securities issued by these firm (Van der Valk, 1932). A significant number of the directors representing banks on the board were specialized industrialists helping the banks to protect their interests in the connected firms.

Up until 1932 the Belgian banking industry did not experience severe adverse shocks and credit was still readily available. For example, loans and advances of Belgian banks to industry increased from 2,158 million francs in 1927 to 2,597 million francs in 1928, 3,139 million francs in 1929 and 3,206 million francs in 1930 and decreased to 2,533 million francs in 1931 after which they decreased sharply (only 1,904 million francs in 1932) (Durviaux 1947; van Meerten

1992; Van Hentenryk 1997).[2] Moreover, during the period of high inflation preceding the stabilization of the Belgian franc in 1926, banks were forced to increase their equity, while many of their assets, mainly equity stakes, did not lose value. This created hidden reserves (Chlepner 1930; Durviaux 1947).

However, from 1932 onward some banks became financially distressed. When the middle-sized Belgische Bank van de Arbeid failed in March 1934, it became clear that fundamental measures were needed to restore public trust in the Belgian banking sector. A system of legal regulation and official control was introduced in 1934, which radically changed the organization and workings of the banking sector.[3] Before 1934, Belgian banks had enjoyed almost complete freedom (e.g., Chlepner, 1943). Universal banks were forced to split up into deposit banks and holding companies, and banks came under the supervision of a newly created public institution. Banks were forbidden to hold bonds and stocks, and they were obliged to restrict their activities either to investment banking or to the deposits and loan business (e.g. Vanthemsche 1997). Bank directors were not allowed anymore to hold positions at non-financial companies, only at other financial institutions. The split-up of universal banks in 1934 led to a substantial reduction in the density of the networks of interlocking directorships, which further declined after WW II (Ghita 2011). The decline after WW II is consistent with the argument of Rajan & Zingales (2003) that entrenched economies will open up when political forces that are not aligned with the private interests of an entrenched business elite become strong enough to allow cross-border trade and capital flows. While Rajan & Zingales do not directly consider business elite networks in their

[2] It seems that the Belgian banks initially viewed the crisis as a stock market correction unrelated to the state of the Belgian economy. In November 1929 the banks issued a joint statement that the stock exchange did not reflect economic conditions in Belgium (van Meerten, 1992), while the Société Générale de Belgique argued on its general meeting in February 1930 that '*Certainly the stock market has shown exaggerated optimism and a reaction had to come sooner or later: it has been accentuated by the crisis of the New York stock market .. But, unlike previous occasions, the crisis was not caused either by a sudden fall in economic activity, or the accumulation of stocks*' (Van Hentenryk, 1997, p. 276).

[3] Vanthemse (1997) argues that it was actually the governor of the Société Générale de Belgique Emile Francqui, who had been a minister in the Belgian government in 1926-1927, who convinced the government in 1934 to split up the universal banks.

study, it can be expected that the network of the entrenched business elite will disintegrate when the economy opens up, as has happened in Belgium after WW II.

3 Board composition and firm value during a crisis

3.1 Busy boards

According to the resource dependence theory (e.g. Pfeffer 1972; Pfeffer & Salancik 1978; Boyd 1990), directors holding directorships at other firms provide connections with the outside world which allow the firm to cope with uncertainty and to access trustable, timely and up-to-date information more easily (Carpenter & Westphal 2001; Coles *et al.* 2012). Having multiple directorships might also proxy for reputational capital (e.g. Kaplan & Reishus 1990): higher quality directors are more frequently asked to serve on other boards (Ferris *et al.* 2003; Coles *et al.* 2012). The advising role of boards might become especially important during a crisis (Francis *et al.* 2012), which could increase the value of a busy board.

On the other hand, relying on directors' network may not be enough to deal with the crisis. Directors are supposed to act in crisis situations (Mace 1986), but to properly do so, a director needs to have sufficient time to analyze the company's situation before he or she is able to advise and support management (e.g. De Maere *et al.* 2014). Furthermore, Loderer and Peyer (2002) and Fich and Shivdasani (2006) find that directors with multiple board seats can become overcommitted, rendering them unable to effectively perform their monitoring duties or to advice management properly. If board busyness reflects weak monitoring by the board, a crisis can lead to a greater expropriation by managers and controlling shareholders, and make investors more aware of weak corporate governance (Johnson *et al.* 2000; Mitton 2002; Baek *et al.* 2004). This will especially be the case in an environment where investors are weakly protected by external corporate governance mechanisms. Therefore, we hypothesize that busy directors/board are negatively related to firm value during the crisis.

3.2 Board size

The resource dependence theory suggests that larger boards are associated with a higher firm value (e.g. Foreman-Peck & Hannah 2013). A larger board may have more knowledge and experience at its disposal and it may have a larger network and may therefore be better able to cope with various external uncertainties and secure external resources (e.g. Dalton *et al.* 1999). On the other hand, smaller boards can monitor management more effectively and therefore reduce agency costs (Jensen 1993; Yermack 1996; Eisenberg *et al*. 1998). Recent studies, both on recent and historical data, have also shown that the value of a large board may depend on firm characteristics such as firm complexity (e.g. Coles *et al.* 2008; Graham *et al.* 2011). During a crisis, smaller boards may be more able to reach consensus and initiate strategic actions, while larger boards may more easily develop factions and coalitions that lead to group conflict, which may hinder the process of reaching consensus and taking action (e.g. Goodstein *et al*. 1994). Therefore, we hypothesize that during a crisis when rapid action is needed (e.g. Daily & Dalton 1994), any positive effect of board size on firm value becomes smaller.

3.3 Bankers on the board

Having a banker on the board allows a bank to closely and successively monitor a client firm. This may reduce information asymmetries and associated moral hazard problems between the bank and the firm (e.g. Jensen & Meckling 1976; Diamond 1984). Several empirical papers have found a beneficial relationship between having a banker on the board and firm value and liquidity (e.g. pre-World War I evidence from Ramirez 1995 for the U.S.; Becht & Ramírez 2003 for Germany; Van Overfelt *et al.* 2009 for Belgium). Furthermore, bankers can provide valuable financial advice to management and they can signal quality to outside investors, which makes it easier and thus cheaper for firms to attract additional capital (e.g. DeLong 1991; Fohlin 1999). During a crisis, having a banker on the board may be positively associated with firm value

because they can grant financial relief, extend credit and give financial expertise (e.g. Hoshi *et al.* 1990; Elsas & Krahnen 1998; Ferri *et al.* 2001; Francis *et al.* 2012).

Other studies suggest that banks may also abuse their private information by holding up related firms or by creating an information monopoly so that banks can extract rents from the borrowing firm (e.g. Fohlin 1997 for Germany; 1998 for Italy; Guinnane 2002 for Germany). Moreover, in times of financial distress, the bank can take actions to insulate itself from trouble and shift the burden to other creditors (e.g. Kroszner & Strahan 2001). Banks can, for example, issue 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. It is a priori not clear how bankers on the board relate to firm value during the crisis.

4 Research design

4.1 Sample

Our study is based on a sample of non-financial Belgian firms listed on the Brussels Stock Exchange during the period 1928–1931. We hand-collected accounting data and names and positions of the members of the boards of directors from the *Recueil Financier*, a financial annual containing firm-specific information on firms listed on the Brussels Stock Exchange. Stock data were taken from a database constructed by the StudieCentrum voor Onderneming en Beurs (SCOB) at the University of Antwerp. This database contains information on all stocks listed on the Brussels Stock Exchange. Since most of the information needed for this study had to be hand-collected, we initially restricted our sample to the 220 largest firms based on market capitalization in 1928. 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, for which we have an unbalanced panel of 574 firm–year observations for the four-year period 1928 to 1931. We have a representative sample. The market capitalization of our sample represents 96% of market capitalization of all Belgian firms listed on the Brussels Stock exchange, excluding financial firms and government owned firms.

*** Table 1 about here ***

4.2 Empirical model

We estimate a random effects model with the following specification[4]:

$\text{Ln(MTB)}_{i,t} = a + b$ (Crisis Year Dummies) + c Board measure_i + d Board measure_i x (Crisis Year Dummies) + e (Firm $\text{Characteristics}_{i,t}$) + f (Industry Dummies_i)

All variables used in the model are described in Table 1. The dependent variable is the natural log of the ratio of market value to book value of total assets (MTB). Using this ratio as a measure of firm value is consistent with related studies such as, for example, Fich and Shivdasani (2006), Yermack (1996), Coles *et al*. (2008), Field *et al*. (2013) and Ferris *et al*. (2003). Better governance of the firm should be reflected in a higher market-to-book ratio. This ratio is calculated as the market value of equity plus the book value of debt, divided by the book value of total assets at the end of the fiscal year. We take the natural logarithm to reduce skewness[5]. The advantage of a market based value measure as compared to accounting profitability is that when a crisis occurs, it immediately incorporates the effect of the crisis on profit expectations. Accounting measures of profitability on the other hand are by nature backward looking.

[4] We do not include firm fixed effects in our base model because the board measures which are defined only once would drop out of the regressions. The Breusch-Pagan Lagrange multiplier test confirmed the presence of random effects. The results of the random effect model are qualitatively the same as those of the OLS regressions.

[5] Skewness drops from 12.7 to 1.4 after taking the natural logarithm.

Furthermore, accounting profits in Belgium were highly susceptible to manipulation (Van Overfelt *et al.* 2010).[6]

The main independent variables in our models are (1) three dummy variables equal to one for the crisis years 1929, 1930 and 1931, to take into account the effect of the crisis, (2) board variables measuring board busyness, board size and bank affiliation, and (3) the interaction between the crisis year dummies with our board measures, to investigate how the relation between firm value and board characteristics changed during the crisis years. Additionally we control for firm characteristics and industry effects. The measurement of board characteristics, firm characteristics and industry effects are further discussed in the next three subsections.

4.3 Board measures

We consider several measures of board busyness, board size and bank affiliation. Board busyness is measured in three different ways, based on information from the Recueil Financier. First, following Ferris *et al*. (2003), we use *directorships per director* which is the total number of directorships held across all the directors of a board divided by board size. If there is a dispersion in the number of board seats held by the different directors of the same firm, the average number of directorships per director may not be a perfect measure. Therefore, following Fich & Shivdasani (2006), our second busyness measure is the *percentage of busy directors* on a firm's board. A director is busy if he/she holds three or more directorships. We use three directorships as the cut-off rate because the mean and median number of directorships per board in the sample is close to three, resulting in a roughly even split between busy and non-busy directors. It is also in line with prior work by Fich & Shivdasani (2006) and Ferris *et al*. (2003).

[6] As a robustness check we used return on assets, i.e. net income plus depreciation divided by total assets, as a measure of performance. Not surprisingly, we find no statistically significant relation between board composition and return on assets (results available from the authors upon request). It would also be interesting to investigate how board characteristics are related to firm survival. Unfortunately the number of firms in our sample which go bankrupt is too small to draw any meaningful statistical conclusion: only three of the 150 firms in our sample were bankrupt by the end of 1931, and six firms were bankrupt by the end of 1935. This number is small, but not really surprising since we consider only the largest firms on the Brussels Stock Exchange.

Third, we use *ln(no. of external directorships+1)*, which is the natural logarithm of (the total number of external directorships held by all the directors of the board plus one). Board size is the total number of executive and supervising directors.

To measure bank affiliation, we use interlocking directorships between firms and banks (e.g. Fohlin 1997, 1998; Becht & Ramírez 2003; Van Overfelt *et al.* 2009). A firm is assumed to be bank affiliated if it has a bank director on its board. We identify interlocking directorships by the names of the directors. We consider the directors of 41 banks based on a list of banks drawn up by Durviaux (1947) for 1930. We use the list from Durviaux (1947) to identify the *banks in 1930*, and the Recueil Financier to identify the name of the *directors* of these banks *in 1928*, which are matched with the names of directors from our sample firms in 1928. We use different affiliation measures. First, *bank affiliated* is a dummy equal to one if the firm has at least one bank director on its board, and zero otherwise. Second, firms in our sample were often affiliated with more than one bank. Multiple bank affiliations may reduce the incentive of individual banks to monitor a firm or to grant credit to it because the costs are borne by just one bank, while the benefits are enjoyed by the other banks as well (e.g. Foglia *et al.* 1998). This may have a negative effect on firm value. On the other hand, multiple bank relations might allow a firm to avoid the *hold-up problem*, i.e. a firm's house bank abusing her information monopoly by charging (ex post) high interest rates (Boot 2000). As a result, firms may become reluctant to borrow from the bank to finance valuable investment projects. Therefore, we include the *no. of affiliated banks*, which is the number of banks which have at least one director on a firm's board. Third, the *percentage of bank directors* is the number of bank directors on the board of a firm divided by the total number of directors of the firm.

Firms may react to the deteriorating economic conditions by adapting their board (e.g. Gilson 1990). They could, for example, appoint new busy directors so that the firm can take advantage of valuable reputation and experience to better cope with the crisis. In principle, this endogeneity

issue is controlled for by defining board structure variables at the end of 1928, before the start of the crisis and by keeping the sample period relatively short. To ascertain that board composition does not change significantly during the sample period, we looked at the evolution of board size and board busyness between 1928 and 1933. If a firm's performance would affect the number of directors in our sample, we should observe important changes in the number of directors over time. Therefore, we compared the names of directors in 1928 with the names in 1933 for 128 surviving firms[7]. Between 1928 and 1933, the mean change in the board size is 0.54 and the median change is zero. Furthermore, 60% of the boards did not change or changed only one director. The correlation between performance and the change in the board size of directors is very small (-0.050) and statistically insignificant. We also find that directorships per director decreases from 2.95 in 1928 to 2.73 in 1933, but this change is not statistically significant (p-value is 0.164). The percentage of busy directors decreases from 0.38 to 0.30. This decrease is statistically significant (p-value is 0.016) and is inconsistent with the idea that badly performing firms would attract busy directors or increase the number of external directorships to better cope with the crisis. There were no legal changes in corporate governance during our sample period.

*** Table 2 about here ***

Panel A of Table 2 shows descriptive statistics for the board measures. The average board size is 15.38. The average number of executive directors is 10.87 and the average number of supervising directors is 4.51. By way of comparison, Foreman-Peck & Hannah (2013) found an average board size in the UK in 1911 of 9.6, Frydman & Hilt (2010) found an average board size of 12.43 for listed U.S. railroad companies for the period 1905-1923 and Graham *et al*. (2011) found an average board size of 10.97 for U.S. firms during the Great Depression. Table 2 also shows that boards tend to be busy: the average number of directorships per director is 2.95. This

[7] Firms that drop out of the sample are not only firms that went bankrupt (cf. footnote 4), but also firms which merged or were taken over.

is in line with Fich & Shivdasani (2006) and Ferris *et al*. (2003) for contemporary US data, but the frequency of busy boards is high (38%) compared to other studies (e.g. Ferris *et al.* 2003). We find strong board connections between the firms in our sample and the banking industry: 87% of the firms in our sample have a bank director on their board and the median firm is affiliated with two banks. 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.

4.4 Firm characteristics

As potential determinants of MTB we consider the following firm characteristics: firm size, age, leverage, diversification, beta and family ownership (e.g. Yermack 1996; Fich & Shivdasani 2006; Coles *et al.* 2008). The *size* of the firm is measured by the natural logarithm of total assets at the beginning of the fiscal year. *Age* is the difference between the beginning of the year and the year the firm was first listed[8]. As a measure of the *debt ratio*, we use the book value of total debt divided by the book value of total assets measured at the beginning of the fiscal year. We account for *diversification* by including the number of business segments (e.g. Yermack 1996; Faleye *et al.* 2011; Francis *et al.* 2012). As risky firms generally have a high default risk and are therefore more vulnerable to external shocks (e.g. Baek *et al.* 2004), we include *beta*. We first compute beta by regressing a firm's monthly stock return in the pre-crisis period on the corresponding market return obtained from SCOB. We require at least 24 months of return prior to January 1929 to compute beta and we use a maximum of 63 months' worth of data. Since we compare firms across industries, we calculate *unlevered* beta using the Hamada equation (Hamada 1972).

Firm value might be affected by who owns and/or controls the firm. *Family ownership* may mitigate the classic agency problem between shareholders and managers and therefore positively

[8] If a firm had different stock types with a different period of listing, we use the age of the oldest stock.

affect firm value, especially in absence of strong monitoring (Yermack 1996; Fich & Shivdasani 2006). However, this effect may be offset by the costs of family control if hired professionals are better managers than family founders or their heirs (Burkart *et al.* 2003). Furthermore, family ownership could also create agency costs due to diverging interests between the family and other shareholders. External directors protecting the interests of the non-family shareholders could reduce these agency costs. Since there are no ownership data available for Belgian firms in the period considered in this study, we constructed a proxy for family ownership based on four characteristics (Molly *et al.* 2010). *Family firm* is a dummy equal to one if a firm has (i) at least two directors with the same name, (ii) at least two directors living at the same address, (iii) at least one director living at the address of the firm and/or (iv) at least one director that has the same name as the firm.

Descriptive statistics on the firm characteristics are reported in panel B of Table 2. The firms in our sample tend to be mature firms: they have on average been listed for 26 years (median is 20 years). The average (median) debt ratio is 0.37 (0.34), which is substantially higher than the debt ratios found by Deloof & Van Overfelt (2008) for capital intensive Belgian firms in 1905-1909. 58% of the firm-year observations are for firms categorized as a family firm. Figure 2 shows the mean and median values of the MTB in each of the four years. Not surprisingly, the effect of the crisis from 1928 to 1931 is very pronounced: the mean (median) MTB decreases from 5.17 (2.33) in 1928 to 1.64 (0.90) in 1931. Outside the US, Belgium experienced one of the most serious declines in economic activity (together with Austria, Germany, France, Poland and Czechoslovakia) (Aldcroft 1997).

*** Figure 2 about here ***

*** Table 3 about here ***

4.5 Industry effects

To control for industry effects, we include seven industry dummies, a dummy for firms with their main activities abroad and a dummy for firms with mainly colonial activities. The industry classification is taken from the SCOB database and is based on the most important industry in which the firm is active. The industries were double-checked with a description of the firm's activities in the Recueil Financier.

Table 3 describes board characteristics and connections between firms across industries (averages). While firms in all industries tend to have large boards, busy boards and bank directors on the board in all industries, these characteristics are especially pronounced for firms in electricity, colonial firms and firms operating abroad. For example, 55% of the directors of colonial firms are "busy", i.e. they hold three or more directorships. All these firms are affiliated with at least one bank, and the average number of affiliated banks is 6.61.

The table also shows the number of firms connected with at least one firm in the same industry and the percentage of external directorships held in firms in the same industry. These figures suggest many interlocking directorships within an industry. For example, 20 out of 23 firms in the mining industry are connected to other firms in the mining industry via interlocking directors. At the same time, firms are also strongly connected with firms in other industries. For example, of all the external directorships held by directors in the mining industry, only 33% is within the mining industry, other board seats are in other industries. Only four firms have no interlocking directors with other firms in our sample.

These results confirm the finding of Ghita (2011) of an intensive network of interlocking directorships between listed Belgian firms. This network was formed in the decade before WW I and lasted until the 1930s after which the network started to gradually decline. It has been argued that the formation of this network was driven by a business elite with close ties to the universal banks, which were primarily interested in protecting their entrenched interests (Ghita, 2011;

Rajan & Zingales, 2003). Moreover, interlocking directorships between and within industries reflected to a large extent cross-shareholdings of firms, which allowed these firms to spread their risks, to cooperate with competitors, and to get easier access to resources and markets (Vaes 1946). The magnitude of connections within industries may also have been driven by the creation of international cartels (Heyman 1928). According to van der Valk (1932), Belgian banks played an important role in the formation of cartels in e.g. the mining, metal and chemicals industries.[9]

The last two columns report for each industry riskiness as measured by the average beta and performance during the crisis which is measured by the percentage decline in the average MTB over the period 1929-1931. Colonial firms were very risky (beta = 1.210) and unsurprisingly suffered the most during the crisis: the average MTB of colonial firms declined by 81% from 1929 to 1931. All other industries also lost more than half of their value.

*** Table 4 about here ***

5 Results

5.1 Board busyness, board size and bankers on the board

First, we consider the relation between firm value and board busyness. Regression results are reported in Table 4. As a benchmark, in regression (1) we first look at the effect of the crisis on the natural log of the MTB without taking into account board characteristics. As expected, firm value significantly decreased in the crisis years 1929, 1930 and 1931. We also find a statistically significant and negative relation between firm value and *size* (e.g. Van Overfelt 2009). The statistically significant and positive coefficient of the *debt ratio* is consistent with the governance point of view of debt: firms relying more on external finance can be expected to be monitored more closely by debt holders, thereby increasing firm value (e.g. historical findings of Van Overfelt *et al*. (2009), Graham *et al*. (2011) and Foreman-Peck and Hannah (2013)). Our

[9] In the Recueil Financier, the 'Société anonyme Métallurgique de Prayon', a metallurgic firm from our sample, mentions restrictions of production because of international agreements ("entente international").

measures for diversification, risk and family ownership on the other hand are not significantly related to firm value.

Next, we include the board busyness measures *directorships per director* (regression (2)), *percentage of busy directors* (regression (3)) and *ln(no. of external directorships+1)* (regression (4)). Firm value is positively related to all three measures before the crisis. This relationship is statistically significant for *directorships per director* and *no. of external directorships.* It is also economically significant: one additional directorship per director is associated with a 16% increase in the MTB (=100*(exp(0.149)-1)). However, firm value associated with busy directors significantly decreased in the crisis years 1929, 1930 and 1931. This result holds for all three busyness measures. For example, one additional directorship per director is associated with a decrease in MTB of about 8% in 1929 compared to 1928.[10]

*** Table 5 about here ***

Table 5 reports results on the relation between firm value, board size and bank affiliation. Regression (5) suggests that firm value is positively related to board size before the crisis: the board size coefficient is positive and statistically significant. The relation between board size and firm value is also economically significant: a 10% increase in board size increases MTB with 4.5%. Again, this positive relationship significantly weakens in 1929. The coefficients for the interaction variables are also negative for 1930 and 1931, but they are not statistically significant. Since boards were composed of both executive and supervising directors, our results may be driven by either executive or supervising directors. When we differentiate between the *no. of executive directors* (regression (6)) and the *no. of supervising directors* (regression (7)), we find

[10] In the analyses reported in the paper we consider not only executive directors but also supervising directors. Supervisory directors could be employees or relatives of the firm's executive directors, and being a supervisory director was often seen as a preparation for becoming an executive director (Vaes 1929; Wauwermans 1933; Velghe 1934). Furthermore, both executive and supervising directors were obliged to deposit shares of the firm and were allowed to vote in the general meeting. On the other hand, the tasks of executive and supervising directors were quite different and executive directors mostly met without the supervising directors. In unreported regressions we therefore considered only executive directors. Overall, we find results which are very similar to the ones reported in table 4, suggesting that these results are mainly driven by the executive directors.

for executive directors a significantly positive effect before the crisis and a significant decline in each of the three crisis years. The number of supervising directors is not significantly related to firm value, indicating that it was the number of executive directors that mattered, not the number of supervising directors.

With respect to bank affiliation, we find a positive but statistically insignificant relation between pre-crisis firm value and bank affiliation as measured by *bank affiliated* (regression (8)) and the percentage of bank directors on the board (regression (10)). The positive relation between firm value before the crisis and the number of affiliated banks is statistically significant at the 10% level (regression (9)). It is also economically significant: affiliation with an additional bank is associated with a 4.7% increase in the MTB (=100*(exp(0.046)-1)). For all three measures, we find that the decline in firm value in 1929 was more pronounced for bank affiliated firms. The interactions between bank affiliation and the 1930 and 1931 dummies are also negative but are not statistically significant. These results indicate that the perceived costs of bank affiliation in Belgium increased during the first year of the Great Depression.[11]

*** Table 6 about here ***

To assess the relative importance of the different board characteristics, in Table 6 we include measures of board busyness, board size and the number of affiliated banks in the same regression. To avoid multicollinearity we consider one crisis dummy which equals one for each of the three crisis years, instead of individual year dummies. The relation between board busyness and firm value remains significant, both pre-crisis and during the crisis. We also find an overall positive relation between board size and firm value before the crisis, but no significant crisis effect. The

[11] A large number of firms in our sample were affiliated with the Société Générale de Belgique (58 firms) and/or the Banque de Bruxelles (52 firms). Both banks were hit hard by the crisis. Over the period 1929-1931, shareholders of the Société Générale and the Banque de Bruxelles suffered a loss of 70% and 77% respectively. By way of comparison, shareholders of the three other major listed banks (Banque Belge pour l'Etranger, Crédit Anversois and Algemeene Bankvereeniging) lost on average only 9% over the same period. In an unreported analysis we find that firms affiliated with the Société Générale were valued significantly higher than other firms before the crisis when the bank itself did very well, but they also experienced a larger drop in value in 1929. We find a similar pattern for Banque de Bruxelles, but it is not statistically significant.

effect of affiliated banks also becomes statistically insignificant. These results indicates that board busyness is the main driver of the negative board effects during the crisis.

*** Table 7 about here ***

So far we did not consider firm fixed effects which control for time invariant unobserved firm characteristics, because the board measures which are defined only once would drop out of the regressions. To investigate whether the crisis effects of board characteristics remain after controlling for omitted/unobserved characteristics such as firm culture, quality of the management and other governance mechanisms that do not change during our sample period, we present fixed effects regression results in table 7. Inevitably, all time invariant variables drop out of the regression. The results are consistent with our base findings. Board busyness (regression (14)), board size (regression (15)) and the number of affiliated banks (regression (16)) are associated with a significant lower firm value in 1929, and board busyness is also associated with a lower firm value in 1930 and 1931. Our base results are also confirmed when the dependent variable is the *change* in MTB, instead of ln(MTB), in regressions (17), (18) and (19). Taking the change in MTB reduces our sample to 419 observations because we lose the base year 1928. The results confirm that board busyness, board size and affiliated banks were associated with a statistically and economically decline in firm value in 1929. They also suggest that firm value somewhat rebounds in 1930 for firms with more affiliated banks, but we do not find any significant compensating increase (or further decrease) in firm value in 1930 and 1931 for board busyness and board size. So again the base results are confirmed.

5.2 Board characteristics and firm risk

It cannot be ruled out that unobserved factors correlated with our board measures affected firm performance during the crisis. Specifically, board busyness, board size and bankers on the board might be related to firm risk. The resource dependence theory proposes that corporate boards are a mechanism for reducing environmental uncertainty (Pfeffer 1972). Hillman and

Dalziel (2003) argue that boards may not only provide resources, but may also "provide channels of communication and conduits of information between the firm and external organizations" (p. 387). Therefore, the higher a firm's environmental uncertainty, the more a firm may try to connect with the external environment by having a large board with busy directors and bank directors. The negative crisis effects of our board variables may therefore be driven by firm risk: more risky firms, which suffer more when there is a crisis, enlarge their network by having a large board with busy directors and bank directors. Consistent with this argument, the beta coefficient of the firms in our sample is positively related to our board busyness measures, and to a lesser extent also to the board size and bank affiliation measures.[12]

*** Table 8 about here ***

While beta generally tends to be positively related to stock returns, one would expect firms with a high beta to perform poorly during a crisis period, when the overall market performs poorly (e.g. Baek *et al.* 2004). To take into account any changing effect of beta during the crisis, we add interactions between beta and the three crisis years in regressions of which the results are reported in Table 8. We find a significant positive relation between beta and firm value before the crisis, but this relation becomes significantly smaller in each of the three crisis years, confirming that a higher systematic risk was associated with a decline in firm value during the crisis. Compared to the base regressions in section 5.1, the relation between firm value and board busyness (regression (20)), board size (regression (21)) and the number of affiliated banks (regression (22)) become smaller, but we still find a significant decline in 1929 for all three board measures. This indicates that the effect of board characteristics we find is not only driven by underlying differences in systematic risk.

[12] Pearson correlations between beta and directorships per director, percentage of busy directors and ln(no. of external directorships + 1) are 0.42, 0.53 and 0.43 respectively. Correlation with board size is 0.22; correlations with bank affiliated, no. of affiliated banks and percentage of bank directors are 0.13, 0.20 and 0.16 respectively.

5.3 Additional analyses and limitations

Additionally, we take into account the possibility that the effect of board characteristics on firm value might reflect differences between family and non-family firms. Lins *et al*. (2013) argue that the nonfamily shareholders of family firms were more negatively affected by the 2008-2009 crisis than those of nonfamily firms, because family firms were biased toward survival-oriented actions that helped preserve the family's control. The value of family ownership might therefore decrease during a crisis. However, when we estimate unreported[13] regressions which include the interaction between family ownership and year dummies 1929, 1930 and 1931, these interaction variables are never significant, and the results for the board variables are not affected.

We also investigate whether board characteristics are related to dividend policy. In an environment with weak legal investor protection, dividend payments may protect shareholders by reducing the free cash flow that is available to the managers, making it more difficult to expropriate the shareholders (e.g. Deloof *et al.* 2010; Campbell & Turner 2011). Dividend payments could be a complement for a strong board, but they could also be substitute for weak control by the board. This could limit the role of the board of directors as a governance tool. However, in unreported regressions we find little or no evidence of a relation between board characteristics and dividend policy, before or during the crisis.[14]

It cannot be ruled out that the effects of board characteristics we find are driven by underlying firm characteristics which are correlated with board characteristics. Consistent with resource dependence theory we find that high risk firms which suffered more during the crisis had a large director network in order to cope with environmental uncertainties. However, our results suggest that firm risk can only partially explain the effects of board characteristics during the crisis. The

[13] The unreported results are available from the authors upon request.

[14] We estimated regressions of the determinants of dividend policy which we include board characteristics, using the same explanatory variables as in the regression models reported in the paper. Dividend policy is measured by a dividend payer yes/no dummy and the dividend yield. All board effects are insignificant, except for board size, which is negatively related to the dividend yield before the crisis. This effect is significantly reduced in 1929.

crisis effects of large and busy boards also do not seem to be driven by bank control or family ownership. Furthermore, while the Belgian law on the board of directors changed only after WWII, already in 1936 there was a law proposal to change the regulation of the board of directors, which included e.g. the requirement to have representatives of minority shareholders and independent accounting specialists in the supervisory board. The timing suggests that contemporaries saw substantial problems with how these boards functioned during the crisis.

Another limitation of this study is the relatively short time period considered (1928-1931), which includes only one pre-crisis year (1928). It cannot be ruled out that the effect of board characteristics on firm value was actually different in 1928 as compared to earlier pre-crisis years. The available data do not allow us to include years before 1928. However, the stock value evolution in 1928 was a continuation of a persistent increase in stock values on the Brussels Stock Exchange since 1926 (cf. Figure 1) and the networks of interlocking directorships were quite stable in this period. So it seems unlikely that including additional pre-crisis years would affect our findings.

6 Conclusion

This study investigates the relation between corporate board structure and the value of Belgian firms in the period 1928-1931. Boards were likely to play an important role in Belgium during this period, when there were high information asymmetries between firms and investors, investors were weakly protected, and interlocking directorships were used to limit competition and protect entrenched interests. We find that firms had large, busy boards and were strongly connected with other firms and with banks. While board busyness, board size and bankers on the board were positively related to firm value before the crisis, firms with busy and large boards and bankers on their board were more negatively affected by the crisis. This negative effect, which is driven by board busyness, raises doubts about the value of connected directors during a crisis. It is inconsistent with the argument that connected directors provide valuable expertise and

facilitate financial relief in turbulent times. On the contrary, our results suggest that such directors may actually harm their firm when swift action is needed to adapt to a rapidly changing economic environment.

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Table 1
Variables definitions

Company value	
Ln(MTB)	Natural log of the ratio of market value to book value of total assets
Crisis effect	
1929, 1930, 1931	Dummy variables equal to one for the crisis years 1929, 1930 and 1931, and zero otherwise
Board measures	
Directorships per director	Total number of directorships held across all the directors of a board divided by total number of directors
Percentage of busy directors	Percentage of directors who hold three or more directorships
Ln(no. of external directorships+1)	Natural log of (the total number of external directorships held by all the directors of the board plus one)
Board size	Total number of executive and supervising directors
Bank affiliated	Dummy variable equal to one if the firm has at least one bank director on its board, and zero otherwise
No. of affiliated banks	Number of banks which have at least one director on a firm's board
Percentage of bank directors	Percentage of bank directors on the board of a firm
Firm characteristics	
Firm size	Natural log of total assets at the beginning of the fiscal year
Age	Difference between the beginning of the year and the year the firm was first listed
Debt ratio	Book value of total debt divided by book value of total assets at the beginning of the fiscal year
Diversification	Number of industries in which the firm is active
Beta	Regression coefficient obtained by regressing a firm's monthly stock return in the pre-crisis period (before 1929) on the corresponding market return, which is unlevered using the Hamada equation (Hamada 1972).
Family firm	Dummy equal to one if a firm has (i) at least two directors with the same name,(ii) at least two directors living at the same address, (iii) at least one director living at the address of the firm and/or (iv) at least one director that has the same name as the firm, and zero otherwise

Table 2
Descriptive statistics (period 1928-1931, 150 firms and 574 observations)

	Mean	Median	St. Dev.	25th percentile	75th percentile
Panel A: Board characteristics in 1928 (150 observations)					
Board size	15.38	14.00	6.35	11.00	19.00
No. of executive directors	10.87	10.00	5.20	7.00	14.00
No. of supervising directors	4.51	4.00	1.82	3.00	5.00
Directorships per director	2.95	2.84	1.41	1.70	4.00
Percentage of busy directors	0.38	0.38	0.24	0.18	0.56
No. of external directorships	31.95	27.00	27.68	8.00	49.00
Bank affiliated	0.87				
No. of affiliated banks	4.70	4.00	4.19	2.00	7.00
Percentage of bank directors	0.22	0.20	0.15	0.09	0.33
Panel B: Firm characteristics in 1928-1931 (574 observations)					
MTB	3.24	1.43	12.90	0.92	2.54
Size (in millions of Belgian franks)	200	100	310	53	200
Age	25.87	20.00	20.54	9	36
Debt ratio	0.37	0.34	0.19	0.23	0.48
Diversification[a]	1.88	2.00	1.04	1.00	3.00
Beta[a]	0.62	0.56	0.37	0.34	0.80
Family firm[a]	0.58				

[a] Based on 150 observations

Table 3

Board characteristics and firm connections across industries (mean figures)

Industry	No of firms	Board size	Directorships per director	% busy directors	No. of external directorships	Bank affiliated	No. of affiliated banks	% external directorships within industry	Connected firms within industry	Beta	ΔMTB crisis
Mining	23	13.70	2.97	30%	27.74	0.91	4.13	33%	20	0.304	-52%
Metal	17	14.95	2.74	33%	26.94	0.88	5.71	18%	15	0.838	-60%
Electricity	14	20.29	3.67	57%	54.64	1.00	6.14	27%	14	1.101	-66%
Stone	9	10.78	2.03	20%	12.56	0.78	3.22	19%	4	0.291	-55%
Tram/railways	9	17.78	2.98	43%	34.22	0.78	3.44	14%	8	1.100	-59%
Chemicals	8	14.13	2.15	25%	17.63	0.88	4.50	6%	4	1.119	-71%
Textile	5	10.80	1.48	16%	5.80	0.60	5.00	23%	3	0.517	-51%
Foreign	32	15.94	3.00	40%	34.88	0.88	4.41	36%	28	0.647	-68%
Colonial	23	16.39	3.79	55%	45.61	1.00	6.61	49%	21	1.210	-81%
Other (*)	10	13.82	2.22	24%	17.82	0.55	2.09	39%	0	0.791	-54%

(*) Other industries include: automobile industry, catering, construction, food industry, other manufacturing, other utilities, shipping, weapon industry and wholesale

Table 4
Firm value and busy boards

	(1)	(2)	(3)	(4)
Board busyness measure:		Directorships per director	Percentage of busy directors	ln(no. of external directorships+1)
1929	-0.195***	0.056	-0.009	0.153**
	(0.0000)	(0.3480)	(0.8521)	(0.0228)
1930	-0.524***	-0.322***	-0.345***	-0.205*
	(0.0000)	(0.0006)	(0.0000)	(0.0592)
1931	-0.721***	-0.512***	-0.534***	-0.435***
	(0.0000)	(0.0000)	(0.0000)	(0.0001)
Board busyness		0.149***	0.436	0.177***
		(0.0025)	(0.1976)	(0.0031)
Board busyness *1929		-0.085***	-0.491***	-0.115***
		(0.0000)	(0.0000)	(0.0000)
Board busyness *1930		-0.068**	-0.475***	-0.105***
		(0.0154)	(0.0046)	(0.0023)
Board busyness *1931		-0.071**	-0.503***	-0.094***
		(0.0160)	(0.0049)	(0.0094)
ln (Size)	-0.435***	-0.437***	-0.429***	-0.443***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
ln (Age)	0.047	0.054	0.053	0.065
	(0.3655)	(0.3110)	(0.3545)	(0.2469)
Debt ratio	0.959***	0.902***	1.015***	0.939***
	(0.0000)	(0.0001)	(0.0000)	(0.0001)
Diversification	-0.001	0.017	0.001	0.010
	(0.9857)	(0.7352)	(0.9898)	(0.8370)
Beta	0.172	0.074	0.194	0.105
	(0.3404)	(0.6852)	(0.3381)	(0.5891)
Family firm	-0.080	-0.005	-0.070	-0.018
	(0.4332)	(0.9620)	(0.5419)	(0.8675)
Industry dummies	Yes	Yes	Yes	Yes
Observations	574	574	574	574
R^2	0.50	0.52	0.50	0.51

Notes: this table displays the regression coefficients and robust p-values for random effects regressions, with clustered standard errors at the firm level. The dependent variable is the natural logarithm of the MTB. *1929*, *1930* and *1931* are year dummies; all other variables are defined as before. Industry dummies are included. Intercept is included but not reported. Here ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 5
Firm value, board size and bank affiliation

	(5)	(6)	(7)	(8)	(9)	(10)
		Board size			Bank affliation	
Board measure:	Ln(Board size)	ln(No. of executive directors)	ln(No. of supervising directors)	Bank affiliated	No. of affiliated banks	Percentage of bank directors
1929	0.313*	0.140	-0.052	-0.082	-0.114***	-0.097**
	(0.0508)	(0.2525)	(0.5862)	(0.2617)	(0.0084)	(0.0395)
1930	-0.107	-0.198	-0.504***	-0.470***	-0.475***	-0.453***
	(0.6970)	(0.2813)	(0.0020)	(0.0016)	(0.0000)	(0.0000)
1931	-0.319	-0.407**	-0.696***	-0.681***	-0.703***	-0.662***
	(0.2149)	(0.0183)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Board measure	0.464***	0.347***	0.254*	0.035	0.046**	0.462
	(0.0012)	(0.0046)	(0.0651)	(0.8164)	(0.0119)	(0.2240)
Board measure * 1929	-0.190***	-0.147***	-0.096	-0.131*	-0.016**	-0.446**
	(0.0015)	(0.0050)	(0.1239)	(0.0978)	(0.0189)	(0.0176)
Board measure * 1930	-0.154	-0.141*	-0.008	-0.064	-0.008	-0.320
	(0.1263)	(0.0719)	(0.9406)	(0.6789)	(0.4004)	(0.2659)
Board measure * 1931	-0.148	-0.136*	-0.011	-0.048	-0.002	-0.271
	(0.1253)	(0.0693)	(0.9103)	(0.7248)	(0.8894)	(0.2988)
ln (Size)	-0.463***	-0.452***	-0.457***	-0.432***	-0.468***	-0.438***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
ln (Age)	0.075	0.076	0.040	0.047	0.049	0.049
	(0.1714)	(0.1734)	(0.4451)	(0.3603)	(0.3472)	(0.3509)
Debt ratio	0.977***	1.006***	0.923***	0.960***	0.928***	0.951***
	(0.0000)	(0.0000)	(0.0001)	(0.0001)	(0.0000)	(0.0000)
Diversification	-0.011	-0.011	-0.002	-0.001	-0.002	-0.002
	(0.8296)	(0.8249)	(0.9739)	(0.9814)	(0.9588)	(0.9677)
Beta	0.150	0.166	0.128	0.177	0.156	0.179
	(0.4011)	(0.3501)	(0.4896)	(0.3335)	(0.3846)	(0.3221)
Family firm	-0.065	-0.065	-0.081	-0.082	-0.034	-0.069
	(0.5104)	(0.5090)	(0.4290)	(0.4328)	(0.7294)	(0.5055)
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	574	574	574	574	574	574
R^2	0.51	0.51	0.50	0.50	0.52	0.50

Notes: this table displays the regression coefficients and robust p-values for random effects regressions, with clustered standard errors at the firm level. The dependent variable is the natural logarithm of the MTB. All variables are defined as before. Intercept is included but not reported. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 6
The combined effect of board busyness, board size and bank affiliation on firm value

	(11)	(12)	(13)
Board busyness measure:	Directorships per director	Directorships per director	Directorships per director
Board size measure:	Ln(board size)	Ln(board size)	Ln(board size)
Bank affiliation measure:	Bank affiliated	No. of affiliated banks	Percentage of bank directors
Crisis	0.038	0.094	0.039
	(0.8540)	(0.6451)	(0.8456)
Board busyness	0.160***	0.121**	0.151***
	(0.0020)	(0.0181)	(0.0028)
Board busyness * crisis	-0.073***	-0.072***	-0.068***
	(0.0006)	(0.0006)	(0.0019)
Board size	0.592***	0.395**	0.539***
	(0.0003)	(0.0216)	(0.0003)
Board size * crisis	-0.115	-0.118	-0.094
	(0.1365)	(0.1540)	(0.1993)
Bank affiliation	-0.261	0.027	-0.157
	(0.1045)	(0.1827)	(0.6698)
Bank affiliation * crisis	0.089	0.006	0.018
	(0.4589)	(0.5617)	(0.9309)
ln (Size)	-0.579***	-0.593***	-0.580***
	(0.0000)	(0.0000)	(0.0000)
ln (Age)	0.054	0.042	0.050
	(0.2689)	(0.3833)	(0.3109)
Debt ratio	1.110***	1.145***	1.098***
	(0.0000)	(0.0000)	(0.0000)
Diversification	0.016	0.015	0.018
	(0.7642)	(0.7817)	(0.7297)
Beta	0.053	0.089	0.053
	(0.7683)	(0.6287)	(0.7667)
Family firm	0.013	0.027	0.015
	(0.8996)	(0.8036)	(0.8938)
Industry dummies	Yes	Yes	Yes
Observations	574	574	574
R^2	0.48	0.48	0.47

Notes: this table displays the regression coefficients and robust p-values for random effects regressions, with clustered standard errors at the firm level. The dependent variable is the natural logarithm of the MTB. All variables are defined as before. Intercept is included but not reported. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 7
Firm value and board characteristics: alternative models

	(14)	(15)	(16)	(17)	(18)	(19)
Alternative model:	Fixed effects			Dependent variable = change in MTB		
Board measure:	Directorships per director	Ln(Board size)	No. of affiliated banks	Directorships per director	Ln(Board size)	No. of affiliated banks
1929	0.051	0.150	-0.115*	-	-	-
	(0.5102)	(0.4571)	(0.0544)			
1930	-0.508***	-0.481	-0.641***	-0.345***	-0.514***	-0.195***
	(0.0001)	(0.1797)	(0.0000)	(0.0000)	(0.0055)	(0.0000)
1931	-0.806***	-0.723*	-0.979***	-0.180**	-0.395*	-0.075
	(0.0000)	(0.0527)	(0.0000)	(0.0374)	(0.0897)	(0.1942)
Board measure * 1929	-0.096***	-0.144*	-0.023***	-0.065***	-0.123**	-0.013***
	(0.0000)	(0.0501)	(0.0031)	(0.0000)	(0.0182)	(0.0024)
Board measure * 1930	-0.063*	-0.080	-0.009	0.022	0.038	0.009**
	(0.0568)	(0.5354)	(0.3813)	(0.1648)	(0.4918)	(0.0198)
Board measure * 1931	-0.071**	-0.110	-0.003	0.003	0.033	0.007
	(0.0404)	(0.4154)	(0.8040)	(0.8746)	(0.5647)	(0.1458)
Control variables	Ln(size), ln(age), debt ratio			Ln(size), ln(age), debt ratio, diversitfication, beta, family firm, industry dummies		
Observations	574	574	574	419	419	419
R^2	0.42	0.42	0.41	0.17	0.14	0.15

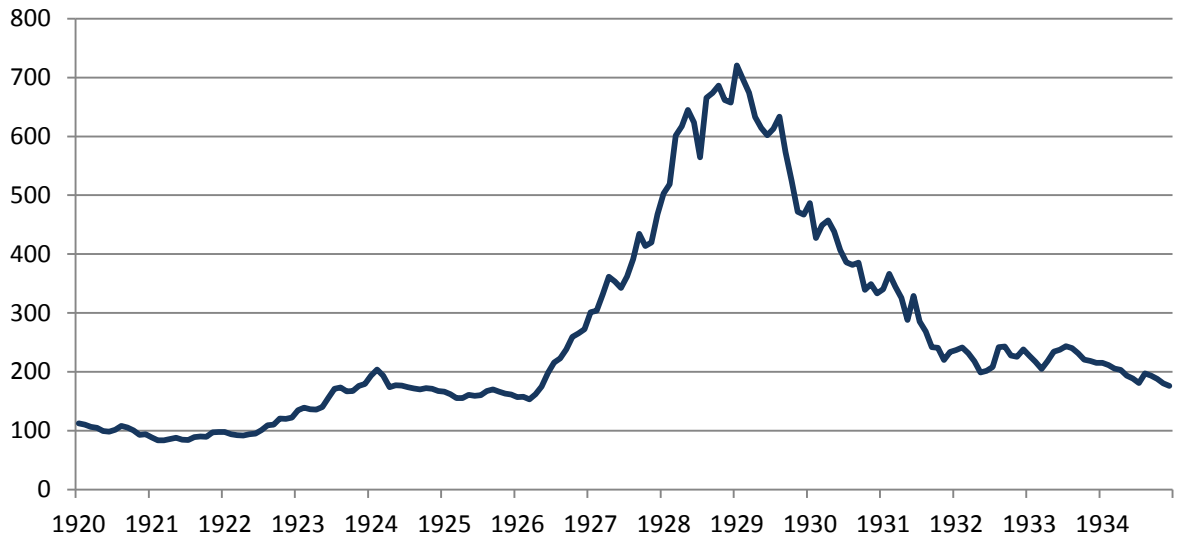
Notes: this table displays the regression coefficients and robust p-values for fixed effects regressions (models 14, 15, 16) and random effect regression (models 17, 18, 19) with clustered standard errors at the firm level. R^2 for the fixed effects regressions is *overall* R^2. The dependent variable is the natural logarithm of the MTB in regressions 14, 15 and 16 and the change in MTB in regressions 17, 18 and 19. All variables are defined as before. Intercept is included but not reported. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 8
Firm value, board characteristics and firm risk during the crisis

	(20)	(21)	(22)
	Directorships per director	ln (Board size)	No. of affiliated banks
1929	0.174***	0.330**	0.117**
	(0.0018)	(0.0265)	(0.0156)
1930	-0.084	-0.043	-0.084
	(0.2875)	(0.8638)	(0.2319)
1931	-0.278***	-0.228	-0.326***
	(0.0008)	(0.3358)	(0.0000)
Beta	0.629***	0.709***	0.724***
	(0.0049)	(0.0006)	(0.0006)
Beta * 1929	-0.372***	-0.417***	-0.421***
	(0.0000)	(0.0000)	(0.0000)
Beta * 1930	-0.702***	-0.711***	-0.713***
	(0.0000)	(0.0000)	(0.0000)
Beta * 1931	-0.656***	-0.676***	-0.682***
	(0.0000)	(0.0000)	(0.0000)
Board measure	0.098*	0.339**	0.039**
	(0.0594)	(0.0216)	(0.0327)
Board measure * 1929	-0.052***	-0.104*	-0.013**
	(0.0035)	(0.0763)	(0.0375)
Board measure * 1930	-0.008	-0.020	-0.002
	(0.7531)	(0.8371)	(0.8261)
Board measure * 1931	-0.020	-0.034	0.003
	(0.4776)	(0.7044)	(0.7956)
ln (Size)	-0.411***	-0.432***	-0.434***
	(0.0000)	(0.0000)	(0.0000)
ln (Age)	0.085*	0.097*	0.083*
	(0.0802)	(0.0616)	(0.0939)
Debt ratio	1.094***	1.170***	1.147***
	(0.0000)	(0.0000)	(0.0000)
Diversification	0.015	-0.008	-0.003
	(0.7693)	(0.8666)	(0.9463)
Family firm	-0.016	-0.065	-0.034
	(0.8833)	(0.5087)	(0.7329)
Industry dummies	Yes	Yes	Yes
Observations	574	574	574
R^2	0.54	0.53	0.54

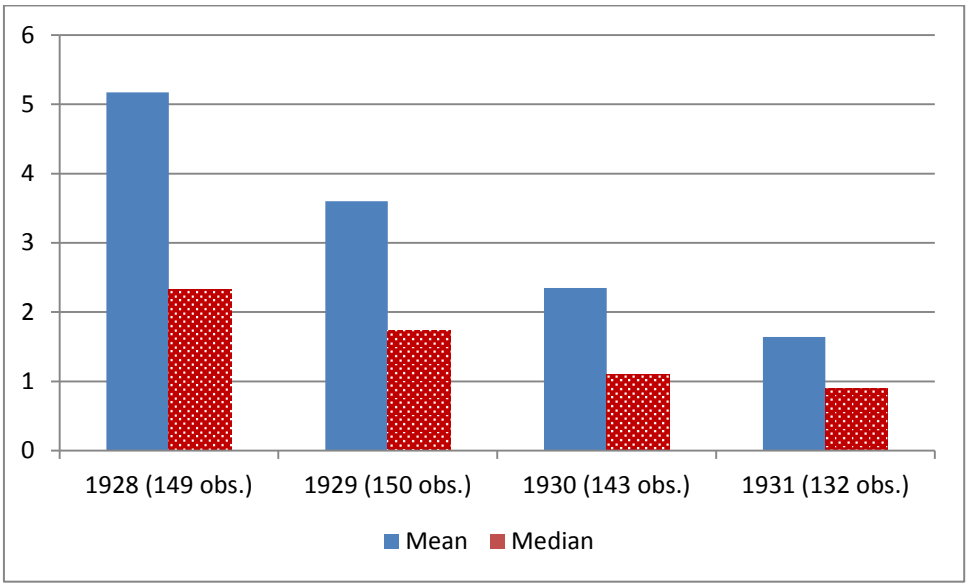
Notes: this table displays the regression coefficients and robust p-values for random effects regressions, with clustered standard errors at the firm level. The dependent variable is the natural logarithm of the MTB. All variables are defined as before. Intercept is included but not reported. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Figure 1
Cumulative stock return of Belgian firms on the Brussels Stock Exchange with December 1919 as basis (index value of 100).



Source: Own calculations based on SCOB database

Figure 2
Market-to-book ratio 1928-1931



Source: Own calculations based on SCOB database and data from the Recueil Financier