



**Laboratoire
de Recherche
en Gestion
& Economie**

Working Paper

Working Paper

2010-04

**Small business groups enhance performance and
promote stability, not expropriation.
Evidence from French SMEs**

Anaïs Hamelin

Avril 2010

Université de Strasbourg
Pôle Européen de Gestion et d'Economie
61 avenue de la Forêt Noire
67085 Strasbourg Cedex
<http://ifs.u-strasbg.fr/large>

IFS
Institut de Finance
de Strasbourg

Small business groups enhance performance and promote stability, not expropriation.

Evidence from French SMEs.

*Anaïs HAMELIN**

LaRGE, Institut d'études Politiques, Université de Strasbourg

CEB, Solvay Brussels School of Economics and Management, Université Libre de Bruxelles

Abstract:

This paper investigates the influence of a firm's distance from control on its performance, using a unique firm level data set on small business ownership, as well as balance sheet information. This study fills a gap in the empirical governance literature by investigating whether or not there is an expropriation of minority shareholders in small business groups. Contrary to what is usually observed for large business groups, results show a positive relationship between the separation of control from ownership and firm performance. Results also underline that tunneling is used to promote controlling shareholders' profit stability rather than profit maximization in small business groups.

Key words: Ownership, Control, Tunneling, Small Business, Performance.

JEL Codes: G32, G34.

* 47, Avenue de la Forêt-Noire, 67082 Strasbourg Cedex. Anais.Hamelin@unistra.fr, Tel : 0033388417737.
The author thanks Hans Degryse, Michel Dietsch, Adrian Pop, and Ariane Szafarz for helpful comments.

1 Introduction

Recent evidence points out that small business groups (SBG) are burgeoning in developed countries. A SBG is an ownership structure where a dominant shareholder holds several firms through a control chain, and its size is that of a small and medium enterprise (SME)¹. According to the Banque de France, French firms affiliated to SBGs have doubled over the last decade, and represent one third of the SMEs in the country (e.g., Cayssials et al., 2007; and Nahmias, 2007). Structuring control using a SBG, rather than develop the initial business in a standalone firm is a specific growth strategy. This paper explores entrepreneurs' motivations to adopt this strategy. Corporate governance theory suggests that business groups (BG) are a device used to increase control without commensurate cash flows. This is done by introducing a separation between control rights and cash flow rights. Indeed, concentrated control allows the dominant shareholder to act in its own interest, raising concern for the expropriation of minority shareholders (e.g., Shleifer and Vishny, 1997). Under the expropriation hypothesis, excess control of dominant shareholders has a negative influence on firms' value. Empirical evidence strongly supports this hypothesis for large BGs (see Table 1). However, grouping SMEs might also be a growth strategy limiting the wealth exposure to the business risk of dominant shareholders. Indeed, indirect control of several firms, rather than control of a standalone firm creates a "fractioning of liability": the dominant shareholder's wealth exposure to the business risk is divided between group firms. This paper investigates whether the rationale to grow the business by building a SBG is to increase dominant shareholders private benefits (expropriation hypothesis) or to limit their wealth exposure to the business risk (immunization hypothesis).

At first glance, agency issues should be exacerbated in SBGs given the concentrated governance structure of small businesses. Thus, like in large family BGs, the concentration of

¹ SMEs are defined following the recommendation of the EU Commission (6 May 2003) regarding the definition of a SME: a SME is a firm which annual turnover is inferior to 50 million Euros.

control may lead to the expropriation of minority shareholders. More specifically, in owner-manager firms, control concentration does not improve the efficiency of monitoring, whereas the entrenchment problem persists (e.g. Bennedsen and Nielsen, 2010). Despite the concentration of control, SMEs' external investors specificities may lower business owners' propensity to extract private benefits at the expense of minority shareholders. Given SMEs' informational opacity and the illiquidity of their shares, there are two types of specific external investors in SMEs. Connected minority shareholders, such as family members, are the main source of a SME's external equity financing. In order to broaden financial resources, social connections based on trust, are thus crucial for SMEs (e.g., Vos et al., 2007). The presence of connected minority shareholders therefore diminishes the incentives to extract private benefits at their expense. Small business owners do not wish to be deprived from this source of external financing in the future. In addition, SMEs might also be financed by informed minority shareholders, such as venture capitalists. Their monitoring capacities limit the dominant shareholder's ability to extract private benefits. It is therefore possible to cast doubt on the relevance of the hypothesis according to which grouping small businesses allows to increase the private benefits of control.

Furthermore, small business owners' wealth under diversification creates an incentive to reduce their wealth exposure to the business risk. Since an important proportion of entrepreneurs' wealth is vested into the business, their risk exposure is higher than that of shareholders investing their wealth in public securities (e.g., Moskowitz and Vissing-Jorgensen, 2002). This situation creates distortions in their risk incentives: they are sensitive to the business idiosyncratic risk. Small businesses' owners might thus favor strategies reducing their wealth exposure to the firm's business risk. Choosing to grow via a SBG allows the dominant shareholder to immunize part of his wealth. Indeed, the fact that BGs' firms have a limited liability between them reduces entrepreneurs' losses in case of a group's

firm default. SBGs' owners only loose control on the assets of the defaulting firm, maintaining control over the assets of the other group's firms, which allow pursuing production. Moreover, internal transfers between group's firms allow the controlling shareholder to affect group firms' risk patterns. The dominant shareholder can use internal transfers in order to smooth the revenue of firms where its stakes are higher. The under diversification of small business owners might therefore explains why they opt to growth their businesses using a SBG. On the one hand, the "fractioning of liability", permits to limit the entrepreneur's losses in case of a group's firm default. On the other hand, it enables dominant shareholder to transfer risk toward firms where its stakes are lower, which would imply a shift from value expropriation toward risk expropriation of minority shareholders.

This study explores empirically two hypotheses: the expropriation and the immunization hypothesis. It uses a unique data set which exhaustively lists ownership links between French corporations. More than 15 000 SBGs are identified according to the criterion of majority control: a BG corresponds to a chain of majority control relationships. The database contains information on the direct and indirect cash-flow rights of each firm in other firms, which allow computing the cash flow rights of controlling firms and traditional variables of excess control. The database also provides information on firms' position in the control chain. This permits to distinguish controlling from controlled firms, and assess the relative position of the firm according to its position in the control chain and the number of levels in the control chain. Therefore, this paper broaden the traditional approach, which focus on controlling shareholders 'excess control, by exploring the influence of firms' distance from control on their performance. Complete accounting information is available for half of these SBGs for the period between 1999 and 2007.

This paper explores the motivations to growth using a SBG rather than a standalone firm, by studying the link between SMEs' governance and performance. This study first assesses

the accuracy of the expropriation hypothesis in SBGs. Traditionally studies on this issue observe the influence of dominant shareholders' excess control on firms' performance. This study performs this test, but also uses the firm's position in the control chain to observe how firms' distance from control influence their performance. If the expropriation hypothesis is verified, firms that are more distant from control position should underperform. Next, the study investigates related party transactions within SBGs, by assessing the influence of the firm's distance from control on its performance sensitivity to industry and group shocks. This permits to gauge whether wealth is transferred from firms where dominant shareholders stakes are low toward firms where their stakes are high, which would provide support to the expropriation hypothesis. However, if internal transfers favor the lowering of the firm's sensitivity to shocks when the firm is closer from control position, this is interpreted as support for the immunization hypothesis. Furthermore, the influence of the business environment on value transfers between group firms is captured. This is done in order to test whether resources transfer out of controlled firms toward controlling firms is related to the will to maintain artificially controlling firms' performance. To explore this issue Bertrand et al. (2002) empirical setting is extended in order to estimate the global effect of a firm's distance from control on its performance, controlling for the type of shock. The use of internal transfers to prevent controlling firms' performance from unfavorable shocks is interpreted as support for both the immunization and expropriation hypotheses. Indeed, such transfers reduce dominant shareholders wealth exposure to the business risk, by transferring it to minority shareholders.

Results confirm that SBGs are primarily built for dominant shareholders' wealth immunization rather than for minority shareholders' expropriation objectives. The data shows a positive relationship between distance from control and firms' performances. Furthermore, related party transactions are influenced by the firm's business environment and group

performance. Intra group transfers foster controlled firms' development when both are favorable; however, when shocks are unfavorable, related party transactions preserve controlling firms' performance. Results support the idea that grouping small businesses favors the wealth stability of dominant shareholders: the sensitivity to exogenous shocks of controlling firms is 68% lower than the one of controlled firms.

This paper corroborates that governance issues are different in SBGs compared to large BGs. The expropriation hypothesis, according to which structuring control in a BG is a growth strategy permitting to increase capital while conserving the private benefits of control, is not verified in SBGs. Indeed, results show that SBG affiliation enhances controlled firms performance. One explanation to this observation relates to the specificity of small businesses minority shareholder that limits the possibilities for SMEs' owners to extract private benefits. Thus, in the case of small businesses, specific governance mechanisms related to close connections or/and higher monitoring abilities might offset the governance inefficiencies related to informational opacity and concentrated control. The immunization hypothesis according to which structuring control in a BG is a growth strategy allowing controlling shareholders to reduce their wealth exposure to the business risk is verified. Moreover, results point out that when the business environment is unfavorable resources are transferred out of controlled firms in order to support controlling firms' performance. Thus, the will to immunize controlling shareholders' wealth does in certain conditions engender an expropriation of minority shareholders. Overall, results point out that dominant shareholders trade performance against reduced risk with minority shareholders in SBGs. If SBGs minority shareholders have the ability to diversify risk then building a SBG seems an efficient growth strategy. In this case the inefficiencies related to private benefits extraction are limited and the benefits of a reduction of business owners' risk exposure led to higher growth through a diminution of their cost of capital and thus an increase of their investment.

The paper is structured as follows: Section 2 summarizes the literature and develops the hypothesis. Section 3 presents the data and the methodology. Section 4 discusses the results. Section 5 concludes.

2 Theory and hypothesis

The hypothesis of expropriation of minority shareholders in business groups have been empirically studied following two approaches. A majority of papers focus on the relationship between excess control and firm performance, while other papers investigate the direction of related party transactions between controlling and controlled firms.

2.1 Excess control and firms' performance

In business groups, a firm's performance is driven by two opposite incentive mechanisms: a positive effect resulting from the dominant shareholder's cash flow rights and a negative effect related to its control rights. The negative effect is related to the fact that "large shareholders may represent their own interest, which need not coincide with the interests of other investors" (e.g., Shleifer and Vishny, 1997, p758). Securing control rights prevents dominant shareholders from losing control over the firm, which may lead to entrenched behavior. In addition, business owners might use their control rights in order to extract private benefits at the expense of minority shareholders. Hence, a firm's performance is influenced by the controlling shareholder's separation between control rights and cash flow rights within the firm. In large business groups, mainly in emerging countries, empirical results are consistent with the expropriation of minority shareholders hypothesis. Results show that excess control is detrimental for firm value and that resources are diverted from controlled firms toward controlling firms (see Table 1). Even so, the evidence on the agency cost of business groups in developed countries remains scarce. And, there is to our knowledge, no study of this topic for SBGS.

[Insert table 1 here]

Even if a majority of empirical studies verify the existence of a negative relationship between the excess control of dominant shareholders and the firm's value, this idea can be challenged. In fact, in the case of new firms, Almeida and Wolfenzon (2006) argue that controlling shareholders create dynamically new firms when the original firm starts to decline. Such a strategy would drive controlling firms' underperformance relative to controlled firms. In the case of SMEs, minority shareholders' specificity could prevent dominant shareholders from extracting private benefits. The presence of connected minority shareholders diminishes the owner's incentives to extract private benefits. While the presence of informed minority shareholders, with monitoring abilities, such as venture capitalists, limits a dominant shareholder's ability to extract private benefits. Therefore, the specificity of SMEs minority shareholders make it difficult to extract private benefits at their expense, casting doubts on the validity of minority shareholders expropriation in SBGs.

2.2 *Related party transactions: propping or tunneling?*

In business groups, it is possible to transfer assets and benefits through related party transactions between firms. To observe the direction of related party transactions Bertrand et al. (2002) assess firm performance reaction to shocks to its industry and to other group firms' performance. The literature focuses on the direction of related party transactions. Tunneling² describes assets and benefits transfers from firms where the dominant shareholder's stakes are low, to firms where its stakes are high (e.g., Johnson et al, 2000). Whereas, propping describes a transfer from higher-level firms to lower-level firms in the control chain, which is intended to bail out the receiving firm from bankruptcy (e.g., Friedman et al. 2003). Bertrand

² Johnson *et al.* (2000), distinguish between two types of tunneling. First, a controlling shareholder might transfer resources in his own interest through internal transfers: self dealing transactions. Secondly, controlling shareholder can increase his control without transferring any assets through dilutive share issues; this paper only focuses on the first type of tunneling.

et al. (2002) consider the case of Indian business groups, their results uphold that tunneling is an issue in large business groups, providing support for the expropriation hypothesis. However, recent evidence points out that propping and tunneling are intermingled issues. Dow and McGuire (2009) observe profit tunneling of more weakly affiliated Keireitsu firms during strong economic times, but propping in those firms during recession. Such evidence can be related to the mutual insurance effect of business groups. Affiliated firms are, on average, less risky than independent firms, because internal transfers allow to smooth revenue across group firms (Khanna and Yafeh, 2005).

But, an entrepreneur's wealth under diversification affects its risk incentives, therefore building SBGs might be a growth strategy limiting the dominant shareholder's risk exposure. As a matter of fact, commercial law recognizes the principle of a controlling firm's limited liability in case of bankruptcy of an affiliated firm³. Consequently, indirect control of several firms, rather than control of a standalone firm, creates a "fractioning of liability": the control risk of dominant shareholders is divided between group firms. This allows small business owners to secure assets in one firm, and concentrate production risk in another group firm. If a lower-level group' firm goes bankrupt, entrepreneurs still control the assets necessary to pursue production. Moreover, related party transactions allow to tunnel resources out of controlled firms in order to support the controlling firm's performance, when the business environment is unfavorable. If grouping SMEs is a growth strategy promoting the dominant shareholder's wealth stability, distance from control will increase a firm's performance sensitivity to shocks. Overall, the patterns of propping and tunneling should be inverted in SBGs compare to large BGs.

³ French commercial law is quite protective of controlling companies as there are only three restrictive exceptions to this principle (French commercial code: C.COM art L.621-2; L.651-1 and L.651-1).

3 Data and methodology

SBGs are identified using a large database⁴ provided by Coface Services, which lists 1.900.000 direct and indirect ownership links between French corporations. Sample firms are either directly or indirectly controlled at a majority⁵ by a firm or group's controlling firms. They belong to business groups with total aggregated turnover lower than 50 million Euros. 15 877 SBGs are identified⁶. SBGs are composed, on average, of 3 firms and the chain of control has two levels. Overall, the final sample contains 17 152 firms, of which 13 657 are controlled and 3 495 are controlling firms. Accounting information over the period 1999 to 2007 is available for all firms. It comes from the Diane database, supplied by Coface Services and Bureau Van Dijk. In Appendix D variables used in this study are summarized.

3.1 Distance from control variables

The synopsis of the literature points out two main types of variables used to characterize the firm's control. The excess of control right over cash flow rights is the more commonly used variable. However, broader measures of the firm's distance from control- such as group affiliation, director/family ownership of the controlling firm, vertical or horizontal structure of the group - are also used. The detailed information contained in the database allows the use of both types of variables in order to verify if results are affected or not by variables choice. Particularly, the database enables to identify the group's controlling firms and included them because SBGs do not consolidate their account.

Excess control variables capture the dominant shareholder's separation between ownership and control in a firm. To measure excess control, this study uses two variables. The first variable, the controlling firm's *ownership (CF)* in a firm, increases as the controlling

⁴ Details on this database are presented in appendix B.

⁵ The methodology adopted to identify business groups in the database is developed in appendix C.

⁶ Firms with a turnover lower than 750 000€ are excluded (because of the poor reliability of micro firms accounting data) and only observations for which there is at least two consecutive years of accounting information are kept.

firm's excess control diminishes. Then there is the *control ratio*: the ratio of controlling firms' ownership stakes on their control, where control is the weakest direct ownership stake in the chain of control (e.g., Classens et al. 2000)⁷. The difference between these two variables relates to the continuity of control. Indeed, the ownership variable assumes that control is a discrete variable, whereas the control ratio considers that control is a continuous variable.

Alternatively, position variables indicate the firm's vertical position in the control chain. That is, position equals 1 when the firm is the controlling firm, 2 when the firm is directly controlled and so on. Building on this variable several variables indicating the firm's distance from control are created. First, the *controlling* variable is equal to 1 if the firm is the controlling firm and 0 otherwise. Secondly, the *ultimately controlled* variable takes value 1 if the firm is the ultimate controlled firm and 0 otherwise. Finally, the *relative position* variable indicates the position of the firm relative to the number of vertical levels in the control chain: it is the ratio of the number of levels in the control chain on the firm's position. An increase in relative position indicates that firms are closer to control position. Position variables are a broader approach than excess control variables. On the one hand, they indicate the likelihood that separation between control and ownership might be introduced. Firms distant from the controlling firm are more prone to experience a significant separation between control and ownership. On the other hand, position variables capture a firm's control value. Even if there is a separation between control and ownership, it may not be the dominant shareholder's interest to hurt firms high in the control chain. Because, losing control over these firms implies losing control over the firms lower in the control chain.

Descriptive statistics reported in Table 2 underline that in the sample, controlling firms' ownership concentration in controlled firms is high (76%) compare to the one in large

⁷ In appendix D an example illustrates how these two variables are computed.

business groups. In addition, the average separation between control and ownership in sample firms is rather low.

[Insert Table 2 here]

3.2 Methodology

Three empirical settings exploring the link between a firm's performances and its distance from control are used in order to test the hypotheses of expropriation and immunization. Estimations include all sample firms.

First, equation 1 is estimated, to test whether a firm's distance from control influences its performances.

$$Perf_{i,t} = \alpha + \beta_1 CS_i + \sum_{n=2}^N \beta_n Controls_{n,i,t} + \varepsilon_{i,t} \quad (1)$$

The dependent variable is either the firm's return on asset (ROA) or the return on equity (ROE) in year t . The ROA is used to proxy for the firm's economic performance. Indeed, the ROA measure is not influenced by firms' financial and amortization policies. In this case, the ROA fully reflects the firm's operating performance. The ROE measures the actual return for shareholders; it is an indicator of the firm's financial performance. The analysis focuses on the coefficients in front of firms' distance from control (CS_i). If the expropriation hypothesis is verified, then distance from control⁸ should have a negative influence on firm performance. Several control variables, which also influence firm performance, are included. The firm's industry controls for the firm's performance opportunities such as the importance of economies of scale in the industry where the firm operates, as well as characteristics of the

⁸ The control ratio and ultimately controlled variables have higher values when the firm's distance from control is higher, whereas the ownership, controlling and relative position variables have lower values the distance from control increases. Therefore, if the expropriation hypothesis is verified one should observe a positive coefficient on ownership, controlling and relative position variables and a negative coefficient on the control ratio and ultimately controlled variable.

market including its size and the intensity of competition. The equation also includes controls variables for the firm's age and size. In addition, the firm's leverage and sales growth control for the firm's financial structure and growth opportunities. Finally, year dummies are introduced to control for the business cycle impact.

The second objective is to assess the direction of related party transaction using the firm's performance sensitivity to shocks. Equation 2 is estimated to investigate whether a firm's distance from control affects its performance sensitivity to industry shocks.

$$ROA_{i,t} = \alpha + \beta_1 ROAf_{i,t,k} * CS_i + \beta_2 ROAf_{i,t,k} + \sum_{n=3}^N \beta_n Controls_{n,i,t} + \varepsilon_{i,t} \quad (2)$$

Shocks, at the industry level, are measured using the industry adjusted performance ($ROAf_{i,t,k}$): the assets weighted average ROA of firms belonging to the same industry⁹, as follows:

$$ROAf_{i,t,k} = \frac{\sum_{j=1}^J [TotalAsset_{j,t,k} \times ROA_{j,t,k}]}{\sum_{j=1}^J TotalAsset_{j,t,k}}, \text{ where } j \neq i \text{ and } k \text{ is one of the 60 industries.}$$

The interaction term between distance from control variables and industry adjusted performance ($ROAf_{i,t,k} * CS_i$) assess differences in a firm's sensitivity to industry shocks explained by the firm's distance from control. According to Bertrand et al. (2002), if value is transferred out of the firm, then its performance sensitivity to exogenous shocks is lower. If the expropriation hypothesis is verified, distance from control should diminish a firm's

⁹ To compute the industry adjusted performance the official industry classification into 60 industries is used. Moreover, the sample used to compute the industry adjusted performance also includes a sub sample of independent firms. Finally, the firm is excluded when computing the industry adjusted performance; indeed a mechanical correlation is introduced when the firm's performance is estimated and also determines an explicative variable.

sensitivity to shocks. But, if the immunization hypothesis is verified distance from control should increase a firm's performance sensitivity to shocks. Control variables are the same as equation (1), except that industry dummies are excluded, because this would be redundant with the adjusted performance measure.

Equation 3 is estimated to capture the relationship between a firm's distance from control and firm performance sensitivity to shocks to the group's performance.

$$ROA_{i,t} = \alpha + \beta_1 CS * ROAg_{i,t,g} + \beta_2 ROAg_{i,t,g} + \beta_3 ROAf_{i,t,k} + \sum_{n=4}^N \beta_n Controls_{n,i,t} + \varepsilon_{i,t} \quad (3)$$

Shocks to the group performance are captured using group firms' average industry adjusted performance, excluding firm i ($ROAg_{i,t,g}$), as follows:

$$ROAg_{i,t,g} = \frac{\sum_{j=1}^J [ROAf_{j,t,g}]}{Nbfirms_g - 1}, \text{ where } j \neq i \text{ and } g \text{ indicates the business group. To properly estimate}$$

predicted group performance, complete accounting information is required for all group firms, which restricts the sample.

The interaction term between the firm's distance from control and group shocks ($CS * ROAg_{i,t,g}$) assess differences in the firm's performance sensitivity to group performance, resulting from its distance from control. The firm's industry adjusted performance is maintained in the model specification in order to avoid overlapping in the case where two or more group firms belong to the same industry.

The third objective is to explore whether the flow of resources between group firms depends on the type of shocks (favorable or unfavorable), in order to test whether internal transfers are used to immunize the controlling shareholder's wealth. This is done by observing the global effect of a firm's distance from control on its performance. The firm's distance

from control is introduced as an independent variable in equations 2 and 3. The effect of a firm's distance from control on the firm's performance, controlling for the type of shocks

is: $\frac{\Delta ROA}{\Delta ControlStructure} = \beta_1 + \beta_2 * ROA(f / g)$, where β_1 is the coefficient in front of the

firm's distance from control variable, and β_2 is the coefficient in front of the interaction term between control structure and industry adjusted or group performance. This allows the computing of industry adjusted and group performance thresholds for which distance from control has a positive influence on firms' performance. This setting helps to determine whether the issues of propping and tunneling are influenced by the business environment. If tunneling occurs when the business environment is unfavorable then this provides support both to the immunization and the expropriation hypotheses.

4 Results

This section reports results on the influence of the firm's distance from control on the firm's performance (4.1), and on the firm's sensitivity to industry and group shocks (4.2).

4.1 *The impact of distance from control on firm's individual performance*

Table 3 reports results of the influence of a firm's distance from control on the firm's ROA. Columns 1 and 2 indicate that controlling firms' cash flow rights have a negative influence on their economic performance. On the contrary, the relationship between the separation of control from ownership and the firm's ROA is positive (Columns 3 and 4). The sign on the coefficients for the position variables confirms these results. Controlling firms have an inferior economic performance, whereas ultimately controlled firms overperform other firms (Columns 5 to 10). The influence of a firm's distance from control on its performances is economically important compared to the other explicative variables.

[Insert Table 3 here]

Table 4 indicates that using average values over the period provides similar estimations. Thus, results are not driven by the volatility of small businesses' accounting data. Moreover, the coefficients of year dummies are statistically significant, but their economic significance is really low: the sample is not driven by the business cycle.

[Insert Table 4 here]

Estimations of the firms ROE, displayed in Columns 1 to 5 Table 5, confirm that firms closer to control positions have, on average, an inferior performance. In order to determine whether expropriation of minority shareholders occurs through intra-group loans or asset transfers, the firm's ROA is introduced as a control variable. In this setting, the controlling firm's cash flow rights positively influence the firm's financial performance (Column 6). Moreover, ultimately controlled firms have, on average, an inferior economic performance (Column 9), and the relative position variable positively influences firm financial performance (Column 10). These results support the expropriation of minority shareholders. However, the separation between control and ownership has a positive influence on a firm's financial performance, which contradicts previous results (column 7). Finally, the relationship between the controlling status of firms and their ROE, controlling for firms' ROA is insignificant (column 8). These results contradict the previous findings, therefore evidence on the expropriation of minority shareholders through financial operations and/or asset transfers is limited.

[Insert Table 5 here]

The evidence reported in this section shows that distance from control has a positive influence on a firm's performance. Results do not support the hypothesis that minority shareholders' expropriation is an issue in SBGs.

4.2 *Related party transactions in SBGs*

In Table 6, results clearly underline that ownership concentration and closeness to control position reduce a firm's sensitivity to industry shocks (Column 1 and 5). Controlling firms are, on average, 68% less sensitive to industry shocks than non controlling firms (Column 3). Inversely, excess control increases a firm's performance sensitivity to industry shocks (Column 2). Column 4 shows that ultimately controlled firms are significantly more sensitive to industry shocks. Results differ from the ones obtained by Bertrand et al. (2002). They observe that controlled firms are, on average, less sensitive to industry shocks. Their interpretation is that a firm's performance sensitivity to exogenous shocks is lower when value is transferred out from the firm. Following their interpretation, results indicate that in SBGs, resources flow from controlling firms toward controlled firms.

Results on the firms' sensitivity to group shocks, displayed in Table 6, sustain that controlling firms are less sensitive to shocks, contrary to ultimately controlled firms (Column 8 and 9). These results are confirmed in Column 10, which indicates that firms closer to control positions have a reduced sensitivity to group shocks. In addition, the separation between control and ownership increases a firm's performance sensitivity to group shocks (Column 2). Finally, Column 1 indicates that the cash flow rights of the controlling firm reduce a firm's performance sensitivity to the group's performance.

[Insert Table 6 here]

Overall, Table 6 indicates that firms closer to control positions have a lower performance sensitivity, both to industry and group shocks. The interpretation of this result is twofold. On the one hand, this indicates that value is transferred out of controlling firms toward controlled firms, which led to the rejection of the expropriation of minority shareholders in SBGs. On the other hand, controlling firms' performance reduced sensitivity

to shocks might point out that related party transactions are used to limit the wealth exposure of dominant shareholders to exogenous shocks, supporting the immunization hypothesis. In order to explore more in depth this issue, in Table 7 the firm's distance from control effect on performance is estimated, controlling for industry and group shocks.

In Table 7, Column 1 reports that the relationship between the controlling firms' ownership and the firms' economic performance depends on the type of shocks. When a firm's industry-adjusted performance ($ROA_{i,t,k}^f$) is lower than 6,31%¹⁰, ownership concentration has a positive influence on the firm's economic performance. However, when firms have good levels of industry-adjusted performance (higher than 6,31%), a negative relationship is observed. Similar results are found regarding firm performance sensitivity to group shocks, with a threshold of 7, 63% (see Column 6). Likewise, controlling firms overperform other group firms when their industry adjusted performance and group performance are below 5% and 3.5%, respectively (Column 3 and 8). The separation between control and cash flow rights has no significant influence on the firm's performance global sensitivity to shocks (Column 2 and 7). Lastly, the firm's distance from control is detrimental to its performance when shocks are unfavorable, whereas favorable shocks influence positively their performance (Column 4, 5, 9 and 10).

[Insert Table 7 here]

By and large, results in Table 7 indicate that a firm's distance from control influence on its performance is conditioned by the shock the firm undergoes. When shocks are favorable, resources are transferred from controlling firms toward controlled firms. When they are

¹⁰ In order to compute this threshold the following formula is used:

$$\frac{\Delta ROA}{\Delta ControlStructure} = \beta_1 + \beta_2 * ROA(f/g) = 0 \Leftrightarrow ROA(f/g) = -\frac{\beta_1}{\beta_2},$$

where β_1 is the coefficient in front of the control structure variable, and β_2 is the coefficient in front of the interaction term between control structure and industry adjusted or group performance

unfavorable however, controlling firms tunnel resources out of controlled firms, which artificially improve their performance. These results are consistent with the immunization hypothesis and indicate that in SBGs minority shareholders expropriation is related to increase risk rather than value expropriation.

5 Discussion and Conclusions

This paper investigates the rationale that leads entrepreneurs to structure their control in SBGs, rather than to develop their original business in a standalone firm. Firstly, this paper tests whether distance from control of firms influences their economic and financial performance. Results provide evidence against the hypothesis that minority shareholders are expropriated in SBGs: controlled firms over perform controlling firms. This over performance is more pronounced however, when one considers the firm's economic performance over their financial performance. In this case, minority shareholders' interests are hurt via specific financial and asset sales policies. Secondly, this paper explores how firms distance from control influence their performance sensitivity to exogenous shocks. Results show that value transfers are not aimed at increasing the controlling shareholder's private benefits of control, but rather at limiting its control risk. Indeed, firms higher in the control chain tend to tunnel resources out, expropriating value from minority shareholders when the business environment is unfavorable. Thus, tunneling in small business groups arises when controlling firms undergo negative shocks and use internal transfers to artificially maintain their level of performance. Nevertheless, when the business environment is good, controlling firms transfer resources toward controlled firms in order to support their development.

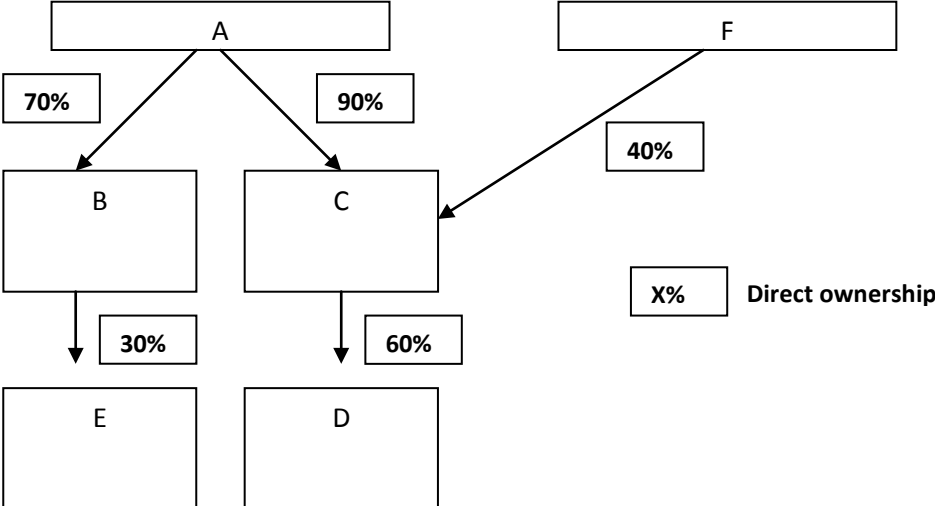
On the whole, results point out that the rationale to structure control via a SBG is different from what is observed for large business groups. Grouping SMEs certainly appears to be a specific growth strategy which limits controlling shareholders' risk exposure rather

than one that maximizes the extraction of private benefits. From a managerial point of view, results underline that a firm's distance from control influences its speed of transition in performance classes close to distress. This indicates that group control structure has to be taken into account when modeling a firm's credit risk. To derive political economy implications from these results, future research should address the question of the efficiency of this growth strategy, in comparison with internal growth in a standalone firm. Structuring control in a SBG reduces the controlling shareholder's wealth exposure to the business specific risk therefore it may increase its incentives to invest, which will stimulate business expansion.

Appendices

Appendix A: An example of a business group identified in the initial database

Figure A1: An example of ownership links between firms



In the ownership structure, represented in figure A1: firm A has an ownership stake of $90\% * 60\% = 48\%$ in firm D. However, A controls majoritarily¹¹ firm C that in turn controls majoritarily firms D, thus A controls firm D. Firm F and E are considered independent firms because none of them are majoritarily controlled by another firm or majoritarily control another firm.

Appendix B: The database on ownership links from Coface Services

In the database, each firm is uniquely identified according to its official fiscal identity number (SIREN). For each ownership link, the database provides two SIREN: one for the *controlling firm* and the other for the *controlled firm*.

Level (l): indicates the length of the control chain between the two firms. This variable is equal to 1 if the controlling firm owns directly the controlled firm. Values larger than 1 correspond to indirect ownership through a vertical chain of holdings of length *l*.

Ownership (o): is the real holding of the controlling firm in the controlled firm at level *l*. For level=1, the ownership variable defines the direct ownership matrix (D), that lists direct ownership across firms. For level>1, the ownership variable defines the indirect ownership matrix (I) at level *l*. Indirect holdings are the product of direct ownership along the control chain.

Number of links (n): is the number of firms, all level confounded, that have an ownership stake into the firm.

The ownership structure illustrated in figure 1 is filled in the database as showed in table B1:

¹¹ The term majoritarily is used to describe the fact that a firm controls another firms with the majority (>50%) of the controlled firm's shares.

Table B1: Initial database structure

Controlled firm	Controlling firm	Level	Number of links	Ownership
B	A	1	1	70%
C	A	1	2	90%
D	A	2	3	48%
E	A	2	2	21%
E	B	1	2	30%
D	C	1	3	60%
C	F	1	2	40%
D	F	2	3	20%

Appendix C: Identification procedure of business groups according to the criteria of effective majority control in the database.

The group identification procedure uses the *criterion of majority control*: a business group corresponds to a chain of majority control relationships. The majoritisation rule (e.g., Chapelle and Szafarz, 2005) implies a dichotomization of ownership to find *majority control*: whenever the shareholder's ownership stake is higher than 50% it is assumed that control is total. In turn other shareholders are assumed to have no effective control. This criterion seems better adapted for this study. Indeed, the sample concerns privately held firms where ownership is often highly concentrated, yet this threshold avoids counter intuitive findings of two controlling firms.

Firstly, in order to identify the control chains and establish if control is effective at each chain's link the ultimate holding level for each controlled firms is identified. A variable *N* is created, which indicates the higher holding level for each of the controlled firms in the initial database. The highest level of holding found in the database is 17. Contrary to the level variable that characterized the relation of a controlled firm with a controlling firm, the *N* variable is unique per controlled firm and indicates the higher level at which this firm is held.

Secondly, a binary variable indicates whether a firm undergoes direct effective control from the firm holding it directly. The majoritization rule is applied using the ownership (*o*) variable when $level=1$ to obtain the *effective control (ec)* variable: this variable takes value 1 if direct ownership of the firm is higher than 50% and 0 else.

Thirdly, the *effective control level (S)* is the highest level where the firm is effectively controlled all along the chain of control. From firm at level *S* to firm at level 0 the control variable is equal to 1 at each level. In order to identify the effective control level of firms in the database we start from the lowest level of control and go up along the control chain in order to observe if there is a control rupture. At the level at which this occurs it returns the value of *S*.

Fourthly, the controlling firm (*ActS*) at level *S* is identified. When *N* is greater than 2 a *N* steps procedure is required. We first identify whether the firm is effectively controlled at level 1, and then if the controlling firm at level 1 (*Act1*) is effectively controlled and so on using the effective control variable (*c*) that returns the direct ownership between two firms. Those transformations allowed modifying the structure of the database as the observations are the controlled firms and not every couple of controlled/controlling firm as illustrated in Table C 1. Next, the table reports that vertical control chains are the observations and the variables indicate the chain of control. Something not reported in the example bellow is the fact that the database also contains the information on direct ownership between firms at each level *DS*.

Table C 1: Identification of the vertical chains of control

Firm	N	S	ActN1	ActN2	ActNi	ActN17	Ultimate controlling firms
B	1	1	A	.	.	.	A
C	1	1	A	.	.	.	A
D	2	2	C	A	.	.	A
E	2	0

Finally, to identify groups a last transformation is needed. The aim of this transformation consists of making the business groups the observations instead of the vertical chains of control. Each of the controlled firms are indexed both by their level of control (l) and the horizontal branches to which they belong to (b). This also allows obtaining the following group level variables. The *Level* indicates the length of the vertical control chain in the business group. *Nbfirms* is a variable indicating the number of firms in the business group including the controlling firm. *Branches* provides information regarding the geometry of the group by indicating the number of horizontal chain in the business group. If this variable is equal to one then the BG is a vertical chain of control, whereas if it is more than 1 then the BG a mix between horizontal and vertical control chain as illustrated in the example of business group develop here.

Table C.2: Identification of business groups

Ultimately controlled firm	Act11	Act12	Level	NBfirms	Branches	Controlling firm	Group
D	C	D	2	4	2	A	1
E				.	.	.	0

Appendix D: Variables description

Table D1: Distance from control variables

		Variable	Example	Definition
Control structure variables	Cash flow related variables	<i>Ownership (CF)</i>	A: . ;B: 0,7 ;C: 0,9; D: $0,9*0,6 = 0,54$; E: . F:.	Product of direct cash flow rights along the chain of control.
		<i>Control ratio</i>	A: . ; B: $0,7/0,7 = 1$; C: $0,9/0,9=1$; D: $0,9*0,6/0,6 = 0,9$; E:.; F:.	Ratio of the controlling firm's ownership stakes and its control, according to the weakest link method.
	Position variables	<i>Controlling</i>	A: 1; B: 0 ; C:0; D:0;E:.; F.	Equal 1 if the firm is the controlling firm, and 0 otherwise.
		<i>Ultimately controlled</i>	A:0; B:1; C:0; D:1; E:.; F:.	Takes value 1 if the firm is the ultimate controlled firm, and 0 otherwise.
		<i>Relative position</i>	A: $3/3 = 1$; B: $2/3$ C: $2/3$; D= $1/3$; E: ., F:.;	Indicates the position of the firm relative to the level number in the control pyramid: it is the ratio of the number of levels in the pyramid to the position of the firm.

The example column illustrates how those variables were computed for the business group represented in Figure A.1.

Table D2: Shock variables

		Variable	Formula	Definition
Shock variables	Industry	<i>ROAf</i> (industry adjusted performance)	$ROAf_{i,t,k} = \frac{\sum_{j=1}^J [TotalAsset_{j,t,k} \times ROA_{j,t,k}]}{\sum_{j=1}^J TotalAsset_{j,t,k}}$	Average performance of firms belonging to the same industry, using a industry 60 classification, weighted by firms' size (excluding firm i)
	Group	<i>RoA g</i> (group performance)		Average industry adjusted performance of group firms (g) excluding firm i

Table D3 : Explained variables

		Variable	Formula	Definition
Explained variables	Economic	<i>ROA</i>	$ROA_{i,t} = \frac{EBITDA_{i,t}}{TotalAsset_{i,t}}$	Return on asset computed as the ration of earnings before tax, interest and depreciation (EBITDA) on firm total assets.
	Financial	<i>ROE</i>		Return on equity computed as the ratio of the firm net income and total equity.

Table D4: Control variables

		Variable	Formula	Definition
Control Variables	Technological	<i>Size</i>		Log of firm sales.
		<i>Industry</i>		Dummy variables refering to the belonging of the firm to one industry in a 15 industry classification (very close to NACE classification).
		<i>Age</i>		Log of the number of years since the firm's creation.
	Financial	<i>Leverage</i>		Ratio of firm financial debt over total assets.
		<i>Sales Growth</i>		Annual growth rates of sales.
	Year Dummy	<i>Y1999- Y2007</i>		Those variable equal 1 when the accounting information is from the year in question, and 0 else.

References

Almeida, H., Wolfenzon, D., 2006. A theory of pyramidal ownership and family business groups. *Journal of Finance* 61, 2637-2681.

Bae, K., Kang, J., Kim, J., 2002. Tunneling or value added?: Evidence from mergers by Korean business groups. *Journal of Finance* 57, 2695-2740.

Bennedsen, M., and Nielsen, K., 2010. Incentive and entrenchment effects in European ownership. *Journal of Banking and Finance*, *forthcoming*.

Bertrand, M., Mehta, P., Mullainathan, S., 2002. Ferreting out tunneling: An application to Indian business groups. *Quarterly Journal of Economics* 117, 121-148.

Boubaker, S., 2007. Ownership-Control Discrepancy and Firm Value: Evidence from France. *Multinational Finance Journal* 11, 211-252.

Cayssialis, J-L., Kremp, E., Peter, C., 2007. Dix années de dynamique financière des PME en France. *Banque de France Bulletin* 165.

Chapelle, A., Szafarz, A., 2005. Controlling firms through the majority voting rule. *Physica A* 355, 509-529.

Claessens, S., Djankov, S., Lang, L., 2000. The separation of ownership and control in East Asian corporations. *Journal of Financial Economics* 58, 81-112.

Claessens, S., Djankov, S., Fan, J., Lang, L., 2002. Disentangling the incentive and entrenchment effects of large shareholdings. *Journal of Finance* 57, 2741-2771.

Dow, S., McGuire, J., 2009. Propping and tunnelling: Empirical evidence from Japanese keiretsu. *Journal of Banking and Finance* 33, 1817-1828.

Faccio, M., Lang, L. Young, L., 2001. Dividends and Expropriation. *American Economic Review* 91. 54-78.

Ferris, S., Kim, K., Kitsabunnarat, P., 2003. The costs (and benefits?) of diversified business groups: The case of Korean chaebols. *Journal of Banking and Finance* 27, 251-273.

Friedman, E., Johnson, S., Mitton, T., 2003. Propping and tunnelling. *Journal of Comparative Economics* 31, 732-750.

Gao, L., and Kling, G., 2008. Corporate governance and tunneling: Empirical evidence from China. *Pacific-Basin Finance Journal* 16 (5), 591-605

Joh, S., 2003. Corporate governance and firm profitability: Evidence from Korea before the economic crisis. *Journal of Financial Economics* 68, 141-186.

Johnson, S., La Porta, R., Lopez-de-Silanes, F., and Shleifer, A., 2000. Tunneling. *American Economic Review* 90, 22-27.

Khanna, T., Yafeh, Y., 2005. Business groups and risk sharing around the world. *Journal of Business* 78, 301-340.

Lins, K., 2003. Equity ownership and firm value in emerging markets. *Journal of Financial and Quantitative Analysis* 38, 159-184.

Moskowitz, T. and Vissing-Jørgensen, A., 2002. The returns to entrepreneurial investment: A private equity premium puzzle? *American Economic Review* 92, 745-778.

Nahmias, L., 2007. Groupes de sociétés et analyse du système productif: enjeux et premiers constats. *Banque de France Bulletin* 159.

Shleifer, A., Vishny, R., 1997. A survey of corporate governance. *Journal of Finance* 52, 737-783.

Vos, E., Yeh, A., Carter, S., and Tagg, S., 2007. The happy story of small business financing. *Journal of Banking and Finance* 31, 2648-2672.

TABLES

TABLE 1: Synopsis of the empirical literature

Paper	Sample	Method	Control variable	Explained variable	Result: expropriation of minority shareholders
Classens et al. (2002)	Publicly traded firms in East Asia (1996).	Influence of firm's control structure on its value	Spread between control rights and ownership of controlling shareholder	Firm performance (ROA, Tobin'Q)	YES
Joh (2003)	Korean public and large private firms (1993-1997).	Influence of firm's control structure on its value	Disparity between control rights and ownership rights.	Firm performance (Profitability)	YES
Faccio et al. (2001)	European and Asian business groups (1997-2000)	Influence of firm's control structure on its value	Excess control	Dividends rate	YES, lower effect in Europe than in Asia
Bae et al. (2002)	Korean Chaebol (1981-1993)	Influence of firm's control structure on its value	Bidder category according to the shares of the controlling shareholder	Market reaction to acquisition events, event study of abnormal returns	YES
Boubaker (2007)	Large publicly traded French firms (2000)	Influence of firm's control structure on its value	Excess control	Firm performance	YES
Lins (2003)	Large firms from 18 emerging countries (1995).	Influence of firm's control structure on its value	Excess control	Firm performance	YES
Gao and Kling (2007)	Listed Chinese firms (1998-2002).	Influence of firm's control structure on its value	Belonging to a business group	Difference between account receivable and account payable	YES
Bertrand et al. 2002	Indian business groups (1989-1999).	Tunneling	Group and director equity interaction with exogenous shocks and group shock	Firm performance	Less sensitivity to external shocks and group shocks (Tunneling)
Dow and McGuire (2009)	Japanese Keireitsu (1987-2001)	Propping and Tunneling	IGJ specific methodology to assign affiliation strength and differentiating between three periods	Performance	Tunneling during strong economic times, and propping during recession.
Ferris et al. (2003)	Korean Chaebols (1990-1995)	Propping and Tunneling	Group affiliation	Firm excess value	Propping to the weakest members

TABLE 2: Descriptive statistics

Panel A: Descriptive statistics full sample	Nb	Mean	Standard Error	Median
ROA	105 549,00	0,1392	0,1572	0,1140
ROE	105 549,00	0,0757	0,0859	0,0544
ROAf	105 549,00	0,1268	0,0358	0,1170
ROAg	67 360,00	0,1267	0,0340	0,1202
Size (Sales in K€)	105 549,00	6452	6136	4216
Age	105 549,00	21,67	14,52	19,00
Leverage (Financial debt/Equity)	105 549,00	3,4860	4,3815	2,0579
Sales Growth	105 549,00	0,1061	0,4279	0,0540
Panel B: Average financial variables on the period (1999-2007)				
ROA	17 152,00	0,1366	0,1439	0,1139
ROE	17 152,00	0,0753	0,0770	0,0589
Size (Sales in K€)				
Age	17 152,00	20,43	14,60	17,00
Leverage	17 152,00	3,8345	4,1345	2,4277
Sales Growth	17 152,00	0,1234	0,3226	0,0719
Panel C: Controlled firms control structure characteristics				
CF	13 657,00	76%	24%	85%
Control ratio	13 657,00	1,0254	0,1516	1,0000
Relative Position	17 152,00	1,3325	0,4633	1,0000
Panel D: Groups characteristics				
Nbfirms	10 795,00	4,40	7,95	3,00
Level	10 795,00	2,23	0,52	2,00

TABLE 3: Firms' distance from control influence on their economic performance

Columns 1 to 10 report estimation of the coefficient when estimating the following equation, using ordinary least square method:

$$ROA_{i,t} = \alpha + \beta_1 CS_i + \sum_{n=2}^N \beta_n Controls_{n,i,t} + \varepsilon_{i,t}$$

The explained variable is the annual ROA of the firm. CF is the cash flow rights of the controlling firm, Control Ratio is the ratio of control computed according to the weakest link method and the cash flow rights of the controlling firm, Controlling is a binary variable that takes value 1 if the firm is the business group controlling firm and 0 else, Ultimately Controlled is a binary variable that takes value 1 if the firm does not control any other firm, Relative Position is the ratio of the number of level of control in the business group and the position of the firm, Size is the log of the firm annual turnover, Age is the log of firm age, Leverage is the ratio of firm debt on total liabilities, Growth is the firm annual turnover growth rate. Y 1999 to Y 2006 are year dummies where the year 2007 is the reference. The standard errors of estimates are reported in italics under the value of the estimated coefficients. *** indicates that coefficients estimates are significant at the 1% level according to the student test, ** at 5%, and * at 10%.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
CF	-0,0269*** <i>0,0021</i>	-0,0284*** <i>0,0020</i>								
Control Ratio			0,0182** <i>0,0034</i>	0,0207*** <i>0,0034</i>						
Controlling					-0,0305*** <i>0,0012</i>	-0,0362*** <i>0,0012</i>				
Ultimately Controlled							0,0168*** <i>0,0010</i>	0,0176*** <i>0,0010</i>		
Relative Position									-0,023*** <i>0,0011</i>	-0,0260*** <i>0,0011</i>
Size	0,0049*** <i>0,0005</i>	0,0066*** <i>0,0005</i>	0,0043*** <i>0,0005</i>	0,0060*** <i>0,0005</i>	0,0043*** <i>0,0005</i>	0,0060*** <i>0,0005</i>	0,0056*** <i>0,0006</i>	0,0074*** <i>0,0005</i>	0,0053*** <i>0,0005</i>	0,0072*** <i>0,0005</i>
Age	-0,0139*** <i>0,0007</i>	-0,0237*** <i>0,0007</i>	-0,0147*** <i>0,0007</i>	-0,0245*** <i>0,0007</i>	-0,0119*** <i>0,0007</i>	-0,0214*** <i>0,0007</i>	-0,0132*** <i>0,0007</i>	-0,0229*** <i>0,0007</i>	-0,0126*** <i>0,0007</i>	-0,0222*** <i>0,0007</i>
Leverage		-0,0068*** <i>0,0001</i>		-0,0068*** <i>0,0001</i>		-0,0070*** <i>0,0001</i>		-0,0068*** <i>0,0001</i>		-0,0069*** <i>0,0001</i>
Growth		-0,0041*** <i>0,0011</i>		-0,0043*** <i>0,0011</i>		-0,0039*** <i>0,0011</i>		-0,0040*** <i>0,0011</i>		-0,0038*** <i>0,0011</i>
Y 1999	0,0129*** <i>0,0023</i>	0,0216*** <i>0,0022</i>	0,0126*** <i>0,0023</i>	0,0213*** <i>0,0022</i>	0,0129*** <i>0,0023</i>	0,0219*** <i>0,0022</i>	0,0134*** <i>0,0023</i>	0,0221*** <i>0,0022</i>	0,0134*** <i>0,0023</i>	0,0222*** <i>0,0022</i>
Y 2000	0,0135*** <i>0,0022</i>	0,0219*** <i>0,0021</i>	0,0133*** <i>0,0022</i>	0,0216*** <i>0,0021</i>	0,0135*** <i>0,0022</i>	0,0221*** <i>0,0021</i>	0,0140*** <i>0,0022</i>	0,0223*** <i>0,0021</i>	0,0140*** <i>0,0022</i>	0,0225*** <i>0,0021</i>
Y 2001	0,0150*** <i>0,0021</i>	0,0220*** <i>0,0021</i>	0,0148*** <i>0,0021</i>	0,0217*** <i>0,0021</i>	0,0150*** <i>0,0021</i>	0,0223*** <i>0,0021</i>	0,0154*** <i>0,0021</i>	0,0224*** <i>0,0021</i>	0,0154*** <i>0,0021</i>	0,0225*** <i>0,0021</i>
Y 2002	0,0091*** <i>0,0021</i>	0,0140*** <i>0,0021</i>	0,0089*** <i>0,0021</i>	0,0138*** <i>0,0021</i>	0,0091*** <i>0,0021</i>	0,0142*** <i>0,0021</i>	0,0094*** <i>0,0021</i>	0,0144*** <i>0,0021</i>	0,0094*** <i>0,0021</i>	0,0145*** <i>0,0021</i>
Y 2003	0,0012*** <i>0,0021</i>	0,0059*** <i>0,0021</i>	0,0010 <i>0,0021</i>	0,0057*** <i>0,0021</i>	0,0012 <i>0,0021</i>	0,0061*** <i>0,0020</i>	0,0016 <i>0,0021</i>	0,0062*** <i>0,0021</i>	0,0016 <i>0,0021</i>	0,0064*** <i>0,0021</i>
Y 2004	0,0040*** <i>0,0021</i>	0,0073*** <i>0,0020</i>	0,0038* <i>0,0021</i>	0,0071*** <i>0,0020</i>	0,0040* <i>0,0021</i>	0,0074*** <i>0,0020</i>	0,0043** <i>0,0021</i>	0,0076*** <i>0,0020</i>	0,0043** <i>0,0021</i>	0,0077*** <i>0,0020</i>
Y 2005	-0,0043 <i>0,0021</i>	-0,0020 <i>0,0020</i>	-0,0044 <i>0,0021</i>	-0,0021 <i>0,0020</i>	-0,0043** <i>0,0021</i>	-0,0020 <i>0,0020</i>	-0,0041** <i>0,0021</i>	-0,0018 <i>0,0020</i>	-0,0041** <i>0,0021</i>	-0,0018 <i>0,0020</i>
Y 2006	-0,0044 <i>0,0021</i>	-0,0029 <i>0,0021</i>	-0,0045 <i>0,0021</i>	-0,0029 <i>0,0021</i>	-0,0044** <i>0,0021</i>	-0,0028 <i>0,0021</i>	-0,0042** <i>0,0021</i>	-0,0027 <i>0,0021</i>	-0,0042** <i>0,0021</i>	-0,0027 <i>0,0021</i>
Intercept	0,1341*** <i>0,0053</i>	0,1731*** <i>0,0052</i>	0,1013*** <i>0,0063</i>	0,1369*** <i>0,0063</i>	0,1165*** <i>0,0052</i>	0,1552*** <i>0,0051</i>	0,0939*** <i>0,0054</i>	0,1309*** <i>0,0054</i>	0,1353*** <i>0,0052</i>	0,1757*** <i>0,0052</i>
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
F	287,87	416,73	281,92	410,34	307,06	445,60	292,33	421,54	299,84	432,42
R2	0,0662	0,0996	0,065	0,0982	0,0703	0,1057	0,0672	0,1006	0,0688	0,1029
Number of Observations	105549	105549	105549	105549	105549	105549	105549	105549	105549	105549

TABLE 4: Firms' distance from control influence on their average economic performance from 1999 to 2007

Columns 1 to 10 report estimation of the coefficient when estimating the following equation, using ordinary least square method:

$$ROA_i = \alpha + \beta_1 CS_i + \sum_{n=2}^N \beta_n Controls_{n,i} + \varepsilon_i$$

The explained variable is the average ROA of the firm over the period 1999 to 2007. CF is the cash flow rights of the controlling firm, Control Ratio is the ratio of control computed according to the weakest link method and the cash flow rights of the controlling firm, Controlling is a binary variable that takes value 1 if the firm is the business group controlling firm and 0 else, Ultimately Controlled is a binary variable that takes value 1 if the firm does not control any other firm, Relative Position is the ratio of the number of level of control in the business group and the position of the firm, Size is the log of the firm annual turnover, Age is the log of firm age, Leverage is the ratio of firm debt on total liabilities, Growth is the firm annual turnover growth rate. The standard errors of estimates are reported in italics under the value of the estimated coefficients. *** indicates that coefficients estimates are significant at the 1% level according to the student test, ** at 5%, and * at 10%.

	(1)	(2)	(3)	(4)	(5)
CF	-0,0004*** <i>0,0000</i>				
Control Ratio		0,0345*** <i>0,0026</i>			
Controlling			-0,0376*** <i>0,0028</i>		
Ultimately Controlled				0,0166*** <i>0,0022</i>	
Relative Position					-0,0252*** <i>0,0024</i>
Size	0,0021* <i>0,0012</i>	0,0022* <i>0,0012</i>	0,0021* <i>0,0012</i>	0,0035*** <i>0,0012</i>	0,0033*** <i>0,0012</i>
Age	-0,0172*** <i>0,0016</i>	-0,0173*** <i>0,0016</i>	-0,0172*** <i>0,0016</i>	-0,0189*** <i>0,0016</i>	-0,0181*** <i>0,0016</i>
Leverage	-0,0069*** <i>0,0003</i>	-0,0069*** <i>0,0003</i>	-0,0069*** <i>0,0003</i>	-0,0066*** <i>0,0003</i>	-0,0067*** <i>0,0003</i>
Growth	0,0094*** <i>0,0033</i>	0,0094*** <i>0,0033</i>	0,0094*** <i>0,0033</i>	0,0086*** <i>0,0033</i>	0,0091*** <i>0,0033</i>
Intercept	0,1828*** <i>0,0109</i>	0,1466*** <i>0,0113</i>	0,1826*** <i>0,0109</i>	0,1588*** <i>0,0115</i>	0,2016*** <i>0,0111</i>
F	109,18	108,91	109,17	101,80	104,85
R2	0,1131	0,1128	0,1130	0,1062	0,1091
Number of Observations	17152	17152	17152	17152	17152

TABLE 5: Firms' distance from control influence on their financial performance

Columns 1 to 5 report estimation of the coefficient when estimating the following equation, using ordinary least square method:

$$ROE_{i,t} = \alpha + \beta_1 CS_i + \sum_{n=2}^N \beta_n Controls_{n,i,t} + \varepsilon_{i,t}$$

Columns 6 to 10 report estimation of the coefficient when estimating the following equation, using ordinary least square method:

$$ROE_{i,t} = \alpha + \beta_1 CS_i + \beta_2 ROA_{i,t} + \sum_{n=3}^N \beta_n Controls_{n,i,t} + \varepsilon_{i,t}$$

The explained variable is the annual ROE of the firm. CF is the cash flow rights of the controlling firm, Control Ratio is the ratio of control computed according to the weakest link method and the cash flow rights of the controlling firm, Controlling is a binary variable that takes value 1 if the firm is the business group controlling firm and 0 else, Ultimately Controlled is a binary variable that takes value 1 if the firm does not control any other firm, Relative Position is the ratio of the number of level of control in the business group and the position of the firm, ROA is the firm's return on asset, Size is the log of the firm annual turnover, Age is the log of firm age, Leverage is the ratio of firm debt on total liabilities, Growth is the firm annual turnover growth rate. Y 1999 to Y 2006 are year dummies where the year 2007 is the reference. The standard errors of estimates are reported in italics under the value of the estimated coefficients. *** indicates that coefficients estimates are significant at the 1% level according to the student test, ** at 5%, and * at 10%.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
CF	-0,0065*** <i>0,0011</i>					0,0039*** <i>0,0008</i>				
Control Ratio		0,0124*** <i>0,0019</i>					0,0048*** <i>0,0014</i>			
Controlling			-0,0128*** <i>0,0007</i>					0,0005 <i>0,0005</i>		
Ultimately Controlled				0,0019*** <i>0,0005</i>					-0,0045*** <i>0,0004</i>	
Relative Position					-0,0053*** <i>0,0006</i>					0,0042*** <i>0,0004</i>
ROA						0,3670*** <i>0,0013</i>	0,3667*** <i>0,0013</i>	0,3669*** <i>0,0013</i>	0,3675*** <i>0,0013</i>	0,3677*** <i>0,0013</i>
Size	-0,0019*** <i>0,0003</i>	-0,0021*** <i>0,0003</i>	-0,0021*** <i>0,0003</i>	-0,0019*** <i>0,0003</i>	-0,0018*** <i>0,0003</i>	-0,0044*** <i>0,0002</i>	-0,0042*** <i>0,0002</i>	-0,0043*** <i>0,0002</i>	-0,0047*** <i>0,0002</i>	-0,0045*** <i>0,0002</i>
Age	-0,0112*** <i>0,0004</i>	-0,0113*** <i>0,0004</i>	-0,0103*** <i>0,0004</i>	-0,0112*** <i>0,0004</i>	-0,0109*** <i>0,0004</i>	-0,0025*** <i>0,0003</i>	-0,0024*** <i>0,0003</i>	-0,0024*** <i>0,0003</i>	-0,0028*** <i>0,0003</i>	-0,0027*** <i>0,0003</i>
Leverage	-0,0047*** <i>0,0001</i>	-0,0047*** <i>0,0001</i>	-0,0048*** <i>0,0001</i>	-0,0047*** <i>0,0001</i>	-0,0047*** <i>0,0001</i>	-0,0022*** <i>0,0000</i>	-0,0023*** <i>0,0000</i>	-0,0022*** <i>0,0000</i>	-0,0022*** <i>0,0000</i>	-0,0022*** <i>0,0000</i>
Growth	0,0002 <i>0,0006</i>	0,0001 <i>0,0006</i>	0,0003 <i>0,0006</i>	0,0002 <i>0,0006</i>	0,0002 <i>0,0006</i>	0,0017*** <i>0,0004</i>	0,0017*** <i>0,0004</i>	0,0017*** <i>0,0004</i>	0,0016*** <i>0,0004</i>	0,0016*** <i>0,0004</i>
Y 1999	-0,0057*** <i>0,0012</i>	-0,0058*** <i>0,0012</i>	-0,0056*** <i>0,0012</i>	-0,0057*** <i>0,0012</i>	-0,0056*** <i>0,0012</i>	-0,0137*** <i>0,0009</i>	-0,0136*** <i>0,0009</i>	-0,0136*** <i>0,0009</i>	-0,0139*** <i>0,0009</i>	-0,0138*** <i>0,0009</i>
Y 2000	-0,0032*** <i>0,0012</i>	-0,0032*** <i>0,0012</i>	-0,0031*** <i>0,0012</i>	-0,0032*** <i>0,0012</i>	-0,0031*** <i>0,0012</i>	-0,0112*** <i>0,0009</i>	-0,0112*** <i>0,0009</i>	-0,0112*** <i>0,0009</i>	-0,0114*** <i>0,0009</i>	-0,0114*** <i>0,0009</i>
Y 2001	-0,0010 <i>0,0011</i>	-0,0010 <i>0,0011</i>	-0,0008 <i>0,0011</i>	-0,0010 <i>0,0011</i>	-0,0009 <i>0,0011</i>	-0,0091*** <i>0,0008</i>	-0,0090*** <i>0,0008</i>	-0,0090*** <i>0,0008</i>	-0,0092*** <i>0,0008</i>	-0,0092*** <i>0,0008</i>
Y 2002	-0,0024** <i>0,0011</i>	-0,0024** <i>0,0011</i>	-0,0023** <i>0,0011</i>	-0,0024** <i>0,0011</i>	-0,0023** <i>0,0011</i>	-0,0076*** <i>0,0008</i>	-0,0075*** <i>0,0008</i>	-0,0075*** <i>0,0008</i>	-0,0077*** <i>0,0008</i>	-0,0077*** <i>0,0008</i>
Y 2003	-0,0053*** <i>0,0011</i>	-0,0053*** <i>0,0011</i>	-0,0052*** <i>0,0011</i>	-0,0053*** <i>0,0011</i>	-0,0052*** <i>0,0011</i>	-0,0074*** <i>0,0008</i>	-0,0074*** <i>0,0008</i>	-0,0074*** <i>0,0008</i>	-0,0076*** <i>0,0008</i>	-0,0075*** <i>0,0008</i>
Y 2004	-0,0045*** <i>0,0011</i>	-0,0045*** <i>0,0011</i>	-0,0044*** <i>0,0011</i>	-0,0045*** <i>0,0011</i>	-0,0044*** <i>0,0011</i>	-0,0072*** <i>0,0008</i>	-0,0071*** <i>0,0008</i>	-0,0071*** <i>0,0008</i>	-0,0073*** <i>0,0008</i>	-0,0072*** <i>0,0008</i>
Y 2005	-0,0059*** <i>0,0011</i>	-0,0059*** <i>0,0011</i>	-0,0058*** <i>0,0011</i>	-0,0059*** <i>0,0011</i>	-0,0058*** <i>0,0011</i>	-0,0051*** <i>0,0008</i>	-0,0051*** <i>0,0008</i>	-0,0051*** <i>0,0008</i>	-0,0052*** <i>0,0008</i>	-0,0052*** <i>0,0008</i>
Y 2006	-0,0034*** <i>0,0011</i>	-0,0034*** <i>0,0011</i>	-0,0034*** <i>0,0011</i>	-0,0034*** <i>0,0011</i>	-0,0034*** <i>0,0011</i>	-0,0024*** <i>0,0008</i>	-0,0023*** <i>0,0008</i>	-0,0024*** <i>0,0008</i>	-0,0024*** <i>0,0008</i>	-0,0024*** <i>0,0008</i>
Intercept	0,1367*** <i>0,0029</i>	0,1204*** <i>0,0034</i>	0,1322*** <i>0,0028</i>	0,1304*** <i>0,0029</i>	0,1370*** <i>0,0028</i>	0,0732*** <i>0,0021</i>	0,0702*** <i>0,0025</i>	0,0753*** <i>0,0021</i>	0,0823*** <i>0,0022</i>	0,0723*** <i>0,0021</i>
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
F	399,9500	400,3700	413,8200	399,0900	401,8900	3676,3700	3675,6200	3674,8300	3683,7000	3681,2700
R2	0,0959	0,0960	0,0989	0,0958	0,0964	0,5026	0,5025	0,5025	0,5031	0,5029
Number of Observations	105549	105549	105549	105549	105549	105549	105549	105549	105549	105549

TABLE 6: Firms' distance from control influence on their sensitivity to industry adjusted and group performance

Columns 1 to 5 report estimation of the coefficient when estimating the following equation, using ordinary least square method:

$$ROA_{i,t} = \alpha + \beta_1 ROA_{i,t,k} + \beta_2 ROA_{i,t,k} * CS_i + \sum_{n=2}^N \beta_n Controls_{n,i,t} + \varepsilon_{i,t}$$

Columns 6 to 10 report estimation of the coefficient when estimating the following equation, using ordinary least square method:

$$ROA_{i,t} = \alpha + \beta_1 ROA_{i,t,k} + \beta_2 ROA_{i,t,g} + \beta_3 CS * ROA_{i,t,g} + \sum_{n=2}^N \beta_n Controls_{n,i,t} + \varepsilon_{i,t}$$

The explained variable is the annual ROA of the firm. CF is the cash flow rights of the controlling firm, Control Ratio is the ratio of control computed according to the weakest link method and the cash flow rights of the controlling firm, Controlling is a binary variable that takes value 1 if the firm is the business group controlling firm and 0 else, Ultimately Controlled is a binary variable that takes value 1 if the firm does not control any other firm, Relative Position is the ratio of the number of level of control in the business group and the position of the firm, ROAf is the firm's industry adjusted performance, ROAg is the group's performance, Size is the log of the firm annual turnover, Age is the log of firm age, Leverage is the ratio of firm debt on total liabilities, Growth is the firm annual turnover growth rate. Y 1999 to Y 2006 are year dummies where the year 2007 is the reference. The * between two variables indicates the coefficient estimation of the interaction between the two variables, in column 1 to 5 the interaction is between firms' distance from control and firms' adjusted performance, and in column 6 to 10 it is the interaction between firms' distance from control and group performance. The standard errors of estimates are reported in italics under the value of the estimated coefficients. *** indicates that coefficients estimates are significant at the 1% level according to the student test, ** at 5%, and * at 10%.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
CF*ROAf/g	-0,2917***					-0,3119***				
	0,0152					0,0192				
Control Ratio*ROAf/g		0,1751***					0,1748***			
		0,0263					0,0286			
Controlling*ROAf/g			-0,3107***					-0,4426***		
			0,0089					0,0130		
Ultimately Controlled*ROAf/g				0,1480***					0,1509***	
				0,0073					0,0093	
Relative Position*ROAf/g					-0,2148***					-0,24826***
					0,0078					0,0103
ROAf	1,1200***	0,7856***	0,9978***	0,8848***	1,2476***	0,7865***	0,7944***	0,7219***	0,7878***	0,7679***
	0,0180	0,0299	0,0132	0,0137	0,0167	0,0236	0,0236	0,0235	0,0236	0,0236
ROAg						0,6925***	0,2558***	0,5443***	0,3706***	0,7943***
						0,0299	0,0389	0,0254	0,0257	0,0294
Size	0,0051***	0,0044***	0,0039***	0,0056***	0,0051***	0,0064***	0,0055***	0,0046***	0,0070***	0,0064***
	0,0005	0,0005	0,0005	0,0005	0,0005	0,0007	0,0007	0,0007	0,0007	0,0007
Age	-0,0234***	-0,0245***	-0,0215***	-0,0230***	-0,0224***	-0,0211***	-0,0222***	-0,0187***	-0,0205***	-0,0198***
	0,0007	0,0007	0,0007	0,0007	0,0007	0,0009	0,0009	0,0009	0,0009	0,0009
Leverage	-0,0064***	-0,0064***	-0,0067***	-0,0064***	-0,0065***	-0,0061***	-0,0061***	-0,0065***	-0,0061***	-0,0062***
	0,0001	0,0001	0,0001	0,0001	0,0001	0,0001	0,0001	0,0001	0,0001	0,0001
Growth	-0,0045***	-0,0048***	-0,0044***	-0,0044***	-0,0043***	-0,0062***	-0,0065***	-0,0061***	-0,0061***	-0,0058***
	0,0011	0,0011	0,0011	0,0011	0,0011	0,0014	0,0014	0,0014	0,0014	0,0014
Y 1999	0,0108***	0,0103***	0,0113***	0,0109***	0,0112***	0,0035	0,0033	0,0021	0,0036	0,0034
	0,0022	0,0022	0,0022	0,0022	0,0022	0,0030	0,0030	0,0030	0,0030	0,0030
Y 2000	0,0094***	0,0090***	0,0100***	0,0096***	0,0099***	0,0015	0,0014	0,0008	0,0017	0,0017
	0,0021	0,0022	0,0021	0,0021	0,0021	0,0029	0,0029	0,0028	0,0029	0,0029
Y 2001	0,0106***	0,0103***	0,0112***	0,0107***	0,0110***	0,0048*	0,0047*	0,0046*	0,0048*	0,0049*
	0,0021	0,0021	0,0021	0,0021	0,0021	0,0028	0,0028	0,0028	0,0028	0,0028
Y 2002	0,0064***	0,0061***	0,0068***	0,0066***	0,0067***	0,0019	0,0017	0,0017	0,0019	0,0020
	0,0021	0,0021	0,0021	0,0021	0,0021	0,0027	0,0027	0,0027	0,0027	0,0027
Y 2003	0,0034	0,0031	0,0036*	0,0036*	0,0037*	0,0003	0,0001	0,0005	0,0004	0,0006
	0,0021	0,0021	0,0020	0,0021	0,0021	0,0027	0,0027	0,0027	0,0027	0,0027
Y 2004	0,0055***	0,0053***	0,0057***	0,0057***	0,0059***	0,0028	0,0026	0,0032	0,0028	0,0031
	0,0020	0,0020	0,0020	0,0020	0,0020	0,0026	0,0026	0,0026	0,0026	0,0026
Y 2005	0,0024	0,0022	0,0024	0,0027	0,0027	0,0017	0,0015	0,0023	0,0017	0,0019
	0,0021	0,0021	0,0020	0,0021	0,0020	0,0026	0,0026	0,0026	0,0026	0,0026
Y 2006	0,0030	0,0029	0,0030	0,0033	0,0033	0,0024	0,0022	0,0029	0,0024	0,0026
	0,0021	0,0021	0,0021	0,0021	0,0021	0,0026	0,0026	0,0026	0,0026	0,0026
Intercept	0,0588***	0,0677***	0,0675***	0,0517***	0,0559***	0,0115*	0,0218***	0,0246***	0,0027	0,0071
	0,00514	0,00513	0,00510	0,00518	0,00513	0,0066	0,0066	0,0065	0,0067	0,0066
F	761,81	736,33	828,82	765,53	792,53	535,75	518,84	602,40	535,69	559,51
R2	0,0918	0,0890	0,0991	0,0922	0,0951	0,1066	0,1036	0,1183	0,1066	0,1108
Number of Observations	105549	105549	105549	105549	105549	67360	67360	67360	67360	67360

TABLE 7: Firms' distance from control influence on their sensitivity to industry adjusted and group performance

Columns 1 to 5 report estimation of the coefficient when estimating the following equation, using ordinary least square method:

$$ROA_{i,t} = \alpha + \beta_1 ROA_{i,t,k} + \beta_2 CS_i + \beta_3 CS * ROA_{i,t,g} + \sum_{n=4}^N \beta_n Controls_{n,i,t} + \varepsilon_{i,t}$$

Columns 6 to 10 report estimation of the coefficient when estimating the following equation, using ordinary least square method:

$$ROA_{i,t} = \alpha + \beta_1 ROA_{i,t,k} + \beta_2 ROA_{i,t,g} + \beta_3 CS_i + \beta_4 CS * ROA_{i,t,g} + \sum_{n=5}^N \beta_n Controls_{n,i,t} + \varepsilon_{i,t}$$

The explained variable is the annual ROA of the firm. CF is the cash flow rights of the controlling firm, Control Ratio is the ratio of control computed according to the weakest link method and the cash flow rights of the controlling firm, Controlling is a binary variable that takes value 1 if the firm is the business group controlling firm and 0 else, Ultimately Controlled is a binary variable that takes value 1 if the firm does not control any other firm, Relative Position is the ratio of the number of level of control in the business group and the position of the firm, ROAF is the firm's industry adjusted performance, Size is the log of the firm annual turnover, Age is the log of firm age, Leverage is the ratio of firm debt on total liabilities, Growth is the firm annual turnover growth rate. Y 1999 to Y 2006 are year dummies where the year 2007 is the reference. CS*ROAF is the estimation of the interaction between the industry adjusted performance and the variable of distance from control, witch is also estimated as an independent variable. CS*ROAG is the estimation of the interaction between the group performance and the variable of distance from control, witch is also estimated as an independent variable. The standard errors of estimates are reported in italics under the value of the estimated coefficients. *** indicates that coefficients estimates are significant at the 1% level according to the student test, ** at 5%, and * at 10%.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
CF	0,03414*** <i>0,0073</i>					0,0543*** <i>0,010</i>				
Control Ratio		0,0177 <i>0,0126</i>					0,019 <i>0,015</i>			
Controlling			0,0148*** <i>0,0044</i>					0,0361*** <i>0,007</i>		
Ultimately Controlled				0,0042 <i>0,0034</i>					0,004 <i>0,005</i>	
Relative Position					-0,0025 <i>0,0038</i>					0,0092* <i>0,005</i>
ROAF	1,4015*** <i>0,0465</i>	0,92066*** <i>0,1008</i>	1,0177*** <i>0,0144</i>	0,9016*** <i>0,0194</i>	1,2229*** <i>0,0406</i>	0,7841*** <i>0,024</i>	0,7948*** <i>0,024</i>	0,7130*** <i>0,024</i>	0,7874*** <i>0,024</i>	0,7667*** <i>0,024</i>
CS* ROAF	-0,5410*** <i>0,0552</i>	0,0430 <i>0,0978</i>	-0,4208*** <i>0,0338</i>	0,1175*** <i>0,0259</i>	-0,1965*** <i>0,0287</i>					
ROAg						1,0116*** <i>0,064</i>	0,4009*** <i>0,125</i>	0,5882*** <i>0,027</i>	0,3865*** <i>0,032</i>	0,8846*** <i>0,059</i>
CS*ROAg						-0,7115*** <i>0,073</i>	0,033 <i>0,119</i>	-0,7102*** <i>0,050</i>	0,1229*** <i>0,035</i>	-0,3161*** <i>0,040</i>
Size	0,0051*** <i>0,0005</i>	0,0044*** <i>0,0005</i>	0,0040*** <i>0,0005</i>	0,0056*** <i>0,0005</i>	0,0051*** <i>0,0005</i>	0,0063*** <i>0,001</i>	0,0055*** <i>0,001</i>	0,0047*** <i>0,001</i>	0,0070*** <i>0,001</i>	0,0064*** <i>0,001</i>
Age	-0,0236*** <i>0,0007</i>	-0,0245*** <i>0,0007</i>	-0,0216*** <i>0,0007</i>	-0,0229*** <i>0,0007</i>	-0,0224*** <i>0,0007</i>	-0,0212*** <i>0,001</i>	-0,0222*** <i>0,001</i>	-0,0189*** <i>0,001</i>	-0,0205*** <i>0,001</i>	-0,0199*** <i>0,001</i>
Leverage	-0,0064*** <i>0,0001</i>	-0,0064*** <i>0,0001</i>	-0,0067*** <i>0,0001</i>	-0,0064*** <i>0,0001</i>	-0,0065*** <i>0,0001</i>	-0,0061*** <i>0,000</i>	-0,0061*** <i>0,000</i>	-0,0065*** <i>0,000</i>	-0,0061*** <i>0,000</i>	-0,0062*** <i>0,000</i>
Growth	-0,0045*** <i>0,0011</i>	-0,0048*** <i>0,0011</i>	-0,0044*** <i>0,0011</i>	-0,0044*** <i>0,0011</i>	-0,0042*** <i>0,0011</i>	-0,0062*** <i>0,0014</i>	-0,0065*** <i>0,0014</i>	-0,0061*** <i>0,0196</i>	-0,0061*** <i>0,0014</i>	-0,0058*** <i>0,0014</i>
Y 1999	0,0108*** <i>0,0022</i>	0,0103*** <i>0,0022</i>	0,0113*** <i>0,0022</i>	0,0110*** <i>0,0022</i>	0,0112*** <i>0,0022</i>	0,0035 <i>0,0030</i>	0,0033 <i>0,0030</i>	0,0022 <i>0,0030</i>	0,0036 <i>0,0030</i>	0,0034 <i>0,0030</i>
Y 2000	0,0094*** <i>0,0021</i>	0,0090*** <i>0,0022</i>	0,0101*** <i>0,0021</i>	0,0096*** <i>0,0021</i>	0,0099*** <i>0,0021</i>	0,0016 <i>0,0029</i>	0,0014 <i>0,0029</i>	0,0010 <i>0,0028</i>	0,0017 <i>0,0029</i>	0,0017 <i>0,0029</i>
Y 2001	0,0106*** <i>0,0021</i>	0,0103*** <i>0,0021</i>	0,0112*** <i>0,0021</i>	0,0108*** <i>0,0021</i>	0,0110*** <i>0,0021</i>	0,0030* <i>0,0019</i>	0,0047 <i>0,0028</i>	0,0047* <i>0,0028</i>	0,0048* <i>0,0028</i>	0,0049* <i>0,0028</i>
Y 2002	0,0064*** <i>0,0021</i>	0,0061*** <i>0,0021</i>	0,0068*** <i>0,0021</i>	0,0066*** <i>0,0021</i>	0,0068*** <i>0,0021</i>	0,0048 <i>0,0027</i>	0,0017 <i>0,0027</i>	0,0018 <i>0,0027</i>	0,0019 <i>0,0027</i>	0,0020 <i>0,0027</i>
Y 2003	0,0034 <i>0,0021</i>	0,0031 <i>0,0021</i>	0,0036* <i>0,0021</i>	0,0036* <i>0,0021</i>	0,0037* <i>0,0021</i>	0,0003 <i>0,0027</i>	0,0001 <i>0,0027</i>	0,0005 <i>0,0027</i>	0,0004 <i>0,0027</i>	0,0006 <i>0,0027</i>
Y 2004	0,0055*** <i>0,0020</i>	0,0053*** <i>0,0020</i>	0,0057*** <i>0,0020</i>	0,0057*** <i>0,0020</i>	0,0059*** <i>0,0020</i>	0,0028 <i>0,0026</i>	0,0026 <i>0,0026</i>	0,0032 <i>0,0026</i>	0,0028 <i>0,0026</i>	0,0031 <i>0,0026</i>
Y 2005	0,0024 <i>0,0021</i>	0,0022 <i>0,0021</i>	0,0024 <i>0,0020</i>	0,0026 <i>0,0021</i>	0,0027 <i>0,0020</i>	0,0017 <i>0,0026</i>	0,0015 <i>0,0026</i>	0,0022 <i>0,0026</i>	0,0017 <i>0,0026</i>	0,0019 <i>0,0026</i>
Y 2006	0,0030 <i>0,0021</i>	0,0029 <i>0,0021</i>	0,0030 <i>0,0021</i>	0,0033 <i>0,0021</i>	0,0033 <i>0,0021</i>	0,0024 <i>0,0026</i>	0,0022 <i>0,0026</i>	0,0028 <i>0,0026</i>	0,0024 <i>0,0026</i>	0,0026 <i>0,0026</i>
Intercept	0,0314*** <i>0,0078</i>	0,0496*** <i>0,0139</i>	0,0644*** <i>0,0052</i>	0,0492*** <i>0,0056</i>	0,0592*** <i>0,0072</i>	-0,0310*** <i>0,010</i>	0,002 <i>0,017</i>	0,0066*** <i>0,001</i>	0,000 <i>0,007</i>	-0,0048*** <i>0,009</i>
F	712,64	687,38	774,41	714,59	739,72	504,52	486,51	566,90	502,25	524,75
R2	0,0920	0,0890	0,0992	0,0922	0,0951	0,107	0,104	0,119	0,107	0,111
Number of Observations	105549	105549	105549	105549	105549	67360	67360	67360	67360	67360

Working Papers

Laboratoire de Recherche en Gestion & Economie

- D.R. n° 1 "Bertrand Oligopoly with decreasing returns to scale", J. Thépot, décembre 1993
- D.R. n° 2 "Sur quelques méthodes d'estimation directe de la structure par terme des taux d'intérêt", P. Roger - N. Rossiensky, janvier 1994
- D.R. n° 3 "Towards a Monopoly Theory in a Managerial Perspective", J. Thépot, mai 1993
- D.R. n° 4 "Bounded Rationality in Microeconomics", J. Thépot, mai 1993
- D.R. n° 5 "Apprentissage Théorique et Expérience Professionnelle", J. Thépot, décembre 1993
- D.R. n° 6 "Strategic Consumers in a Duable-Goods Monopoly", J. Thépot, avril 1994
- D.R. n° 7 "Vendre ou louer ; un apport de la théorie des jeux", J. Thépot, avril 1994
- D.R. n° 8 "Default Risk Insurance and Incomplete Markets", Ph. Artzner - FF. Delbaen, juin 1994
- D.R. n° 9 "Les actions à réinvestissement optionnel du dividende", C. Marie-Jeanne - P. Roger, janvier 1995
- D.R. n° 10 "Forme optimale des contrats d'assurance en présence de coûts administratifs pour l'assureur", S. Spaeter, février 1995
- D.R. n° 11 "Une procédure de codage numérique des articles", J. Jeunet, février 1995
- D.R. n° 12 "Stabilité d'un diagnostic concurrentiel fondé sur une approche markovienne du comportement de rachat du consommateur", N. Schall, octobre 1995
- D.R. n° 13 "A direct proof of the coase conjecture", J. Thépot, octobre 1995
- D.R. n° 14 "Invitation à la stratégie", J. Thépot, décembre 1995
- D.R. n° 15 "Charity and economic efficiency", J. Thépot, mai 1996
- D.R. n° 16 "Pricing anomalies in financial markets and non linear pricing rules", P. Roger, mars 1996
- D.R. n° 17 "Non linéarité des coûts de l'assureur, comportement de prudence de l'assuré et contrats optimaux", S. Spaeter, avril 1996
- D.R. n° 18 "La valeur ajoutée d'un partage de risque et l'optimum de Pareto : une note", L. Eeckhoudt - P. Roger, juin 1996
- D.R. n° 19 "Evaluation of Lot-Sizing Techniques : A robustness and Cost Effectiveness Analysis", J. Jeunet, mars 1996
- D.R. n° 20 "Entry accommodation with idle capacity", J. Thépot, septembre 1996

- D.R. n° 21 "Différences culturelles et satisfaction des vendeurs : Une comparaison internationale", E. Vauquois-Mathevot - J.Cl. Usunier, novembre 1996
- D.R. n° 22 "Evaluation des obligations convertibles et options d'échange", Schmitt - F. Home, décembre 1996
- D.R. n° 23 "Réduction d'un programme d'optimisation globale des coûts et diminution du temps de calcul, J. Jeunet, décembre 1996
- D.R. n° 24 "Incertitude, vérifiabilité et observabilité : Une relecture de la théorie de l'agence", J. Thépot, janvier 1997
- D.R. n° 25 "Financement par augmentation de capital avec asymétrie d'information : l'apport du paiement du dividende en actions", C. Marie-Jeanne, février 1997
- D.R. n° 26 "Paiement du dividende en actions et théorie du signal", C. Marie-Jeanne, février 1997
- D.R. n° 27 "Risk aversion and the bid-ask spread", L. Eeckhoudt - P. Roger, avril 1997
- D.R. n° 28 "De l'utilité de la contrainte d'assurance dans les modèles à un risque et à deux risques", S. Spaeter, septembre 1997
- D.R. n° 29 "Robustness and cost-effectiveness of lot-sizing techniques under revised demand forecasts", J. Jeunet, juillet 1997
- D.R. n° 30 "Efficience du marché et comparaison de produits à l'aide des méthodes d'enveloppe (Data envelopment analysis)", S. Chabi, septembre 1997
- D.R. n° 31 "Qualités de la main-d'œuvre et subventions à l'emploi : Approche microéconomique", J. Calaza - P. Roger, février 1998
- D.R. n° 32 "Probabilité de défaut et spread de taux : Etude empirique du marché français", M. Merli - P. Roger, février 1998
- D.R. n° 33 "Confiance et Performance : La thèse de Fukuyama", J.Cl. Usunier - P. Roger, avril 1998
- D.R. n° 34 "Measuring the performance of lot-sizing techniques in uncertain environments", J. Jeunet - N. Jonard, janvier 1998
- D.R. n° 35 "Mobilité et décision de consommation : premiers résultats dans un cadre monopolistique", Ph. Lapp, octobre 1998
- D.R. n° 36 "Impact du paiement du dividende en actions sur le transfert de richesse et la dilution du bénéfice par action", C. Marie-Jeanne, octobre 1998
- D.R. n° 37 "Maximum resale-price-maintenance as Nash condition", J. Thépot, novembre 1998
- D.R. n° 38 "Properties of bid and ask prices in the rank dependent expected utility model", P. Roger, décembre 1998
- D.R. n° 39 "Sur la structure par termes des spreads de défaut des obligations », Maxime Merli / Patrick Roger, septembre 1998
- D.R. n° 40 "Le risque de défaut des obligations : un modèle de défaut temporaire de l'émetteur", Maxime Merli, octobre 1998
- D.R. n° 41 "The Economics of Doping in Sports", Nicolas Eber / Jacques Thépot, février 1999
- D.R. n° 42 "Solving large unconstrained multilevel lot-sizing problems using a hybrid genetic algorithm", Jully Jeunet, mars 1999
- D.R. n° 43 "Niveau général des taux et spreads de rendement", Maxime Merli, mars 1999

- D.R. n° 44 "Doping in Sport and Competition Design", Nicolas Eber / Jacques Thépot, septembre 1999
- D.R. n° 45 "Interactions dans les canaux de distribution", Jacques Thépot, novembre 1999
- D.R. n° 46 "What sort of balanced scorecard for hospital", Thierry Nobre, novembre 1999
- D.R. n° 47 "Le contrôle de gestion dans les PME", Thierry Nobre, mars 2000
- D.R. n° 48 "Stock timing using genetic algorithms", Jerzy Korczak – Patrick Roger, avril 2000
- D.R. n° 49 "On the long run risk in stocks : A west-side story", Patrick Roger, mai 2000
- D.R. n° 50 "Estimation des coûts de transaction sur un marché gouverné par les ordres : Le cas des composantes du CAC40", Laurent Deville, avril 2001
- D.R. n° 51 "Sur une mesure d'efficacité relative dans la théorie du portefeuille de Markowitz", Patrick Roger / Maxime Merli, septembre 2001
- D.R. n° 52 "Impact de l'introduction du tracker Master Share CAC 40 sur la relation de parité call-put", Laurent Deville, mars 2002
- D.R. n° 53 "Market-making, inventories and martingale pricing", Patrick Roger / Christian At / Laurent Flochel, mai 2002
- D.R. n° 54 "Tarification au coût complet en concurrence imparfaite", Jean-Luc Netzer / Jacques Thépot, juillet 2002
- D.R. n° 55 "Is time-diversification efficient for a loss averse investor ?", Patrick Roger, janvier 2003
- D.R. n° 56 "Dégradations de notations du leader et effets de contagion", Maxime Merli / Alain Schatt, avril 2003
- D.R. n° 57 "Subjective evaluation, ambiguity and relational contracts", Brigitte Godbillon, juillet 2003
- D.R. n° 58 "A View of the European Union as an Evolving Country Portfolio", Pierre-Guillaume Méon / Laurent Weill, juillet 2003
- D.R. n° 59 "Can Mergers in Europe Help Banks Hedge Against Macroeconomic Risk ?", Pierre-Guillaume Méon / Laurent Weill, septembre 2003
- D.R. n° 60 "Monetary policy in the presence of asymmetric wage indexation", Giuseppe Diana / Pierre-Guillaume Méon, juillet 2003
- D.R. n° 61 "Concurrence bancaire et taille des conventions de services", Corentine Le Roy, novembre 2003
- D.R. n° 62 "Le petit monde du CAC 40", Sylvie Chabi / Jérôme Maati
- D.R. n° 63 "Are Athletes Different ? An Experimental Study Based on the Ultimatum Game", Nicolas Eber / Marc Willinger
- D.R. n° 64 "Le rôle de l'environnement réglementaire, légal et institutionnel dans la défaillance des banques : Le cas des pays émergents", Christophe Godlewski, janvier 2004
- D.R. n° 65 "Etude de la cohérence des ratings de banques avec la probabilité de défaillance bancaire dans les pays émergents", Christophe Godlewski, Mars 2004
- D.R. n° 66 "Le comportement des étudiants sur le marché du téléphone mobile : Inertie, captivité ou fidélité ?", Corentine Le Roy, Mai 2004
- D.R. n° 67 "Insurance and Financial Hedging of Oil Pollution Risks", André Schmitt / Sandrine Spaeter, September, 2004

- D.R. n° 68 "On the Backwardness in Macroeconomic Performance of European Socialist Economies", Laurent Weill, September, 2004
- D.R. n° 69 "Majority voting with stochastic preferences : The whims of a committee are smaller than the whims of its members", Pierre-Guillaume Méon, September, 2004
- D.R. n° 70 "Modélisation de la prévision de défaillance de la banque : Une application aux banques des pays émergents", Christophe J. Godlewski, octobre 2004
- D.R. n° 71 "Can bankruptcy law discriminate between heterogeneous firms when information is incomplete ? The case of legal sanctions", Régis Blazy, october 2004
- D.R. n° 72 "La performance économique et financière des jeunes entreprises", Régis Blazy/Bertrand Chopard, octobre 2004
- D.R. n° 73 "Ex Post Efficiency of bankruptcy procedures : A general normative framework", Régis Blazy / Bertrand Chopard, novembre 2004
- D.R. n° 74 "Full cost pricing and organizational structure", Jacques Thépot, décembre 2004
- D.R. n° 75 "Prices as strategic substitutes in the Hotelling duopoly", Jacques Thépot, décembre 2004
- D.R. n° 76 "Réflexions sur l'extension récente de la statistique de prix et de production à la santé et à l'enseignement", Damien Broussolle, mars 2005
- D. R. n° 77 "Gestion du risque de crédit dans la banque : Information hard, information soft et manipulation ", Brigitte Godbillon-Camus / Christophe J. Godlewski
- D.R. n° 78 "Which Optimal Design For LLDAs", Marie Pfiffelmann
- D.R. n° 79 "Jensen and Meckling 30 years after : A game theoretic view", Jacques Thépot
- D.R. n° 80 "Organisation artistique et dépendance à l'égard des ressources", Odile Paulus, novembre 2006
- D.R. n° 81 "Does collateral help mitigate adverse selection ? A cross-country analysis", Laurent Weill –Christophe J. Godlewski, novembre 2006
- D.R. n° 82 "Why do banks ask for collateral and which ones ?", Régis Blazy - Laurent Weill, décembre 2006
- D.R. n° 83 "The peace of work agreement : The emergence and enforcement of a swiss labour market institution", D. Broussolle, janvier 2006.
- D.R. n° 84 "The new approach to international trade in services in view of services specificities : Economic and regulation issues", D. Broussolle, septembre 2006.
- D.R. n° 85 "Does the consciousness of the disposition effect increase the equity premium" ?, P. Roger, juin 2007
- D.R. n° 86 "Les déterminants de la décision de syndication bancaire en France", Ch. J. Godlewski
- D.R. n° 87 "Syndicated loans in emerging markets", Ch. J. Godlewski / L. Weill, mars 2007
- D.R. n° 88 "Hawks and doves in segmented markets : A formal approach to competitive aggressiveness", Claude d'Aspremont / R. Dos Santos Ferreira / J. Thépot, mai 2007
- D.R. n° 89 "On the optimality of the full cost pricing", J. Thépot, février 2007
- D.R. n° 90 "SME's main bank choice and organizational structure : Evidence from France", H. El Hajj Chehade / L. Vigneron, octobre 2007

- D.R. n° 91 “How to solve St Petersburg Paradox in Rank-Dependent Models” ?, M. Pfiffelmann, octobre 2007
- D.R. n° 92 “Full market opening in the postal services facing the social and territorial cohesion goal in France”, D. Broussolle, novembre 2007
- D.R. n° 2008-01 A behavioural Approach to financial puzzles, M.H. Broihanne, M. Merli, P. Roger, janvier 2008
- D.R. n° 2008-02 What drives the arrangement timetable of bank loan syndication ?, Ch. J. Godlewski, février 2008
- D.R. n° 2008-03 Financial intermediation and macroeconomic efficiency, Y. Kuhry, L. Weill, février 2008
- D.R. n° 2008-04 The effects of concentration on competition and efficiency : Some evidence from the french audit market, G. Broye, L. Weill, février 2008
- D.R. n° 2008-05 Does financial intermediation matter for macroeconomic efficiency?, P.G. Méon, L. Weill, février 2008
- D.R. n° 2008-06 Is corruption an efficient grease ?, P.G. Méon, L. Weill, février 2008
- D.R. n° 2008-07 Convergence in banking efficiency across european countries, L. Weill, février 2008
- D.R. n° 2008-08 Banking environment, agency costs, and loan syndication : A cross-country analysis, Ch. J. Godlewski, mars 2008
- D.R. n° 2008-09 Are French individual investors reluctant to realize their losses ?, Sh. Boolell-Gunesh / M.H. Broihanne / M. Merli, avril 2008
- D.R. n° 2008-10 Collateral and adverse selection in transition countries, Ch. J. Godlewski / L. Weill, avril 2008
- D.R. n° 2008-11 How many banks does it take to lend ? Empirical evidence from Europe, Ch. J. Godlewski, avril 2008.
- D.R. n° 2008-12 Un portrait de l’investisseur individuel français, Sh. Boolell-Gunesh, avril 2008
- D.R. n° 2008-13 La déclaration de mission, une revue de la littérature, Odile Paulus, juin 2008
- D.R. n° 2008-14 Performance et risque des entreprises appartenant à des groupes de PME, Anaïs Hamelin, juin 2008
- D.R. n° 2008-15 Are private banks more efficient than public banks ? Evidence from Russia, Alexei Karas / Koen Schoors / Laurent Weill, septembre 2008
- D.R. n° 2008-16 Capital protected notes for loss averse investors : A counterintuitive result, Patrick Roger, septembre 2008
- D.R. n° 2008-17 Mixed risk aversion and preference for risk disaggregation, Patrick Roger, octobre 2008
- D.R. n° 2008-18 Que peut-on attendre de la directive services ?, Damien Broussolle, octobre 2008
- D.R. n° 2008-19 Bank competition and collateral : Theory and Evidence, Christa Hainz / Laurent Weill / Christophe J. Godlewski, octobre 2008
- D.R. n° 2008-20 Duration of syndication process and syndicate organization, Ch. J. Godlewski, novembre 2008
- D.R. n° 2008-21 How corruption affects bank lending in Russia, L. Weill, novembre 2008
- D.R. n° 2008-22 On several economic consequences of the full market opening in the postal service in the European Union, D. Broussolle, novembre 2008.

- D.R. n° 2009-01 Asymmetric Information and Loan Spreads in Russia: Evidence from Syndicated Loans, Z. Fungacova, C.J. Godlewski, L. Weill
- D.R. n° 2009-02 Do Islamic Banks Have Greater Market Power ?, L. Weill
- D.R. n° 2009-03 CEO Compensation: Too Much is not Enough!, N. Couderc & L. Weill
- D.R. n° 2009-04 La cannibalisation des produits à prix aléatoires : L'Euromillions a-t-il tué le loto français?, P. Roger & S. Chabi
- D.R. n° 2009-05 The demand for Euromillions lottery tickets: An international comparison, P. Roger
- D.R. n° 2009-06 Concentration in corporate bank loans What do we learn from European comparisons?, C.J. Godlewski & Y. Ziane
- D.R. n° 2009-07 Le mariage efficace de l'épargne et du jeu : une approche historique, M. Pfiffelmann
- D.R. n° 2009-08 Testing alternative theories of financial decision making: an experimental study with lottery bonds, P. Roger
- D.R. n° 2009-09 Does Corruption Hamper Bank Lending? Macro and Micro Evidence, L. Weill
- D.R. n° 2009-10 La Théorie Comportementale du Portefeuille et l'Equilibre du Marché, O. Bourachnikova
- D.R. n° 2009-11 Déformation des Probabilités Objectives et la Théorie Comportementale du Portefeuille, O. Bourachnikova
- D.R. n° 2009-12 La Théorie Comportementale du Portefeuille vs. le modèle moyenne – variance. Étude empirique, O. Bourachnikova
- D.R. n° 2009-13 Symmetric vs. Downside Risk: Does It Matter for Portfolio Choice? O. Bourachnikova & N. Yusupov
- D.R. n° 2009-14 Negative Agency Costs, J. Thépot
- D.R. n° 2010-01 Does family control of small business lead to under exploitation of their financial growth potential? Evidence of the existence of conservative growth behavior in family controlled French SMEs, A. Hamelin
- D.R. n° 2010-02 Better borrowers, fewer banks?, C.J. Godlewski & F. Lobez & J.-C. Statnik & Y. Ziane
- D.R. n° 2010-03 Responsabilité sociale de l'entreprise et théorie de l'organisation, J. Thépot
- D.R. n° 2010-04 Small business groups enhance performance and promote stability, not expropriation. Evidence from French SMEs, A. Hamelin