



HAL
open science

How does family control affect stock price synchronicity?

Zeineb Barka, Ramzi Benkraiem, Taher Hamza, Faten Lakhhal

► To cite this version:

Zeineb Barka, Ramzi Benkraiem, Taher Hamza, Faten Lakhhal. How does family control affect stock price synchronicity?. *Finance Research Letters*, 2022, 49, pp.103092. 10.1016/j.frl.2022.103092 . hal-03713069

HAL Id: hal-03713069

<https://audencia.hal.science/hal-03713069>

Submitted on 22 Jul 2024

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution - NonCommercial 4.0 International License

How Does Family Control Affect Stock Price Synchronicity?

Zeineb BARKA

PRESTIGE Labo, IHEC- University of Carthage, Tunisia
zeynebbk@yahoo.fr

Ramzi BENKRAIEM*

[*Corresponding author]

Full Professor

Head of research partnerships with academic institutions and associations

Head of research - Faculty of accounting, management and economics

Audencia Business School (AACSB, EQUIS & AMBA), Nantes, France

Email: rbenkraiem@audencia.com

Taher HAMZA

EM Normandie Business School, Metis Lab, France.

PRESTIGE Labo, IHEC- University of Carthage, Tunisia

Email: thamza@em-normandie.fr

Faten LAKHAL

Léonard de Vinci Pôle Universitaire, Research Center, 92916 Paris La Défense

IRG, Université Paris-Est (France)

Email: faten.lakhal@devinci.fr

How Does Family Control Affect Stock Price Synchronicity?

Abstract

This paper examines the effect of family control on the degree of stock price synchronicity. The results reveal that family control has a negative effect on stock price synchronicity, supporting the socioemotional wealth perspective. The results also show that this negative effect of family control on stock price synchronicity is prevalent only for family firms with high analyst coverage and a large institutional investor stake. These results suggest that families disclose more specific information to enhance their reputation and alleviate minority investors' fears of being expropriated when the firm has less information asymmetry and is well monitored.

Keywords: Stock price synchronicity; Family control, Corporate governance; Information environment; Financial crisis.

1. Introduction

Ever since Roll (1988) incorporated firm-specific information into the discussion of stock price fluctuations, the concept of stock price synchronicity has attracted growing interest in academic research. Stock price synchronicity refers to the extent to which individual stock prices co-move with the market. According to Roll (1988), when firm-specific information is not readily available, investors depend heavily on publicly available market and industry information, which leads to high stock price synchronicity. Several scholars discuss stock price synchronicity from the perspective of investor protection (Morck et al., 2000), corporate ownership structure (Boubaker et al., 2014; Gul et al., 2010), analyst coverage (Chan and Hameed, 2006), and the CEO type (Xu and Zhang, 2018). Examining the role of institutional investors, An and Zhang (2013) report that dedicated institutional investors with long-term horizons improve the incorporation of firm-specific information into stock prices. Nevertheless, limited literature focuses on the information disclosure role of family-controlled firms. To fill this gap, we examine whether family firms exhibit less synchronous stock prices in France, a topic that has yet to be addressed in the literature. France provides an interesting institutional setting for at least two reasons. First, France is a civil law country characterized by a low level of investor protection (La Porta et al., 1999), which may limit the incorporation of firm-specific information into stock prices (Gul et al., 2010). The second reason is that, the French stock market is dominated by the presence of family-controlled firms; (Faccio and Lang, 2002) and is often criticized for its inability to protect minority investors. Indeed, family shareholders may take advantage of their dominant ownership position to get private benefits at the expense of minority shareholders (Andres, 2008).

Family firms have attracted the attention of scholars worldwide due to their ubiquity and complexity (La Porta et al., 1999). Family firms have a unique principal–agent agenda that produces relatively few conflicts between shareholders and managers but high conflicts of interest between controlling and minority shareholders (Ali et al., 2007; Wang, 2006). Despite the relevance of the financial disclosure practices in family businesses, the literature on this topic is still scarce and does not reach univocal results.

The existing literature presents two alternative views regarding the effect of family control on information dissemination in the stock market (Ali et al., 2007; Anderson et al., 2009; Wang, 2006). The first view is based on the socio-emotional perspective, which entails the consideration of non-economic aspects of family firms (Gomez- et al., 2011). The socioemotional wealth approach argues that the decision-adoption process in the family firm revolves around protecting its socioemotional wealth such as reputation, social status and family dynasty (Glover & Reay, 2015). According to this theoretical approach, we build our argument on the fact that families are emotionally linked to their businesses and thus are committed to disclosing more information to build a good reputation, signal their integrity, and reduce minority shareholders' concerns about family expropriation (Anderson and Reeb, 2003). Studies using U.S. data show that family firms provide better earnings quality, make better financial disclosures, and show more profit warnings (Ali et al., 2007; Wang, 2006). Xu and Zhang (2018) report that family CEOs are more inclined to disclose firm-specific information to mitigate the entrenchment concerns of minority shareholders in China. From this perspective, family firms are expected to have a positive effect on information disclosure, leading to lower stock price synchronicity.

An alternative view is based on the opportunistic behavior of family-controlled firms and highlights a negative effect on information disclosure. Studies document that family firms with

an excess of control place greater emphasis on activities that benefit themselves and offer less information to hide the family's expropriation behavior (Anderson et al., 2009; Faccio and Lang, 2002). Chen et al. (2008) further report that family firms tend to disclose fewer earnings forecasts and hold fewer conference calls. Thus, if the private benefits of control are substantial, controlling families have little incentive to voluntarily disclose firm-specific information, leading to higher stock price synchronicity.

In this paper, we also examine whether the negative relation between family control and price synchronicity is affected by the level of information asymmetry and the effectiveness of corporate governance. We rely on analyst coverage as a proxy for information asymmetry and institutional block ownership to measure the strength of corporate governance. First, evidence suggests that firms with more analyst coverage are associated with better information disclosure policies and less information asymmetry (Lang and Lundholm, 1996). A higher number of analysts following reflects better firms' information environments. Second, recent studies argue that institutional blockholders (with greater ownership stakes and thus more stable ownership) are more active in monitoring, gathering, and processing firm-specific information (Brockman and Yan, 2009; Chen et al., 2007). [Institutional investors have the potential to influence firms to adopt better governance practices either directly, by monitoring management, through "voice", such as proxy contests, raising their voice at board of directors' council \(McCahery et al. \(2016\) or indirectly, through "voting with their feet" or threatening to exit \(Edmans & Manso, 2011\).](#) Therefore, due to strengthened external monitoring by analysts and institutional blockholders, family owners are more inclined to disclose information and face more constraints on hoarding bad news, leading to lower stock price synchronicity. Consistent with this argument, we expect

family control to reduce stock price synchronicity to a greater extent for firms facing lower information asymmetry and effective corporate governance.

Empirically, we examine the relation between family-controlled firms and stock price synchronicity using a hand-collected French dataset from 2002 to 2016. Consistent with the socioemotional wealth perspective, we find evidence that family control has a significant negative impact on stock price synchronicity. The results suggest that family firms disclose more information, which improves the informativeness of stock prices. We also provide evidence that this negative relation between family control and stock price synchronicity is more pronounced for firms with high analyst coverage and institutional block ownership.

This paper contributes to the literature in several ways. First, numerous studies focus on the family's impact on firm performance (Anderson, and Reeb, 2003), earnings quality (Ali et al., 2007; Wang, 2006), and voluntary disclosure (Chen et al., 2008), among others. [This paper sheds light on the role of family shareholders in influencing the incorporation of firm-specific information into stock prices, which has not received much attention.](#) Second, the work is related to the recent rise of studies focusing on the importance of corporate ownership structure and analysts' coverage in determining stock price synchronicity (Boubaker et al., 2014; Chan and Hameed, 2006; Xu and Zhang, 2018). This study extends this literature strand by showing that [family control is an important lever for reducing stock price synchronicity in financial markets.](#) Finally, this paper enhances the understanding of the French stock market, especially of the issue of stock price synchronicity. To the best of our knowledge, this paper is the first to investigate the association between family control and stock price synchronicity in France, a concentrated ownership environment where firms are typically family owned and the protection of outside investors is relatively weak.

The remainder of the paper proceeds as follows. In Section 2, we present the sample and methodology. In Section 3, we report the empirical results. In Section 4, we conclude the paper.

2. Data and methods

2.1. Sample selection

The initial sample includes 590 French listed firms. Following previous studies, we exclude financial firms (SIC codes between 6000 and 6999) and firms that have missing or incomplete financial or governance data. The final sample consists of 224 French listed firms from 2004 to 2016. Data on ownership structure are hand-collected from firms' annual reports and the Thomson-Reuters database. We obtain accounting and financial data from the Worldscope database.

2.2. Variable descriptions

The existing literature relies mainly on R-squared statistics obtained from common asset pricing models to measure either firm-specific or market-wide information on stock prices (Jin and Myers, 2006; Roll, 1988). We measure stock returns using the Fama–French (1993) three-factor model:

$$R_{it} = \alpha + \beta_i R_{mt} + \beta_2 SMB_t + \beta_3 HML_t + \varepsilon_{it}, \quad (1)$$

where R_{it} is the monthly return of firm i in year t , and R_{mt} is the monthly market return. SMB_t and HML_t represent the size and the value risk premium, respectively. Then, we follow Morck et al. (2000) and Jin and Myers (2006) and apply the logistic transformation of the R^2 in the empirical analyses,

$$SYNCH_{it} = \log\left(\frac{R_{it}^2}{1 - R_{it}^2}\right), \quad (2)$$

where R_{it}^2 is the R-squared value from Regression (1) for firm i in year t . A high level of synchronicity indicates that the stock price is more synchronous with market returns and includes less firm-specific information.

Family control is the percentage of shares held by family members (Brahem, et al., 2021; Chen et al. 2008 and Burkart et al. 2003). We define a family-controlled shareholder as an individual owner or a group of family members who directly hold at least 10% of the shares (Faccio and Lang 2002).

Following previous literature on stock price synchronicity (Boubaker et al., 2014; Brockman and Yan, 2009; Gul et al., 2010), the control variables include *LEVERAGE_RATIO*, defined as the ratio of total debt to total assets; growth opportunity (*MTB*), the ratio of the market value of equity to the book value of equity; firm size (*SIZE*), the natural logarithm of total assets; earnings volatility (*SDROA*), defined as standard deviation of the firm's return on assets over the preceding three-year period including the current year; the volatility of firm fundamentals (*SDSALES*), the standard deviation of sales divided by total assets; and *INDNUM*, the natural log of the number of firms in the industry in which a firm belongs. *INDSIZE* is defined as the natural log value of the total assets of all sample firms in the industry to which the firm belongs. We also include industry and year dummies to control for industry- and time-fixed effects.

2.3. Model specification

We estimate the relation between family control and stock price synchronicity by running the following model:

$$SYNCH_{it} = \beta_0 + \beta_1 FAMILY + \beta_2 LEVERAGE_RATIO_{it} + \beta_3 MTB_{it} + \beta_4 SIZE_{it} + \beta_5 SDROA_{it} + \beta_6 SDSALES_{it} + \beta_7 INDNUM_{it} + \beta_8 INDSIZE_{it} + Year_FE + Industry_FE + \varepsilon_{it} . \quad (3)$$

Second, to assess the moderating effect of information asymmetry and corporate governance on the relation between family control and stock price synchronicity, we run a sub-sample analysis and divide the sample into two groups based on the median of analyst coverage and institutional block ownership and estimate Equation (3) for each group. *Analysts* is the number of analysts following a firm. Institutional blockholders are institutional investors who hold 5% or more of a firm's outstanding shares. All continuous variables are winsorized at the 1% and 99% levels to mitigate potential outliers. We use generalized least squares (GLS) regressions to correct the heteroscedasticity and autocorrelation of the residuals within the panel data.

3. Empirical analysis

3.1. Descriptive statistics

Table 1 provides the descriptive statistics of the sample. The average of firm-level stock price synchronicity (*SYNCH*) is -0.174 for the entire sample. This statistic is much higher than the mean reported by Piotroski and Roulstone (2004) for U.S. firms, suggesting that less firm-specific information is incorporated into stock prices in the French context, which translates into higher stock price synchronicity. This is consistent with the findings of Morck et al. (2000) and Boubaker et al. (2014). However, compared to Boubaker et al. (2014), we find that the mean value of stock price synchrony in France has steadily decreased, in recent years. The mean of *FAMILY* is 54%, with a maximum of 98.02%, indicating that that family ownership concentration is relatively high in the French context and that more than half of the sample stocks are held by family members.

3.2. Main results

The regression results are reported in Table 2. Model (1) reveals that the coefficient of *FAMILY* is negatively significant at the 1% level. This result implies that family firms incorporate more firm-specific information into their stock prices, thus reducing stock price synchronicity. In Models (2) through (4), we test the robustness of this finding using other regression settings. In all specifications, the coefficient of *FAMILY* remains statistically significant. Overall, the results support the argument of hypothesis, suggesting that family-controlled firms disclose more specific information to enhance their reputation and alleviate minority investors' fears of being expropriated. Consistent with the socioemotional wealth perspective, we provide important insights that family owners play an important role in making stock prices more informative to preserve long-term and focused strategies for business continuity, and gain access to resources that enhance the family firm's value (Anderson and Reeb, 2003).

Table 3 (columns (1) to (4)) reports the moderating effect of information asymmetry and corporate governance proxies on the relation between family control and stock price synchronicity. Consistent with our theoretical prescription, we find that the negative relation between family control and stock price synchronicity is consistent only for firms followed by a large number of financial analysts (column (2)). Moreover, this negative effect is prevalent only in family firms with high institutional investor ownership (column (4)). These results support H2 and highlight that family control promotes more informativeness in stock (less stock price synchronicity) when the firm has less information asymmetry and is well monitored through a large stake of institutional investors.

3.3. Robustness checks

We check the robustness of the results by performing several sensitivity tests. First, to ensure that the results are not driven by endogeneity concerns, we conduct the generalized method of moments (GMM) model. The Arellano–Bond (second-order autocorrelation) test and the Hansen test of over-identifying restrictions indicate that the instruments used are valid. Column (1) of Table 4 shows that the results using the GMM model remain qualitatively unchanged. Second, previous research suggests that during the global crisis, stock price synchronicity increases because higher market volatility results in a higher R-squared (Morck et al., 2000). Therefore, to test whether our core evidence is driven by an unusual price movement during the years of the financial downturn, we interact the family variable with a dummy variable *CRISIS*, which is equal to one during 2008, 2009, 2011, and 2012, and zero otherwise. The results in column (2) of Table 4 show that the coefficient of *FAMILY* continues to be negative and statistically significant at conventional levels. Moreover, the coefficient of the interaction term (*FAMILY* × *CRISIS*) is not statistically significant, suggesting that the relation between family ownership and stock price synchronicity is not significantly different during the financial crisis.

Finally, we check whether the results hold if we consider alternative proxies for independent variables and model specifications. We rerun the regressions using family-owned stakes of at least 20% (column (3)), *Family dummy*¹ (column (4) and alternative model specifications to re-estimate the R-squared, that is, the market, model (column (5)) and Fama–French (2015) five factors (column (6)). The results remain unchanged and show a negative relation between family control and stock price synchronicity.

4. Conclusions

¹ Family dummy variable is a binary variable that takes 1 if the firm is controlled by a founding family and 0 otherwise. We define a family-controlled shareholder as an individual owner or a group of family members who directly hold at least 10% of the shares (Claessens et al. 2002; Faccio and Lang, 2002), otherwise, the firm is classified as nonfamily firms.

In this paper, we examine the relation between family control and stock price synchronicity in the French context over the period from 2004 to 2016. The empirical results provide robust evidence that family firms disclose more information and have then lower stock price synchronicity. The results suggest that family owners increase the ability of stock prices to incorporate firm-specific information in order to protect their reputation and preserve their socioemotional wealth. We also find that the relation between family control and stock price synchronicity is prevalent only in the presence of high analyst coverage and institutional blockholders.

These results have implications for various market participants (investors, financial analysts, portfolio managers, minority shareholders) who associate lower stock price synchronicity, to more transparency, less crash risk, and better governance quality. [We provide new insights about French business families which play an effective role in the improvement of a firm's information environment. Thus, policymakers and regulators should take measures to encourage families to increase the level of firm-specific information impounded into stock prices. In addition, our conclusions convincingly show that the synchronicity reduction effect is prevalent only in the presence of high analyst coverage and institutional blockholders. Thus, market investors and portfolio managers should pay attention to two decision-making factors, namely, the degree to which the family business is followed by financial analysts and the presence of institutional investors as equity owners.](#)

This study provides valuable insights and clear directions for future research. One natural extension of this study would be to explore the heterogeneity of family businesses in France by focusing on different dimensions, such as generational stage, family CEO, and the age of the family business.

References

- Ali, A., Chen, T.Y., Radhakrishnan, S., 2007. Corporate disclosures by family firms. *J. Account. Econ.* 44(1–2), 238–286. <https://doi.org/10.1016/j.jacceco.2007.01.006>.
- An, H., Zhang, T., 2013. Stock price synchronicity, crash risk, and institutional investors. *J. Corp. Finance* 21, 1–15. <https://doi.org/10.1016/j.jcorpfin.2013.01.001>.
- Andres, C. (2008). Large shareholders and firm performance—An empirical examination of founding-family ownership. *J. Corp. Financ.* 14(4), 431-445.
- Anderson, R.C., Reeb, D.M., 2003. Founding-family ownership and firm performance: Evidence from the S&P 500. *J. Finance* 58(3), 1301–1328. <https://doi.org/10.1111/1540-6261.00567>.
- Anderson, R.C., Duru, A., Reeb, D.M., 2009. Founders, heirs, and corporate opacity in the United States. *J. Financ. Econ.* 92(2), 205–222. <https://doi.org/10.1016/j.jfineco.2008.04.006>.
- Brahem, E., Depoers, F., & Lakhali, F. (2021). Family Control and Corporate Social Responsibility: The Moderating Effect of the Board of Directors. *Manage. Inter.* 25(2), 218-238.
- Brockman, P., Yan, X.S., 2009. Block ownership and firm-specific information. *J. Bank. Financ.* 33(2), 308–316. <https://doi.org/10.1016/j.jbankfin.2008.08.011>.
- Boubaker, S., Mansali, H., Rjiba, H., 2014. Large controlling shareholders and stock price synchronicity. *J. Bank. Financ.* 40, 80–96. <https://doi.org/10.1016/j.jbankfin.2013.11.022>.
- Burkart, M., Panunzi, F., & Shleifer, A. (2003). Family firms. *J. Financ.* 58(5), 2167-2201.
- Chan, K., Hameed, A., 2006. Stock price synchronicity and analyst coverage in emerging markets. *J. Financ. Econ.* 80(1), 115–147. <https://doi.org/10.1016/j.jfineco.2005.03.010>.
- Chen, S., Chen, X.I.A., Cheng, Q., 2008. Do family firms provide more or less voluntary disclosure? *J. Account. Res.* 46(3), 499–536. <https://doi.org/10.1111/j.1475-679X.2008.00288.x>.

- Chen, X., Harford, J., Li, K., 2007. Monitoring: Which institutions matter? *J. Financ. Econ.* 86(2), 279–305. <https://doi.org/10.1016/j.jfineco.2006.09.005>.
- Edmans, A., & Manso, G. (2011). Governance through trading and intervention: A theory of multiple blockholders. *Rev. Fin. Stud.* 24(7), 2395-2428.
- Faccio, M., Lang, L.H., 2002. The ultimate ownership of Western European corporations. *J. Financ. Econ.* 65(3), 365–395. [https://doi.org/10.1016/S0304-405X\(02\)00146-0](https://doi.org/10.1016/S0304-405X(02)00146-0).
- Fama, E.F., French, K.R., 1993. Common risk factors in the returns on stocks and bonds. *J. Financ. Econ.* 33, 3–56. [https://doi.org/10.1016/0304-405X\(93\)90023-5](https://doi.org/10.1016/0304-405X(93)90023-5).
- Fama, E.F., French, K.R., 2015. A five-factor asset pricing model. *J. Financ. Econ.* 116(1), 1–22. <https://doi.org/10.1016/j.jfineco.2014.10.010>.
- Glover, J. L., & Reay, T. (2015). Sustaining the family business with minimal financial rewards: How do family farms continue?. *Fam. Bus. Rev.* 28(2), 163-177.
- Gul, F.A., Kim, J.B., Qiu, A.A., 2010. Ownership concentration, foreign shareholding, audit quality, and stock price synchronicity: Evidence from China. *J. Financ. Econ.* 95(3), 425–442. <https://doi.org/10.1016/j.jfineco.2009.11.005>.
- Jin, L., Myers, S.C., 2006. R2 around the world: New theory and new tests. *J. Financ. Econ.* 79(2), 257–292. <https://doi.org/10.1016/j.jfineco.2004.11.003>.
- McCahery, J. A., Sautner, Z., & Starks, L. T. (2016). Behind the scenes: The corporate governance preferences of institutional investors. *J. Financ.* 71(6), 2905-2932.
- Morck, R., Yeung, B., Yu, W., 2000. The information content of stock markets: Why do emerging markets have synchronous stock price movements? *J. Financ. Econ.* 58(1-2), 215–260. [https://doi.org/10.1016/S0304-405X\(00\)00071-4](https://doi.org/10.1016/S0304-405X(00)00071-4).
- Lang, M.H., Lundholm, R.J., 1996. Corporate disclosure policy and analyst behavior. *Account. Rev.* 71, 467–492.

- Piotroski, J. D., & Roulstone, D. T. (2004). The influence of analysts, institutional investors, and insiders on the incorporation of market, industry, and firm-specific information into stock prices. *Acc. Rev.* 79(4), 1119-1151.
- Roll, R., 1988. R-squared. *J. Finance* 43(2), 541–566. <https://doi.org/10.1111/j.1540-6261.1988.tb04591.x>.
- Wang, D., 2006. Founding family ownership and earnings quality. *J. Account. Res.* 44(3), 619–656. <https://doi.org/10.1111/j.1475-679X.2006.00213.x>.
- Xu, J., Zhang, Y., 2018. Family CEO and information disclosure: Evidence from China. *Finance Res. Lett.* 26, 169–176. <https://doi.org/10.1016/j.frl.2018.01.002>.

Table 1. Descriptive statistics

Variable	Obs	Mean	Standard deviation	Min	Max
SYNCH_FF	2453	-0.174	0.350	-2.551	0.604
FAMILY	1821	54.09%	16.59%	14.75%	98.02%
ANALYSTS	1876	8.430	7.611	1	39
BLOCK_IO	2188	2.747%	5.600%	0.000%	48.74%
LEVERAGE_RATIO	2459	0.201	0.134	0.001	0.461
MTB	2459	1.800	1.093	0.469	4.504
SIZE (\$ mil)	2442	4806	12000	6.060	100161
SDROA	2459	0.023	0.023	0.002	0.087
SDSALES	2459	0.108	0.084	0.016	0.332
INDNUM	2459	4.343	0.977	0.000	4.969
INDSIZE	2459	12.845	0.941	6.560	13.775

Notes: This table provides summary statistics of all variables used. The sample period from 2004 to 2016. SYNCH is our measure of stock price synchronicity. Family is defined as the firm's percentage of ownership held by family members. *Analysts* is the number of analysts following a firm. Institutional blockholders are institutional investors who hold 5% or more of a firm's outstanding shares. LEV is the financial leverage defined as book value of total liabilities divided by total assets. Market to book ratio is the ratio of market value of equity to book value of equity. SDROA is the standard deviation of ROA calculated over the preceding three years including the current year. SDSALES is the standard deviation of sales (calculated over the preceding three years including the current year) scaled by total assets. SIZE is measured by the market value of assets in millions of dollars. INDNUM is the natural log of number of firms in the industry in which a firm belongs. INDSIZE is the natural log value of total asset of all sample firms in the industry to which firm belongs.

Table 2. Family control and stock price synchronicity

VARIABLES	GLS (1)	Fama Mac-Beth (1973) (2)	Cluster Effects (3)	Newey-West (4)
FAMILY	- 0.001*** (-3.09)	-0.0009*** (-4.79)	-0.001*** (-2.97)	-0.001** (-2.42)
LEVERAGE	-0.116** (-2.41)	-0.155** (-2.85)	-0.116** (-2.29)	-0.116* (-1.83)
MTB	-0.015** (-2.55)	-0.020 (-1.52)	-0.015** (-2.26)	-0.015** (-1.82)
SIZE	0.065*** (17.16)	0.065*** (13.18)	0.065*** (16.53)	0.065*** (13.08)
LNSDROA	-0.012** (-2.01)	-0.016* (-2.10)	-0.012** (-1.97)	-0.012* (-1.71)
LNSD-sales	0.004 (0.55)	0.019** (5.33)	0.004 (0.54)	0.004** (0.47)
INDNUM	-0.020** (-2.20)	0.008 (1.72)	-0.020** (-2.11)	-0.020* (-1.68)
INDSIZE	0.004 (0.47)	-0.007 (-0.88)	0.004 (0.46)	0.004 (0.37)
Intercept	-0.671*** (-6.09)	-0.473*** (-6.29)	-0.539** (-4.70)	-0.671*** (-4.75)
Year_FE	Yes	No	Yes	Yes
Industry_FE	Yes	No	Yes	Yes
Sample Size	1554	1554	1,554	1554
F-value (Chi2)	1169.88***	30.44***	43.16***	43.85***
Adjusted R2		0.210	0.419	

Notes: This table presents the panel data regression results. In each specification, the dependent variable is SYNCH_FF. The sample includes 224 French listed firms over the period from 2004 to 2016. *, **, *** denote significance at 10%, 5% and 1% level respectively. The Z-statistics are given in brackets.

Table 3. The moderating effect of information environment and corporate governance

VARIABLES	Information asymmetry (Analyst)		Corporate governance (IO)	
	Low Coverage (Analyst <= median) (1)	High Coverage (Analyst > median) (2)	Low IO (IO < 5%) (3)	High IO (IO >= 5%) (4)
FAMILY	0.000 (0.23)	-0.001*** (-3.82)	0.000 (0.07)	-0.002*** (-4.97)
LEVERAGE	-0.159** (-2.10)	-0.072* (-1.14)	-0.084 (-1.42)	-0.035 (-0.43)
MTB	-0.006*** (-0.68)	-0.023*** (-3.18)	-0.017** (-2.35)	-0.023** (-2.39)
SIZE	0.038*** (5.34)	0.075*** (16.08)	0.052*** (11.37)	0.070*** (9.13)
LNSDROA	-0.006 (-0.63)	-0.008 (-1.00)	-0.006 (-0.79)	-0.023** (-2.17)
LNSD-sales	-0.009 (-0.80)	0.010 (1.01)	0.005 (0.54)	0.000 (0.07)
INDNUM	0.013 (0.86)	-0.029** (-2.54)	-0.001 (-0.13)	-0.040** (-2.53)
INDSIZE	-0.042*** (-2.77)	0.029** (2.19)	-0.024 (-2.04)	0.029 (1.63)
Intercept	-0.143*** (-0.89)	-0.943*** (-5.97)	-0.370*** (-2.88)	-0.891*** (-3.98)
Year_FE	Yes	Yes	Yes	Yes
Industry_FE	Yes	Yes	Yes	Yes
Chow Test	p-value = 0.073		p-value = 0.593	
Sample Size	618	936	1035	519
Chi2	399.79***	856.30***	737.11***	515.28***

Notes: This table presents the results of the moderating effect of information environment and corporate governance. In each specification, the dependent variable is SYNCH_FF. The sample includes 224 French listed firms over the period from 2004 to 2016. *, **, *** denote significance at 10%, 5% and 1% level respectively. The Z-statistics are given in brackets.

Table 4. Robustness checks

VARIABLES	GMM regression (1)	The effect of Financial crisis (2)	INDEP. VAR:		Alternative model to estimate R2	
			20% control threshold (3)	Family Dummy (4)	Market model (5)	Fama-French (2015) model (6)
FAMILY	-0.008*** (-4.25)	-0.001** (-2.67)	- 0.001*** (-3.28)		-0.001*** (-3.65)	- 0.0009** (-2.38)
Family Dummy				-0.029*** (-2.80)		
CRISIS		0.329 (6.54)				
INTERACT		0.000 (0.26)				
LEVERAGE	0.049 (0.43)	-0.116** (-2.41)	-0.148*** (-2.78)	-0.100** (-2.51)	-0.142*** (-2.66)	-0.019 (-0.38)
MTB	-0.052** (-2.58)	-0.015** (-2.56)	-0.019*** (-2.88)	-0.016*** (-3.47)	-0.019*** (-2.99)	-0.021*** (-3.23)
SIZE	0.102*** (6.77)	0.065*** (17.16)	0.071*** (16.87)	0.060*** (20.47)	0.070*** (16.61)	0.061*** (15.20)
LNSDROA	0.020 (1.23)	-0.013** (-2.02)	-0.018*** (-2.62)	-0.016*** (-3.27)	-0.017** (-2.46)	-0.018** (-2.53)
LNSDSALES	0.047*** (2.90)	0.004*** (0.55)	-0.002 (-0.25)	0.013** (2.09)	-0.001 (-0.18)	0.016* (1.85)
INDNUM	0.142* (1.86)	-0.020** (-2.20)	-0.020** (-1.97)	0.012* (1.79)	-0.022** (-2.18)	-0.011 (-1.13)
INDSIZE	0.322 (4.01)	0.004 (0.46)	-0.003 (-0.34)	-0.015** (-2.01)	-0.003 (-0.31)	0.0003 (0.03)
Intercept	-5.208*** (-5.97)	-0.668*** (-6.01)	-0.843*** (-6.90)	-0.591*** (-7.32)	-0.813*** (-6.66)	-0.491*** (-3.96)
Year_FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry_FE	Yes	Yes	Yes	Yes	Yes	Yes
AR (1) test	-2.89 (0.004)					
AR (2) test	-1.36 (0.174)					
Hansen test	90.14 (0.228)					
Sample Size	1439	1554	1550	2376	1555	1122
F-value (Chi2)	2331.24***	1169.99***	1335.15***	1519.76***	1306.63***	759.82***

Notes: This table presents the results of robustness checks with the alternative sample. In each specification, the dependent variable is SYNCH_FF. The sample includes 224 French listed firms over the period from 2004 to 2016. *, **, *** denote significance at 10%, 5% and 1% level respectively. The Z-statistics are given in brackets.