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Why did some firms perform better in the global financial crisis?

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ABSTRACT

We explore what firm and macroeconomic factors assisted Chinese firms to resist the global financial crisis. We find that firms with higher top ten shareholder ratios or firms that are older exhibited saliently higher performance during the crisis, but performed poorly during the non-crisis period. Firm size has a notably negative impact on firm performance. Firms audited by the Big Four accounting firms have a significantly negative correlation with performance. During the crisis, stock markets became less efficient in incorporating firm-specific information into stock prices, signifying that the determinants of firm performance vary across non-crisis and crisis periods.

1. Introduction

Global equity markets dropped more than 56% and there was a reduction in equity value of more than \$29 trillion in the recent global crisis (Bartram & Bodnar, 2009; Chen, Chen, & Lee, 2014a; Lee, Lin, & Zeng, 2016). Despite the overall negative impact of the global financial crisis, some companies profited during the market turbulence (Shakina & Barajas, 2014). This raises a fundamental question: what are the firm and macroeconomic determinants of firms' performance during crisis periods? In responding to the economic situation, governments and firm management adopted various policies or strategies to minimise the severity of the situation and to better cope with the challenges of the severe economic environment. Thus, performance of the firm depends on not only its ownership structure, financial features, and disclosure quality, but also external environments (period and macroeconomic elements).

Numerous studies have attempted to pinpoint some key variables that influence firm performance. For instance, Thomsen and Pedersen (2000) demonstrate that ownership structure is an important factor in firm performance, while others find no statistically significant relation between ownership structure and firm performance (Demsetz & Villalonga, 2001; Iannotta, Nocera, & Sironi, 2007). Some researchers argue that firm performance is

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dependent on the extent of country or macroeconomic variables (Clarke, Cull, & Kisunko, 2012; Cutler, Poterba, & Summers, 1991). In particular, the recent literature has expanded the levels of research factors; for example, Dietrich and Wanzenried (2011) examined the effect of bank-specific, industry-specific, and macroeconomic determinants on bank profitability before and during the global crisis. Clarke et al. (2012) investigated how country and firm characteristics impact firms' financial constraints and their likelihood of survival during the early phase of the recent global crisis. To date, there is scant existing literature that explores the substantial determinants of non-financial firms and the impact of macroeconomic characteristics on firm performance during non-crisis and crisis periods (see Table 1).

Robertson and Chetty (2000) note that, as a result of environmental changes, firms that have survived are expected to use experience and knowledge to discern information and hence make more informed decisions about critical variables. They suggest the contingency approach is a mid-range theory, because it holds the middle ground between two extreme positions. Therefore, this study investigates what firm and macroeconomic factors affected firm performance during the recent global financial crisis and non-crisis periods by adopting the contingency theory as a framework.

Building upon the works of Beltratti and Stulz (2012) and Dietrich and Wanzenried (2011), the present study contributes to related studies as follows. First, while an increasing number of scholars view a country's macroeconomic characteristics as imperative elements for firm performance (e.g., see Cutler et al., 1991; Hartmann, Kempa, & Pierdzioch, 2008; Mulder, Perrelli, & Rocha, 2012), there is little research discussing how firm and macroeconomic factors affect firm performance. Second, while several studies try to point out some important variables that influence firm performance during a crisis, there is scant existing literature that compares whether firm and macroeconomic characteristics leading to better firm performance are altered during diverse periods (i.e., during crisis and non-crisis periods). The exceptions appear to be Byström, Worasinchai, and Chongsithipol (2005), who reject the hypothesis that the default risks of firms are systematic before, during, and after the 1997 Asian crisis. By analysing the full time period and two sub-periods, we are able to see what the solid and temporary determinants are for better-performing firms during diverse time periods.

Third, most research on firm performance focuses on banks or several countries. For example, Dietrich and Wanzenried (2011) find that state-owned banks are more profitable than privately owned banks. Jin, Kanagaretnam, and Lobo (2011), Aebi, Sabato, and Schmid (2012), and Akhigbe, Madura, and Marciniak (2012) study the factors influencing U.S. bank performance during the financial crisis. Mitton (2002) and Gupta, Krishnamurti, and Tourani-Rad (2013) use several countries to explore whether corporate governance factors impact firm performance. Related studies have focused on a single country, such as Kim and Lee (2003), Baek, Kang, and Suh Park (2004), and Kang, Lee, and Na (2010) exploring South Korean firms, and Aebi et al. (2012) and Akhigbe et al. (2012) examining U.S. firms. To the best of our knowledge, only Liu, Uchida, and Yang (2012) highlight the specialty of Chinese state-owned enterprises (SOEs), in which these SOEs performed poorly before the global financial crisis, yet performed better during the crisis. The empirical evidence covering the determinants of Chinese firm performance has seldom been touched upon.

Due to the astonishing expansion and fast growth of China's stock markets, the management of large funds and international institutions have recognised the profit-making

Table 1. Previous works on crisis and performance.

Level	Author	Period	Research purposes	Country/sample	Results
Bank+industry+ macroeconomic	Dietrich and Wanzenried (2011)	1999–2009	Examine how bank-specific characteristics, and industry-specific and macroeconomic factors affect the profitability of banks.	372 commercial banks in Switzerland	Operationally efficient banks are more profitable than banks that are less operationally efficient. State-owned banks are more profitable than privately owned banks.
Bank	Jin et al. (2011)	2006–2007	Examine whether and how accounting and audit variables provided indications of subsequent bank failure during a crisis.	U.S. banks	Banks audited by reputable auditors have lower probability of failure. The U.S. banking crisis was driven by credit problems.
Bank	Aebi et al. (2012)	2006–2008	Whether corporate governance mechanisms are associated with a better performance during the financial crisis of 2007/2008.	U.S. banks	Corporate governance variables are insignificant to banks' performance during the crisis.
Bank	Akhigbe et al. (2012)	2007	Examine bank characteristics that may be effective indicators of a bank's susceptibility to the financial crisis.	288 U.S. bank	Banks with more capital experienced more severe stock price declines, and higher betas and stock volatility levels during the crisis.
Firm/Bank	Erkens, Hung, and Matos (2012)	2007–2008	Probe the influence of corporate governance on firms' performance.	296 financial firms from 30 countries	Firms with more independent boards and higher institutional ownership experienced worse stock returns during the crisis.
Bank	Beltratti and Stulz (2012)	2006	Examine the importance of factors that have been put forth as having contributed to the poor performance during the credit crisis.	Banks around the world	Banks with more shareholder-friendly boards performed saliently worse during the crisis than other banks.
Bank	Kollmann, Ratto, Roeger, and Veld (2013)	1995–2011	Analyse the impact of Euro Area bank asset losses, government support, and conventional fiscal stimulus measures.	Banks of Euro Area countries	Support for banks had a stabilising effect on Euro Area output, consumption, and investment.
Firm	Mitton (2002)	1997–1998	Analysis of the impact of corporate governance on firm performance during the Asian financial crisis.	398 firms from five Asian countries	Saliently better stock price performance is associated with firms that had indicators of higher disclosure quality, and with firms that had higher outside ownership concentration.
Firm	Kim and Lee (2003)	1997–1998	Examine whether agency problems explain the performance of Korean firms during the Asian crisis and did agency problems explain the performance differently for Chaebol vs. non-Chaebol firms.	590 Korean firms	Corporate governance matters in determining the role of agency problems. The explanatory power of agency problems is different for Chaebol firms, compared with non-Chaebol firms.
Firm	Baek et al. (2004)	1997–1998	Whether corporate governance affects firm performance during a crisis.	South Korea	Change in firm value during a crisis is a function of firm-level differences in corporate governance factors.
Firm	Kang et al. (2010)	1997–1998	How owner-managers' incentives and firm-specific measures of corporate governance affect restructuring decisions during shocks.	580 Korean firms	The controlling shareholders' incentives to expropriate other investors are high during an economic shock.
Firm	Alfaro and Chen (2012)	1995–2008	Role of foreign ownership in establishment performance during the global financial crisis.	Multinational firms from five countries	The advantage of foreign ownership is clearly pronounced during the crisis, while relatively muted in non-crisis years.

(Continued)

Table 1. (*Continued*).

Level	Author	Period	Research purposes	Country/sample	Results
Firm	Calomiris, Love, and Martínez Pería (2012)	1997–2008	Measure firms' sensitivity to credit supply shocks through a combination of variables relating to the capital structure and capital structure.	16,000 firms from 44 countries	Return sensitivities to the crisis shocks imply large influences on residual equity returns during a crisis.
Firm	Claessen et al. (2012)	2007–2009	Examine how the global crisis affected firm performance and how various linkages propagated shocks across borders.	7722 non-financial firms in 42 countries	The crisis had a bigger negative impact on firms with greater sensitivity to business cycles and trade developments.
Firm+country	Clarke et al. (2012)	2002–2009	How country and firm characteristics affected firms' financial constraints and their likelihood of survival during the early phase of the global crisis.	Survey of 360 firms from 23 countries	Financial constraints during the crisis were less severe in countries with well-established foreign banks.
Firm	Liu et al. (2012)	2007–2008	The effect of the Chinese corporate governance structure on the change in firm value during the global crisis.	Chinese firms	Chinese state-owned firms that performed poorly before the global crisis performed better during the crisis.
Firm	Gupta et al. (2013)	2006	Study the impact of internal corporate governance on performance during the crisis.	4040 firms from 23 countries	Well-governed firms do not outperform poorly governed firms.

Data source: scholar.google.com.

opportunities and are weighting more of their investment portfolios in these stock markets (Chen, Lee, Lee, & Huang, 2016b; Lee, Chen, & Hsieh, 2013; Lao & Singh, 2011). Nevertheless, recent developments since the onset of the global financial crisis also show that China is not autonomous (Fidrmuc & Korhonen, 2010). We therefore employ annual data from 1,452 Chinese firms during the period 1999 to 2010 to investigate the determinants of firm and macroeconomic factors. The methodology of generalised method of moments (GMM) for panel data analyses is employed here to extract consistent and efficient estimates of the impact of firm and macroeconomic factors on firm performance.

We find that firms having higher top ten shareholder ratios or firms that are older performed poorly during the non-crisis period, yet performed better in the crisis period. For both crisis and non-crisis periods, firm size has pronouncedly negative impacts on firm performance, signifying that small firms could be more efficient. Firms audited by the Big Four accounting firms have a significantly negative correlation with their performance, signifying that the strict requirements held up by the Big Four accounting firms might lower firm performance. Leverage and audit opinions that are worse than unqualified audit opinions have salient impacts on firm performance during the non-crisis period rather than during the crisis period, implying that stock markets during a crisis become less efficient in incorporating firm-specific information into stock prices. Considering the macroeconomic factors, the consumer confidence index and macro-level exports have significant impacts on firm performance during all years. Our results reveal that the determinants of firm performance vary across non-crisis and crisis periods.

The remainder of the paper is organised as follows. Section 2 presents the literature review and variable selections. Section 3 provides the methodology and data. Section 4 presents the empirical results and discussion. Section 5 concludes the paper.

2. Literature review and determinants of firm performance

According to Bartram and Bodnar (2009), global equity markets originally had a market capitalisation of more than $51 trillion, but by the end of February 2009, global equity market capitalisation stood at just over $22 trillion, a drop of more than 56% and a reduction in equity value of more than $29 trillion. The loss in wealth to equity holders is equivalent in value to about 50% of global GDP for 2007. Rose and Spiegel (2012) also pinpoint that the severity of the global financial crisis and the crisis causes differ across countries. Bowman, Chan, and Comer (2010) find that the reactions of global equity markets to the 1997 Asian crisis were driven by macroeconomic fundamentals and countries with a weak economy as measured by poor macroeconomic fundamentals. This study thus explores the fast-growing but modestly researched Chinese markets to find the similarities and dissimilarities among better-performing firms across crisis and non-crisis periods. This section discusses the related literature and scrutinises likely applicable variables employed in the empirical analysis. See Table 2 for a summary of the variables used.

2.1. Dependent variables: firm performance

We use three alternative measures of firm performance. Following Aebi et al. (2012), we take two measures of firm performance: return on assets (ROA), defined as the firms' net income divided by total assets, and return on equity (ROE), defined as the firms' net income

Table 2. List of variables.

Variables	Description
Dependent variables – firm performance	
ROA	Returns on assets, net income divided by the book value of total assets
ROE	Returns on assets, net income divided by the book value of equity
EPS	Earnings per share in RMB
Independent variables	
Firm level	
Disclosure quality	
SIZE	Size of firm, logarithm of sales
AGE	Firm age, number of years since the earliest data availability in https://www.cninfo.com.cn
CPA	Dummy variable = 1, if firms adopt Big Four accounting firms as their auditor, 0 otherwise
OPION	Unqualified opinion = 1, Unqualified opinion with an emphasis of matter = 2, Qualified opinion = 3, Disclaimer opinion = 4, Adverse opinion = 5
Financial structure	
LEV	Leverage ratio, debt over equity
CUR	Current ratio, ratio of current liabilities to current assets
P/E	P/E, price-to-earnings
P/B	P/B, price-to-book
CF	Cash flow per share = (Operating cash flow - Preferred dividends) / Common shares outstanding
DIV	Dividend yield = Annual dividends per share / Price per share
Ownership structure	
STATE	State share ratio, shares with the stock rights belonging to the country
DOMI	Domestic institutions' share ratio, shares with stock rights belonging to domestic legal persons
FORI	Foreign institutions' share ratio, shares with stock rights belonging to foreign legal persons
EMPL	Employees' share ratio, shares with stock rights belonging to the employees
PUB	Public share ratio, shares with stock rights belonging to the public
TOP	Top ten shareholder ratio, the total shares owned by the top ten shareholders
Macroeconomic level	
GCONF	Consumer confidence index
PPI	Producer price index, the average change over time in the selling prices received by domestic producers for their output
GEXR	Value of exports (millions of RMB)
GM2R	Annual growth rate of money supply (M2)
Crisis variable	
CRISIS	Crisis period from 2007 to 2010, the dummy variable = 1, 0 otherwise

Notes: This table presents the variables used to examine the relationship between firm performance and macroeconomy. All data are employed at the annual frequency.
Data source: https://www.cninfo.com.cn.

divided by the book value of equity. For robustness checks, this study follows Gomez-Mejia (1992) and Mashayekhi and Bazaz (2008) to construct earnings per share (EPS) in Renminbi (RMB) as a measure of firm performance. Research studies categorise EPS as a profitability measure, ROA as an operating performance measure, and ROE as a financial performance measure (Gomez-Mejia, 1992; Hart & Ahuja, 1996).

2.2. Independent variables: firm-level determinants of firm performance

Bartram and Bodnar (2009) mention that when the global financial crisis drove down stock markets, weaknesses in firms manifested themselves in a number of dimensions that left economies exposed when conditions began to turn even worse. During crises, Stone (2000)

suggests that specific firm elements lead to sharp falls in investment. Following the early work of Mitton (2002), a number of recent studies have attempted to identify some of the major determinants of firm performance. The empirical studies focus their analyses either on corporate governance evidence (e.g., Baek et al., 2004; Gupta et al., 2013; Liu et al., 2012) or financial firms (Akhigbe et al., 2012; Dietrich & Wanzenried, 2011; Jin et al., 2011). For instance, some scholars present that corporate governance is an important factor in firm value (La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 2000; Lemmon & Lins, 2003; Mitton, 2002), while others find that firm performance is not related to governance (Cai, Qian, & Liu, 2009; Gupta et al., 2013). The empirical results of these above-mentioned studies present huge differences in their variables, time periods, investigated environments, and macroeconomic characteristics. This present study categorises the determinants of firm performance selected as follows.

Disclosure quality. Lu, Liao, and Yang (2007) find that corporate value and information disclosure are correlated with a positive coefficient. Ongena, Smith, and Michalsen (2003) indicate that firm-specific information asymmetries could prevent some firms from accessing funds from outside sources. Mitton (2002) documents a significantly better stock return performance in firms that offered higher disclosure quality and greater transparency during the Asian crisis. Iatridis (2011) notes that the Big Four accounting firms tend to report higher quality disclosures (i.e., less earnings management), and firms that display high-quality accounting disclosure generally exhibit a larger size and higher profitability. Miihkinen (2012) shows that firm size is one of the important drivers of quality. Coad, Segarra, and Teruel (2013) argue that older firms are able to better convert slow growth into subsequent profits, but firm performance deteriorates with age. Forbes (2002) finds that larger firms often have worse performance than smaller firms after depreciation. Dodd, Dopuch, Holthausen, and Leftwich (1984) indicate that many firms experience negative abnormal performance prior to the release of qualified opinions, because there is increasing demand for greater transparency to be incorporated in their financial statements. In addition, the absence of research upon disclosure quality in Chinese firms motivates us to include four variables to proxy the level of information asymmetry: firms audited by the Big Four accounting firms, audit opinions,[1] the size of a firm in terms of the logarithm of sales, and a firm's age measured by the number of years since the public listed date.[2]

Financial structure. Claessens, Djankov, and Nenova (2000) use the degree of financial leverage (debt over equity) and cash flow of a firm to reflect the corporate financial structure. Beltratti and Stulz (2012) find that better banks had less leverage before the global crisis. In contrast, Webber (2001) shows that firms with high leverage ratios grow fast, but they are vulnerable to external shocks. Mulder et al. (2012) state that the more a firm's financing is leveraged, the more likely its assets' value will severely erode its balance sheet when confronting a shock. They also indicate that the availability of assets can offset liquidity risks, which are captured by current ratios. Mulder et al. (2012) show that solvent firms run into problems if they lack liquid assets to meet obligations. Vuolteenaho (2002) decomposes firms' stock returns and finds that they are driven primarily by cash flow news. Dechow (1994) finds that the ability of cash flows to measure firm performance improves relative to earnings when the measurement interval is lengthened. We include cash flow per share, current ratio, and leverage ratio in this study due to their importance.

Ding, Chua, and Fetherston (2005) indicate that value (growth) stocks can be purchased for prices that are low (high) relative to the companies' estimated underlying values such

as price-earnings (P/E) and price-book (P/B). Basu (1983) and Jaffe, Keim, and Westerfield (1989) find positive abnormal returns associated with stocks with low P/E or P/B values. Bauman, Conover, and Miller (1998) reveal that P/E and P/B have a stable, negative relationship with stock returns, while P/E has originally been considered as an indicator of transitory earnings (Molodovsky, 1953), future earnings (Cragg & Malkiel, 1982), or risk (Ball, 1978). Danielson and Dowdell (2001) illustrate that a firm's P/B and P/E ratios can predict the future cash flow pattern earned by a firm. Lam (2002) find that P/B and P/E can capture the cross-sectional variation in average returns. Early in 1988, Fama and French documented the predictive power of dividend yields for stock returns. However, Chung and Lee (1998) report that dividends do not explain price movements. Chen and de Bondt (2004) reveal that dividend yield captures style-related trends in equity returns. Following the extant studies, this study employs P/E, P/B, and dividend yield ratio as the proxies of financial structure.

Ownership structure. This study characterises ownership structure by top ten shareholders ratio, public share ratio, employees' share ratio, foreign institutions' share ratio, domestic institutions' share ratio, and state share ratio. Thomsen and Pedersen (2000) find a positive effect of ownership concentration on shareholder value and profitability. They further support that the identity of large owners – family, banks, institutional investors, government, and other companies – has important implications for corporate performance. However, Demsetz and Villalonga (2001) show no statistically significant relation between ownership structure and firm performance. After controlling for bank characteristics and country and time effects, Iannotta et al. (2007) conclude that ownership concentration does not significantly affect a bank's profitability.

A distinctive feature of the Chinese corporate ownership structure is the existence of state control (Liu et al., 2012). Sun and Tong (2003) and Gunasekarage, Hess, and Hu (2007) find a negative impact of state ownership on firm value, because the expropriation of minority shareholders by the state exists during normal economic states. Qi, Wu, and Zhang (2000) indicate that firm performance increases with the degree of relative dominance of legal person shares over state shares. However, Yu (2013) reveals that a higher level of state ownership is superior to a dispersed ownership structure due to the benefits of government support and political connections.

As for ownership concentration, Xu and Wang (1999) find that a positive correlation exists between performance and ownership concentration, and the performance is positively and significantly correlated with the fraction of legal person shares, rather than state shares. Admati, Pfleiderer, and Zechner (1994) show that large shareholders mitigate the free rider problem of monitoring a management team, thereby reducing the agency costs. In contrast, La Porta, Lopez-De-Silanes, and Shleifer (1999) argue that the existence of large shareholders with high stakes may be harmful to the firm, as the controlling shareholders' interests may not align with those of small shareholders. Bozec and Laurin (2008) indicate that firm performance is lower when large shareholders have both the incentives and the opportunity to expropriate minority shareholders. Few studies discuss the relationship between the top ten shareholder ratio and firm performance, and therefore we include the top ten shareholder ratio among the independent variables.

Chidambaran and John (2000) show that institutional investors can convey private information obtained from management to other shareholders. Gillan and Starks (2003) show that institutional investors increase the liquidity of the markets and price informativeness

and bring about a better monitoring of firms. In addition, Ferreira and Matos (2008) find that higher ownership by foreign and independent institutions has a significantly positive impact on firm valuation, unlike domestic ownership. Schuppli and Bohl (2010) prove that foreign institutions have a stabilising effect on Chinese stock markets. Baek et al. (2004) pinpoint that firms with larger foreign ownerships experienced a smaller drop in share value during the Asian crisis. This study hence separates institutional investors into foreign and domestic institutional investors to check the different impacts on firm performance.

As to public shareholders, Dyck and Zingales (2004) find that large shareholders presumably maximise their utility and thus need not align with public shareholder value. Morck and Yeung (2010) pinpoint that public shareholders' wealth is most directly tied to the firm's economic efficiency. Mitton (2002) demonstrates that firms with higher outside ownership concentration experienced better stock price performance during the Asian crisis. As for employees' shareholder ratio, Rayton (2003) document the existence of a link between the average pay of employees and the performance of the firm. de Bussy and Suprawan (2012) present that employee orientation contributes more to corporate financial performance than orientation towards any other individual primary stakeholder group. Thus, this study considers the variables that are used by the above-mentioned literature as follows: top ten shareholders ratio, public share ratio, employees' share ratio, foreign institutions' share ratio, domestic institutions' share ratio, and state share ratio.

2.3. Macroeconomic-level determinants of firm performance

Cutler et al. (1991) establish that macroeconomic variables explain about one-third of the variance in stock returns. Ehrmann, Fratzscher, and Mehl (2009) show that countries with a stronger fiscal position prior to the recent global financial crisis were hit less severely during the crisis period, possibly due to the ability to conduct countercyclical fiscal policies more effectively. Dietrich and Wanzenried (2011) include bank-specific characteristics and macroeconomic factors in studying the determinants of profitability for banks in Switzerland before and during the global financial crisis. Thus, our non-financial firm performance determinants include macroeconomic factors, which have seldom been considered in previous studies.

Corredor, Ferrer, and Santamaria (2013) find that the consumer confidence index captures investors' perceptions of the economic factors involved household spending and saving tendency, and has a positive influence on the volatility premium. Chen (2011) provides evidence for an asymmetric linkage between stock returns and consumer confidence: the impacts of returns on confidence are larger in bear markets. Bowman et al. (2010) mention that high values of M2 growth represent economic strength and have a positive relationship with returns. Baharumshah, Mohd, and Yol (2009) reveal that a stable long-term relationship exists between broad money supply (M2) and stock prices, as well as stock prices having a significant substitute (positive) effect on long-run M2 demand. Amiti and Weinstein (2011) pinpoint that a striking feature of many financial crises is the collapse of exports.

The producer price index (PPI) is a closely watched indicator of macroeconomic performance and a direct indicator of the purchasing power of money in various types of transactions.[3] Patton (2012) shows that monitoring PPI is important, because it influences stock performance. Sheikh et al. (2011) demonstrate that PPI is an important factor affecting profitability and an indicator of an increase in the interest rate which is considered for

fighting against inflation. Freund and Pierola (2012) find that export expansion offers a path to robust income growth, especially when domestic demand lags, and that exports can sustain income growth. Given the importance of the above-mentioned macroeconomic variables, we include the consumer confidence index, M2 growth rate (GM2R), PPI, and exports (GEXR) as macroeconomic variables.[4]

2.4. Crisis variable

This research focus is on the impact from different levels of features on a firm's performance during a crisis. However, this study needs to control other attributes that could potentially affect the performance of non-financial firms during the crisis. They are the global financial crisis effect and prior performance of the firms.[5] Following Grammatikos and Vermeulen (2012), we divide the period of the analysis into non-crisis (1999–2006) and the crisis periods (2007–2010). In the all-period model, we set a crisis period dummy if the year is 2007–2010. Our inclusion of the control adds a level of comfort to our assertion that the interpretations of the significant coefficients on our reported variables are not due to correlations with omitted variables.

3. Methodology and data

3.1. Empirical model

The dynamic panel approach offers advantages to ordinary least squares (OLS) and efficient to examine the firm factor, macroeconomic factors, and performance link using panel procedures. First, estimation using panel data allows us to explore the time-series nature of the relationship between firm factor, macroeconomic factors, and firm performances. Second, in a pure cross-firm instrumental variable regression, any unobserved firm-specific effect becomes part of the error term, which may bias the coefficient estimates, such as potential endogeneity of all explanatory variables. Thus, our panel procedures control for firm-specific effects. In addition, given the dynamic natures of the models, the OLS estimation methods produce biased and inconsistent estimates (Baltagi, 2001). The GMM technique for panel data analyses, proposed by Arellano and Bond (1991) and then further developed by Blundell and Bond (1998), is employed here to extract consistent and efficient estimates of the impact of firm and macroeconomic factors on firm performance, to control for endogeneity problems of sample firms, and to estimate individual firm's performance persistence.[6] This study focuses on the possible problem of endogeneity in firm performance estimation by using the two-step GMM estimator for our dynamic panel estimation, that is able to deal with the biases and inconsistencies of the estimates.[7] Further, concerning the instruments, we employ the Sargan statistic, which tests the over-identifying restrictions.

To explore the firm, period, and macroeconomic characteristics during the global crisis in driving the performance of firms' stock returns, this study follows García-Herrero, Gavilá, and Santabárbara (2009), and Dietrich and Wanzenried (2011), and uses a panel GMM model given by Equation (1):

$$K_{it} = \beta' K_{i,t-1} + \sum_{j=1}^{J} \lambda_j \delta_{it}^j + \sum_{m=1}^{M} \lambda_m \eta_t^m + \alpha P_t + \varepsilon_{it}, \qquad (1)$$

where K_{it} is the performance of each firm i at time t, with $i=1,…,$ N and t=1,…T; P is the crisis period control variable; δ_{it} are the firm-specific variables; η_t are macroeconomic explanatory variables; and ε_{it} is the disturbance. Coefficient α is the impact of crisis. A larger α means a greater influence of a crisis on firm performance, and a salient negative sign is expected.

Firm performances show a tendency to influence the next period, implying informational opacity and/or sensitivity to regional/macroeconomic shocks to the extent that they are serially correlated (Berger, Bonime, Covitz, & Hancock, 2011). Thus, this study specifies a dynamic panel data model by including a lagged dependent variable among the regressors, i.e., $K_{i,t-1}$ is the one-period lagged performance and β' is the speed of adjustment to equilibrium. A value of β' between 1 and 0 indicates persistence of performance, but it will finally return to the normal level. A value close to 0 presents a firm that is fairly competitive, while a value close to 1 implies a less competitive structure.

3.2. Data

Since our interest is in understanding how firm factors, macroeconomic factors, and firm performances link differences during the non-crisis and crisis periods, we start from 1999 to 2006 as non-crisis period and the 2007–2010 as crisis periods. It is helpful to have the non-crisis data series start at the finish of Asian financial crisis (1997–1998), year 1999,[8] and end before 2007/01/01, as the unsustainable state of the U.S. subprime mortgage market was becoming ever more apparent in the second half of 2007 (Chor & Manova, 2012). In addition, Grammatikos and Vermeulen (2012), Shahrokhi (2011), and Choi (2013) pinpoint that the global financial and economic crisis are from 2007–2010. Following Grammatikos and Vermeulen (2012) and Shahrokhi (2011), we set a crisis period dummy if the year is 2007–2010.[9] This study uses an unbalanced panel of non-financial listed Chinese firms spanning the period 1999 to 2010, covering the year of the global financial crisis. Table 3 presents the summary statistics of the variables used. We take the variables of finance (cash flow per share (CF), current ratio (CUR), leverage ratio (LEV), price-to-earnings ratio (P/E), price-to-book ratio (P/B), dividend yield (DIV), return on assets (ROA), return on equity (ROE), earnings per share (EPS)), share structure (state share ratio (STATE), domestic institutions' share ratio (DOME), foreign institutions' share ratio (FORI), employees' share ratio (EMPL), public share ratio (PUB), and top ten shareholder ratio (TOP)), disclosure quality (CPA audited (CPA firm (CPA) size (logarithm of sales, SIZE), firm age (AGE), and audit opinion (OPION)), and Chinese macroeconomic data (consumer confidence index (CONF), producer price index (PPI), value of exports (GEXR), and annual growth rate of money supply (GM2R)) from https://www.cninfo.com.cn databases. To more closely examine the nature of better-performing firms during economic shocks, the annual data used in this study cover 1,452 publicly-traded non-financial, non-OTC firms that have a listed date before 2007 so as to cover before and during the global crisis periods. This paper follows the China Securities Regulatory Commission categorisation that categorises industries.[10] The major industry is manufacturing, followed by information technology. In addition, the sample effective year we use is ranged from 15 to 18 years over the sample period. On average, the firms in our sample have a ROE of 6.84%, ROA of 4.41%, and an EPS of 0.32 (in RMB) over the entire period from 1999 to 2010. The difference between mean and median indicates that large profitability differences exist among the firms in the sample. Public shares and state shares constitute the two largest ownership structures in

Table 3. Descriptive statistics.

Category	N	Industry	N		N
A-stock	1438	Agriculture	31	ADR	13
B-stock	170	Mining	44	CPA	924
H-stock	50	Manufacturing	893	Age	
SH-listing	796	Utility	70	6y–10y	348
ZH-listing	656	Construction	32	11y–14y	355
		Transportation	69	15y–18y	492
		Information technology	83	19y–23y	257
		Wholesale and retail	106		
		Social service	53		
		Media & culture	19		
		Comprehensive	52		

Dependent variable

	ROA	ROE	EPS
Mean	4.41	6.84	0.32
Median	4.43	7.06	0.23
Maximum	31.69	65.90	2.22
Minimum	−42.76	−108.56	−1.37
Std. Dev.	6.76	14.50	0.36

Independent variable

	AGE	CPA	SIZE	OPION	LEV	CUR	P/B
Mean	15.44	0.04	14.64	1.03	119.19	157.74	3.95
Median	15.00	0.00	14.55	1.00	91.96	123.24	2.58
Maximum	34.00	1.00	20.60	4.00	164.05	574.25	449.04
Minimum	6.00	0.00	10.72	1.00	0.17	0.00	0.36
Std. Dev.	6.25	0.19	1.12	0.21	114.22	170.49	8.85

	P/E	CF	DIV	STATE	DOMI	FORI	EMPL
Mean	87.04	0.46	1.17	24.64	11.21	1.25	0.27
Median	34.94	0.35	0.56	18.11	0.00	0.00	0.00
Maximum	434.47	11.63	17.90	86.20	80.28	75.71	36.80
Minimum	1.10	−8.18	0.00	0.00	0.00	0.00	0.00
Std. Dev.	319.53	0.77	1.71	25.39	18.61	6.11	1.91

	PUB	TOP	GCONF	GEXR	GM2	PPI
Mean	53.18	22.45	102.28	106,555.60	18.05	1.88
Median	47.57	11.31	100.50	111,055.00	17.57	3.00
Maximum	100.00	96.34	113.10	174,623.00	27.68	7.10
Minimum	0.00	0.09	93.20	48,058.00	13.60	−4.00
Std. Dev.	24.67	23.20	7.20	37,463.61	3.65	3.09

Notes: This table reports descriptive statistics on the main analyses for the large sample of 1,452 firms and the macroeconomic variables. Table 2 summarises the definitions of variables. These variables are measured in percentages, except for EPS, cash flow per share (CF), and exports (GEXR) in RMB.
Data source: https://www.cninfo.com.cn.

our sample firms. Furthermore, this study winsorises the independent variables at the 1st and 99th percentiles to control for outliers. Table 4 provides the matrix of Pearson correlation coefficients. The correlation coefficients are usually small, except for GEXR having significantly negative correlations with the top ten shareholder ratio and public share ratio, as well as a negative correlation with the state share ratio.

4. Results

4.1. Empirical results

Table 5 summarises the GMM results for our main profitability measure ROA. The first two columns report the results when including all 12 years in our sample. In order to explore the determinants of firm performance during the crisis and non-crisis periods, we further split up two subsample periods from total sample period: the results of columns three and four refer to the non-crisis period (1999–2006) and columns five and six report the estimates for the years of the main financial crisis, namely 2007–2010. In order to identify the stability of the coefficients and their significance, we first include only the firm-specific determinants into our model (columns one, three, and five). In the second step, we report the estimates of the full model with the firm and macroeconomic factors (columns two, four, and six).

The Sargan test reveals no evidence of over-identifying restrictions. Our lagged dependent variable, which measures the degree of persistence of our performance measure ROA, is statistically salient during all periods, indicating a high degree of persistence in firm performance and justifying the use of a dynamic model. There are some pronounced differences between the results of the crisis and non-crisis periods, both in respect to the significance and the sign of the coefficients.

The cash flow per share and leverage have positive and significant impacts on firm performance during the non-crisis period, but they do not have a significant effect on firm performance as measured by ROA during the financial crisis. In contrast, the dividend yield ratio, audited by Big Four accounting firms, and audit opinion all have significantly negative impacts on firm performance during the non-crisis period, but do not have a significant effect during the crisis. One possible reason we provide for the above five impact changes from significant in the non-crisis period to insignificant in the crisis period is that during the crisis stock markets became less efficient in incorporating firm-specific information into stock prices (Gupta et al., 2013). Aebi et al. (2012) pinpoint that corporate governance variables are mostly insignificantly related to banks' performance during the crisis, rather than during the non-crisis period. Regarding the negative influence of dividend yield during the non-crisis period, our finding is consistent with Gaver and Gaver (1993) in that growth firms have significantly lower dividend yields than non-growth firms. As for audited by Big Four accounting firms, Mitton (2002) finds that a significantly better performance is associated with firms that had indicators of higher disclosure quality (i.e., auditors from Big Four accounting firms). Conversely, we find that firms audited by Big Four accounting firms have lower performance, implying audit by Big Four accounting firms brings firms a higher degree of quality guarantee or commitment. The result is in line with Liu et al. (2012), whereby Chinese firms that adopted a reputable accounting auditor experienced a small reduction in firm value during the global financial crisis.

Table 4. Pearson correlation coefficients.

	ROA	ROE	EPS	CF	CUR	LEV	PE	PB	DIV	AGE	CPA	OPION	SIZE	STATE	DOMI	FORI	EMPL	PUB	TOP	GCONF	GEXR	GM2R	PPI
ROA	1.00																						
ROE	0.58***	1.00																					
EPS	0.61***	0.37***	1.00																				
CF	0.16***	0.09***	0.36***	1.00																			
CUR	0.08***	0.01	0.03**	−0.05***	1.00																		
LEV	−0.18***	0.00	−0.09***	0.06***	−0.18***	1.00																	
PE	−0.11***	−0.06***	−0.14***	−0.07***	0.01	−0.01	1.00																
PB	0.19***	0.20***	0.08***	−0.02	0.02	0.16***	0.07***	1.00															
DIV	0.08***	0.03**	0.13***	0.11***	0.02*	−0.07***	−0.11***	−0.11***	1.00														
AGE	−0.08***	−0.02	−0.11***	0.01	−0.05***	0.13***	0.06***	−0.01	−0.04***	1.00													
CPA	0.04***	0.02	0.09***	0.06***	−0.01	−0.03***	−0.03**	−0.02	0.12***	0.03**	1.00												
OPION	−0.13***	−0.07***	−0.14***	−0.07***	0.00	0.08***	0.03*	0.08***	−0.05***	0.05***	0.00	1.00											
SIZE	0.04***	0.04***	0.33***	0.28***	−0.14***	0.24***	−0.12***	−0.16***	0.24***	0.15***	0.26***	−0.08***	1.00										
STATE	−0.05***	−0.03**	−0.07***	0.06***	−0.04***	−0.03*	−0.01	0.05***	0.17***	0.07***	0.07***	0.01	0.17***	1.00									
DOMI	0.04**	0.05***	0.03**	−0.05***	−0.02	0.01	0.00	0.05***	−0.04***	−0.09***	−0.01	0.01	−0.17***	−0.42***	1.00								
FORI	0.02	0.01	0.02	0.01	0.00	−0.05***	−0.02*	−0.01	0.06***	−0.08***	0.03**	0.01	−0.03**	−0.11***	0.04**	1.00							
EMPL	0.00	0.00	0.01	0.00	0.00	0.00	−0.01	0.00	0.00	−0.05***	−0.01	−0.01	−0.01	0.00	0.00	−0.01	1.00						
PUB	−0.01	0.00	0.04**	0.01	0.02	0.06***	0.02	0.05***	−0.12***	0.10***	−0.09***	−0.01	0.05***	−0.30***	−0.13***	−0.05***	−0.02	1.00					
TOP	0.10***	0.05***	0.21***	0.11***	0.01	0.04**	−0.01	0.03*	−0.03**	−0.06***	0.03*	−0.05***	0.23***	−0.34***	−0.22***	−0.07***	−0.03***	0.33***	1.00				
GCONF	0.08***	0.08***	0.13***	0.03**	−0.01	0.00	0.04**	0.13***	−0.16***	−0.07***	−0.01	−0.03*	0.01	−0.11***	0.04**	0.05***	0.00	0.14***	0.16***	1.00			
GEXR	0.10***	0.07***	0.17***	0.02	0.05***	0.04***	0.03**	0.12***	−0.18***	−0.04**	−0.07***	−0.01	0.11***	−0.44***	−0.14***	−0.03*	−0.04**	0.45***	0.58***	0.41***	1.00		
GM2R	0.03**	0.02	0.05***	0.08***	−0.01	0.01	0.04***	0.06***	−0.10***	0.02	−0.01	−0.02	0.05***	−0.12***	−0.06***	−0.02	−0.01	0.12***	0.17***	0.06***	0.07***	1.00	
PPI	0.01	0.01	0.00	0.01	0.01	−0.01	−0.01	−0.02	0.00	0.00	0.01	−0.03**	0.00	−0.01	0.02	−0.02	−0.01	−0.01	−0.01	0.01	0.00	−0.01	1.00

Notes: ***, **, and * indicate the 1, 5, and 10% significant levels, respectively. For the notation of the variables, see Table 2.
Data source: https://www.cninfo.com.cn.

Table 5. Regression results of ROA as dependent variable.

Dependent variable: ROA	All years: 1999–2010				Before the financial crisis: 1999–2006				During the financial crisis: 2007–2010			
	Firm		Firm and Macro		Firm		Firm and Macro		Firm		Firm and Macro	
ROA(-1)	0.267***	(0.000)	0.302***	(0.000)	0.346***	(0.000)	0.316***	(0.000)	0.039	(0.811)	−0.290**	(0.036)
CF	0.876***	(0.000)	0.704***	(0.000)	1.120***	(0.002)	1.057***	(0.035)	0.132	(0.648)	0.359	(0.171)
CUR	−0.002**	(0.019)	−0.004***	(0.000)	−0.001	(0.632)	−0.001	(0.630)	0.001	(0.798)	0.005	(0.250)
LEV	−0.001	(0.506)	0.003***	(0.000)	0.003***	(0.000)	0.003***	(0.000)	0.012	(0.180)	0.008	(0.374)
PE	−0.063***	(0.000)	−0.067***	(0.000)	−0.006***	(0.005)	−0.002	(0.269)	0.002	(0.205)	−0.006*	(0.081)
PB	−0.001***	(0.000)	−0.001***	(0.000)	0.170	(0.169)	0.192	(0.283)	0.010	(0.653)	−0.001	(0.967)
DIV	0.152***	(0.000)	0.153***	(0.000)	−0.122**	(0.012)	−0.130**	(0.010)	−0.235	(0.387)	−0.110	(0.612)
AGE	−0.161***	(0.000)	−0.130***	(0.000)	−1.848***	(0.009)	−1.674**	(0.031)	2.632	(0.109)	2.898*	(0.085)
CPA	0.200	(0.254)	−0.306	(0.100)	−2.897***	(0.000)	−6.737**	(0.017)	−13.418	(0.525)	−5.136	(0.841)
OPION	−1.629***	(0.003)	−1.891	(0.118)	−2.817***	(0.001)	−2.447***	(0.001)	6.050	(0.179)	3.356	(0.221)
SIZE	−3.186***	(0.000)	−2.603***	(0.000)	−1.248*	(0.094)	−3.817***	(0.000)	−5.445**	(0.047)	−5.606**	(0.016)
STATE	−1.082***	(0.000)	−1.195***	(0.000)	−0.037*	(0.089)	−0.058*	(0.086)	−0.013	(0.791)	0.022	(0.824)
DOMI	−0.005	(0.541)	−0.005	(0.583)	−0.033**	(0.038)	−0.055*	(0.066)	−0.072	(0.307)	0.121	(0.220)
FORI	0.028***	(0.002)	0.014	(0.147)	0.393*	(0.071)	0.289	(0.137)	0.304	(0.549)	−0.118	(0.770)
EMPL	0.033	(0.337)	−0.008	(0.805)	0.233	(0.700)	−0.003	(0.996)	32.767	(0.432)	102.969	(0.266)
PUB	0.178	(0.487)	0.124	(0.514)	0.066***	(0.005)	0.045	(0.196)	−0.009	(0.812)	−0.082	(0.206)
TOP	−0.001	(0.879)	0.004	(0.316)	−0.024*	(0.084)	−0.010	(0.628)	0.078	(0.209)	0.048*	(0.088)
GCONF			0.011*	(0.072)			−0.007	(0.755)			34.859	(0.336)
GEXR			0.017***	(0.001)			0.000	(0.557)			0.000	(0.323)
GM2R			0.000	(0.461)			−0.320***	(0.000)			−10.986	(0.341)
PPI			0.000	(0.973)			−0.274***	(0.000)			0.258	(0.139)
CRISIS	−0.025***	(0.000)	−0.061***	(0.000)								
No. of observations	17,244		17,244		11,489		11,489		5731		5731	
Sargan test[p-value]	0.100		0.333		0.770		0.524		0.972		0.932	

Notes: The table reports results from GMM estimations of the effects of firm-level and macroeconomic-level variables on firm profitability. The dependent variable is the return on assets (ROA). The estimation method is the two-step GMM dynamic panel estimator. For the notation of the variables, see Table 2. The full sample includes 18,876 observations from 1452 firms. The full period covers the years 1999 to 2010, before the financial crisis 1999 to 2006, and after the financial crisis 2007 to 2010. P-values are in parentheses. Coefficients that are significantly different from zero at the 1, 5, and 10% levels are marked with ***, **, and *, respectively. The null hypothesis of the Sargan test is that the instruments used are not correlated with residuals (over-identifying restrictions).
Data source: https://www.cninfo.com.cn.

The coefficients of firm size and P/E have a negative and highly significant effect on firm performance during both the crisis and non-crisis periods. The smaller the firm size is, the higher its performance is. This result does not meet the disclosure quality expectation, but stands in line with the results of Halkos and Tzeremes (2007) in that small firms could be more efficient, because they have flexible, non-hierarchical structures and do not usually suffer from the so-called agency problem. The P/E has a largely negative impact on firm performance and is in line with Basu (1983) and Jaffe et al. (1989), who find positive abnormal returns associated with stocks having a low P/E.

Firm age and the top ten shareholding ratio have significantly positive impacts on firm performance during the crisis period, but salient and negative impacts during the non-crisis period. The negative impact of firm age during the non-crisis period is consistent with Coad et al. (2013) in that firm performance deteriorates with age. However, young firms are more financially constrained (Binks & Ennew, 1996), especially during economic downturn. During the crisis period, an increase in the top ten shareholder ratio brings about higher firm performance, which is in line with Douma, George, and Kabir (2006), who report that a larger foreign ownership shareholding brings a better of firm commitment and long-term involvement. During the non-crisis period, firm performance is lower when large foreign shareholders have the opportunity and the incentive to expropriate minority shareholders (Bozec & Laurin, 2008).

As for the ownership structure variables, public share ratio and foreign institutions' share ratio have significant and positive impacts on firm performance during the non-crisis period, but they have no salient impact during the crisis period. In contrast, domestic institutions' share ratio and state share ratio have significantly negative impacts on firm performance during the non-crisis period, but they have no salient impact during the crisis period. Our finding is consistent with Liu et al. (2012), who report that Chinese state-owned enterprises performed poorly before the global financial crisis and performed better during the crisis, suggesting that state ownership mitigates financial constraints during the financial crisis. Wei, Xie, and Zhang (2005) also find that state share ratio is significantly negatively related to firm value. In line with Douma et al. (2006) and Wei et al. (2005), we find a significantly positive effect of foreign ownership on firm performance during the non-crisis period. In addition, Mitton (2006) notes that firms having more foreign investors have higher growth and greater profitability.

Considering the macroeconomic factors and firm performance, the consumer confidence index and exports have saliently positive impacts on firm performance for the full period, while M2 and the PPI are negatively correlated with firm performance during the non-crisis period. The positive effect of the consumer confidence index confirms the finding of Qiu and Welch (2005), who support the use of the consumer confidence index as a proxy for sentiment and find that the consumer confidence index correlates well with investors' optimism of future market-wide performance.

The extant research on exports can be divided into two categories: macro level and micro level (Singh, 2009). In micro-level exporting research, Temouri, Vogel, and Wagner (2013) do not find evidence for the positive effects of exporting on firm performance. In macro-level research, we find that exports have a positive effect on firm performance, especially during the non-crisis period. Lorie and Hamilton (1973) find evidence that changes in the money supply rate lead to changes in equity prices. Our finding is in line with Haron (1996) for an adverse effect of money supply (M2) on bank profits. The reason for the negative impact of

M2 on firm performance seems to be that a higher M2 indicates a tighter monetary policy and a reduced general availability of capital in capital markets (Yan, Yang, & Jiao, 2010). Tiwari, Mutascu, and Andries (2013) report that the PPI is important for the measurement of inflation. Du (2006) reports that the relationship between stock returns and inflation can be either negative or positive depending on whether the monetary policy is counter- or pro-cyclical. Our finding is confirmed by Kaul (1987) for a positive relationship between stock returns and inflation during the period of the Great Depression when the monetary policy was pro-cyclical and offers evidence of a negative relationship in the post-World War II period when the monetary policy was countercyclical.

Table 6 reports the GMM regression results for our second performance measure, ROE. Again, we estimate the model for the entire time period considered and then separately for the two subsamples of the non-crisis and crisis periods. Overall, the findings of the regressions confirm to a large extent the above-mentioned key results. There are also some differences. The current ratio and P/B ratio have no impact on firm performance when measured by the ROA, while the measure of firm performance on ROE has a saliently negative correlation with the current ratio in the crisis period and a positive correlation with P/B in both the full year and the crisis periods. This finding might be driven by the fact that the ROE reveals shareholder maximisation attempts (Dietrich & Wanzenried, 2011). The current ratio is always a proxy for slack resources, and until now a consensus on knowing how slack resources affect performance remains elusive (Daniel, Lohrke, Fornaciari, & Turner, 2004). Our results confirm Davis and Stout (1992) in that a resource slack may become a source of agency problems, especially during turbulent times (Sharfman, Wolf, Chase, & Tansik, 1988). The high correlation of ROE and P/B is consistent with the finding of Bloomfield, Libby, and Nelson (1999) whereby security values are determined by each firm's price/book ratio, and investors are given information on a firm's ROE.

Table 7 presents the regression results for another performance measure, the EPS. Analysing the determinants of the EPS helps us to better understand firm profitability. Compared with the results in Tables 5 and 6, the relationships of firm age and the top ten shareholder ratio show a significantly positive impact on firm performance, especially during the crisis period rather than in the non-crisis period. The results of Table 7 confirm to a large extent the key findings of Tables 5 and 6. In other words, we find a negative impact from a worse than unqualified audit opinion during the non-crisis period, but no impact during the crisis; a positive impact of leverage during the non-crisis period; a positive impact of P/B during all periods; and negative impacts of dividend yield and audited by Big Four accounting firms during the non-crisis period. Except for a salient positive impact of cash flow per share during the crisis period and no significant impacts shown four ownership structure variables in both subsample periods, we find strong evidence that all ownership structure and macroeconomic variables are significant impacts in our all-sample period. The possible reason for significant results in all-sample period compared with insignificant results in subsample periods is because the length of data is big enough to capture the potential effects on firm performance.

4.2. Discussion

At the point of the global financial crisis hit, why did some firm perform better? Our main findings are as follows. First, firms having higher top ten shareholder ratios or firms that

Table 6. Regression results of ROE as dependent variable.

Dependent variable: ROE	All years: 1999–2010				Before the financial crisis: 1999–2006				During the financial crisis: 2007–2010			
	Firm		Firm and Macro		Firm		Firm and Macro		Firm		Firm and Macro	
ROE (−1)	0.019**	(0.045)	0.040***	(0.000)	0.244***	(0.000)	0.227***	(0.000)	0.049	(0.517)	0.052	(0.428)
CF	2.180***	(0.000)	1.990***	(0.000)	2.039***	(0.006)	1.170	(0.364)	−4.570	(0.394)	0.100	(0.974)
CUR	0.000	(0.856)	−0.002	(0.128)	−0.002	(0.459)	−0.002	(0.729)	−0.001*	(0.055)	0.000	(0.699)
LEV	−0.036***	(0.000)	−0.035***	(0.000)	−0.025	(0.162)	−0.017	(0.407)	−0.057	(0.331)	−0.074	(0.150)
PE	−0.003***	(0.000)	−0.002***	(0.000)	−0.004	(0.301)	0.002	(0.719)	−0.001	(0.353)	−0.002*	(0.062)
PB	0.723***	(0.000)	0.654***	(0.000)	0.080	(0.801)	0.777***	(0.041)	0.455**	(0.031)	0.382**	(0.015)
DIV	−0.074	(0.240)	−0.116*	(0.080)	−0.190*	(0.080)	−0.257*	(0.051)	−0.349	(0.461)	−0.570	(0.199)
AGE	0.986***	(0.012)	−0.055	(0.909)	−6.207***	(0.009)	−2.546	(0.290)	−0.406	(0.925)	0.088	(0.982)
CPA	−7.590***	(0.000)	−11.600***	(0.000)	−11.649***	(0.001)	−18.072**	(0.046)	67.030	(0.136)	61.998	(0.139)
OPION	−7.731***	(0.000)	−8.094***	(0.000)	−4.924***	(0.005)	−2.952*	(0.055)	−8.456	(0.193)	1.649	(0.607)
SIZE	−2.126***	(0.000)	−3.912***	(0.000)	2.152	(0.353)	−2.432	(0.358)	7.535	(0.152)	1.974	(0.543)
STATE	0.008	(0.637)	−0.006	(0.783)	−0.117*	(0.093)	−0.169	(0.110)	−0.002	(0.992)	0.143	(0.502)
DOMI	0.078***	(0.000)	0.020	(0.329)	−0.063	(0.325)	−0.119	(0.130)	−0.395	(0.181)	0.004	(0.990)
FORI	0.038	(0.385)	0.049	(0.277)	0.550	(0.282)	0.434	(0.361)	0.153	(0.814)	0.070	(0.907)
EMPL	−1.110	(0.144)	−0.639**	(0.030)	−0.711	(0.599)	−0.952	(0.508)	3.573	(0.524)	5.362	(0.330)
PUB	0.018*	(0.074)	0.022**	(0.019)	0.103	(0.182)	0.112	(0.317)	−0.109	(0.487)	−0.136	(0.333)
TOP	0.017*	(0.067)	0.018	(0.201)	−0.082*	(0.076)	−0.014	(0.804)	−0.059	(0.753)	0.113	(0.558)
GCONF			0.014	(0.356)			−0.091	(0.181)			−0.005	(0.985)
GEXR			0.000	(0.142)			0.000	(0.164)			0.000	(0.270)
GM2R			−0.084***	(0.001)			−0.311	(0.242)			−0.193	(0.268)
PPI			0.092**	(0.041)			−0.214	(0.436)			0.273	(0.290)
CRISIS	−0.683***	(0.001)	−0.063	(0.824)								
No of observations	17,148		17,148		11,430		11,430		5716		5716	
Sargan test[p-value]	0.193		0.276		0.735		0.587		0.497		0.798	

Notes: The table reports results from GMM estimations of the effects of firm-level and macroeconomic-level variables on firm proftability. The dependent variable is the ROE. The estimation method is the two-step GMM dynamic panel estimator. For the notation of the variables, see Table 2. The full sample includes 18,876 observations from 1452 firms. The full period covers the years 1999 to 2010, before the financial crisis 1999 to 2006, and after the financial crisis 2007 to 2010. *P*-values are in parentheses. Coefficients that are significantly different from zero at the 1%, 5%, and 10% levels are marked with ***, **, and *, respectively. The null hypothesis of the Sargan test is that the instruments used are not correlated with residuals (over-identifying restrictions).
Data source: https://www.cninfo.com.cn.

Table 7. Regression results of EPS as dependent variable.

Dependent variable: EPS	All years: 1999–2010				Before the financial crisis: 1999–2006				During the financial crisis: 2007–2010			
	Firm		Firm and Macro		Firm		Firm and Macro		Firm		Firm and Macro	
EPS (-1)	0.525***	(0.000)	0.390***	(0.000)	0.577***	(0.000)	0.486***	(0.000)	0.183*	(0.097)	0.070	(0.523)
CF	0.103***	(0.000)	0.081***	(0.000)	0.117***	(0.001)	0.070**	(0.040)	0.037***	(0.009)	0.019	(0.308)
CUR	0.000	(0.192)	0.000	(0.378)	0.000**	(0.047)	0.000	(0.374)	0.000	(0.976)	0.000	(0.817)
LEV	0.000	(0.655)	-0.001***	(0.000)	0.000*	(0.077)	0.000**	(0.014)	-0.001	(0.117)	-0.001	(0.466)
PE	0.000***	(0.000)	0.000***	(0.000)	0.000	(0.926)	0.000	(0.837)	0.000	(0.884)	0.000	(0.220)
PB	0.006***	(0.000)	0.007***	(0.000)	0.038***	(0.000)	0.021**	(0.042)	0.004	(0.128)	0.003	(0.206)
DIV	-0.022***	(0.000)	-0.019***	(0.000)	-0.014***	(0.001)	-0.012***	(0.004)	-0.032**	(0.017)	-0.018	(0.184)
AGE	-0.005	(0.721)	0.045***	(0.000)	0.050	(0.456)	-0.016	(0.699)	-0.005	(0.957)	0.244*	(0.066)
CPA	-0.032	(0.799)	-0.226***	(0.000)	-0.079	(0.531)	-0.153	(0.422)	-0.961	(0.502)	-0.553	(0.615)
OPION	-0.129***	(0.000)	-0.097***	(0.000)	-0.134***	(0.005)	-0.132***	(0.002)	0.169	(0.244)	0.139	(0.180)
SIZE	0.066***	(0.000)	0.158***	(0.000)	-0.038	(0.593)	-0.070	(0.337)	0.186	(0.278)	0.028	(0.875)
STATE	0.003***	(0.002)	0.002***	(0.000)	0.001	(0.734)	0.001	(0.675)	0.002	(0.537)	0.004	(0.322)
DOMI	0.005***	(0.000)	0.003***	(0.000)	-0.003	(0.230)	0.000	(0.891)	-0.004	(0.321)	-0.001	(0.838)
FORI	0.009***	(0.009)	0.002	(0.113)	-0.017	(0.352)	-0.006	(0.681)	0.006	(0.646)	-0.002	(0.914)
EMPL	-0.100***	(0.009)	-0.086*	(0.067)	-0.023	(0.641)	-0.056	(0.161)	1.180	(0.381)	1.201	(0.402)
PUB	0.003***	(0.000)	0.002***	(0.000)	0.000	(0.858)	-0.004	(0.126)	0.000	(0.839)	0.001	(0.465)
TOP	0.000	(0.592)	0.001***	(0.000)	-0.003	(0.142)	-0.002	(0.307)	0.001	(0.710)	0.003*	(0.053)
GCONF			0.002***	(0.000)			0.002	(0.114)			0.022	(0.475)
GEXR			0.000***	(0.000)			0.000	(0.671)			0.000	(0.719)
GM2R			0.006***	(0.000)			-0.011	(0.162)			-0.003	(0.805)
PPI			0.000	(0.703)			-0.009	(0.256)			0.001	(0.880)
CRISIS	-0.100***	(0.000)	-0.095***	(0.000)								
No of observations	17,244		17,244		11,519		11,519		5725		5748	
Sargan test[p-value]	0.338		0.236		0.507		0.446		0.614		0.169	

Notes: The table reports results from GMM estimations of the effects of firm-level and macroeconomic-level variables on firm profitability. The dependent variable is the EPS. The estimation method is the two-step GMM dynamic panel estimator. For the notation of the variables, see Table 2. The full sample includes 18,876 observations from 1452 firms. The full period covers the years 1999 to 2010, before the financial crisis 1999 to 2006, and after the financial crisis 2007 to 2010. *P*-values are in parentheses. Coefficients that are significantly different from zero at the 1%, 5%, and 10% levels are marked with ***, **, and *, respectively. The null hypothesis of the Sargan test is that the instruments used are not correlated with residuals (over-identifying restrictions).
Data source: https://www.cninfo.com.cn.

are older performed poorly during the non-crisis period, yet performed better in the crisis period. Most top ten shareholders of Chinese-listed companies are state government agencies and legal persons (Xu & Wang, 1999). A possible economic insight for this finding is that increases in top ten shareholder ratios stabilise firm operations and older firms are less financially constrained, especially during a crisis period. Our finding is consistent with Liu et al. (2012), who report that Chinese state-owned enterprises performed poorly before the global financial crisis and performed better during the crisis, suggesting that state ownership mitigates financial constraints during the financial crisis. Young firms are more financially constrained (Binks & Ennew, 1996), especially during economic downturn.

For both crisis and non-crisis periods, firm size has pronouncedly negative impacts on firm performance, confirming with Halkos and Tzeremes (2007) that small firms could be more efficient, because they have flexible, non-hierarchical structures and do not usually suffer from the agency problem. Firms audited by the Big Four accounting firm have a significantly negative correlation with their performance, signifying that the strict requirements held up by the Big Four accounting firms might lower firm performance. In other worlds, an individual firm that adopts a reputable accounting auditor experiences a reduction in its value. Leverage and audit opinions that are worse than unqualified audit opinions have salient impacts on firm performance during the non-crisis period rather than during the crisis period, implying that stock markets during a crisis become less efficient in incorporating firm-specific information into stock prices. Considering the macroeconomic factors, the consumer confidence index and macro-level exports have significant positive impacts on firm performance during all years. The positive impact of the consumer confidence index confirms the findings of Qiu and Welch (2005) that the consumer confidence index correlates well with investors' optimism of future market-wide performance.

The subtle economic insights of our analysis are as follows: first, firm performance varies on firm size, history, leverage, audit by the Big Four accounting firms, audit opinion, top ten shareholder ratio, time periods (non-crisis and crisis periods), and on macroeconomic factors (export and consumer confidence index). Second, investors need to be more cautious if they invest in younger companies and firms have a smaller top ten shareholder ratio during the crisis period; while firms with larger leverage and audit opinion are worse than unqualified audit opinions during the non-crisis period; larger firms during the full period. Third, the Chinese financial markets became less efficient with respect to information diffusion during the crisis. It is possible, then, that investors or asset managers who build both leverage and audit opinion that are worse than unqualified audit opinions into investment strategies would find that when it comes to financial crises, their strategies may not deliver the desired investment outcome. Our findings indicate that policymakers should consider the key factors that fuel their economy, and firm managers should effectively identify and adopt those characteristics that cause their firm to perform better during different periods and under different macroeconomic conditions. The main contribution of the paper is applicable to China, and is broadly generalisable to other developing market contexts.

5. Conclusions

Contrary to most recent literature which emphasises the issues of bank performance and/or corporate governance during the recent global financial crisis, this paper captures integrated rather than segmented factors, combining firm, macroeconomic, and different economic

environments for the purpose of firm performance analysis. Given that there are wide variances in firms' capabilities as well as countries' economic policy, an imperative issue is why some firms perform better and others suffer during a drastic financial environmental change. This paper examines the impacts of firm and macroeconomic factors on firm performance during the recent global crisis and during the non-crisis period, with a wide range of panel data that cover 1,452 Chinese public non-financial firms from the period 1999 to 2010.

In this research we consider three categories of firm variables (i.e., financial structure, disclosure quality, and ownership structure) and macroeconomic variables during crisis and non-crisis periods. This study applies the recent two-step system GMM dynamic panel data techniques. The empirical findings reveal that the effects of firm age and the top ten shareholder ratio on firm performance are significantly positive (negative) during the crisis (non-crisis) period, which is consistent with the findings of Binks and Ennew (1996), meaning young firms are more financially constrained on their performance, and in line with Douma et al. (2006) that a larger foreign ownership shareholding brings a better firm commitment and long-term involvement during the crisis period. The negative impacts of firm size and P/E during both the non-crisis and crisis periods confirm the results of Halkos and Tzeremes (2007) in that small firms may more efficient due to the agency problem, and agree with Basu (1983), who state that P/E presents positive abnormal returns associated with stocks having a low P/E.

Firms audited by the Big Four accounting firms are significantly negatively correlated with firm performance, signifying that the strict requirements upheld by the Big Four accounting firms might lower firm performance (net income). Firms that adopted Big Four accounting auditors experienced a small reduction in firm value, confirming the results of Liu et al. (2012). Cash flow per share, dividend yield ratio, and leverage have a salient impact on ROA and ROE during the non-crisis period, while they have no significant impact during the crisis period. This is consistent with Gupta et al. (2013), who suggest that during the crisis stock markets became less efficient in incorporating firm-specific information into stock prices. Considering the macroeconomic factors, the consumer confidence index and macro-level exports have significant impacts on firm performance during all years, indicating the strength of the consumer confidence index and exports on firm performance. The negative effect of money supply (M2) on ROA and ROE is in line with Haron (1996), who shows an adverse effect of M2 on profits, implying a higher M2 tightens a monetary policy and reduces the general availability of capital in capital markets (Yan et al., 2010).

The contributions of this study are as follows. First, this study accounts for the contingency variables of the macroeconomy. Second, the extant literature ignores influencing factors that might change under different market conditions. Third, this study employs a GMM approach to illustrate the wealth effect of the selected factors. Our results provide some important policy implications for policy makers, firm managers, and investors during crisis and non-crisis periods. During non-crisis and crisis periods, policy makers may attempt to avert a financial crisis or improve the economy by giving priority to accelerating the consumer confidence index and exports as well as decrease money supply. As to firm managers, they can strengthen the ownership structure of a firm during a crisis. More precisely, pushing the top ten shareholders to increase their shareholdings and considering key performance factors (i.e., P/E) should help maximise firm performance during a crisis. During a non-crisis period, firms should put more weight on firms' cash flow per share, dividend yield, and leverage in order to strengthen their firm's quality as well as create

performance. Due to the different impacts of financial factors (e.g., cash flow per share, dividend yield, and leverage) in crisis and non-crisis periods, our results suggest that investors should be more cautious in basing their investment decisions on the informativeness of financial factors during crisis, and give more weight to top ten shareholder ratio, firm history, and firm size to estimate risks, since these three factors are harder to manipulate. Furthermore, while firm managers aim at critical factors that could saliently improve firm performance, economic growth would accelerate more if matched with effective government economic policy.

Financial crises do repeat (Reinhart & Rogoff, 2009), and appropriate responses to them are difficult and complex. To be better prepared to face the next financial crisis, we conclude that firms have to significantly improve their disclosure quality and financial and ownership structures. The government should set up appropriate monetary policy and economic governance, so that the next crisis will not produce harmful consequences. The findings herein based on the experience in China provide important insights for firms and countries to follow. Evidence provided in this study on the ability to distinguish better firms from other firms ex-ante a crisis adds to the literature on understanding corporate and macroeconomic features, and is relevant to decisions that enhance the effectiveness of policymakers on country governance as well as management on a firm's operations. Finally, investors can identify the most common variables used in our analyses for their own beneficial use.

Notes

1. There are five types of audit opinions: unqualified, unqualified opinion with emphasis of matter, qualified, disclaimer, and adverse.
2. Listings in the U.S., which require more stringent regulations and disclosure rules, may strengthen firms' governance practices and thereby enhance firm value (Pan, Lin, & Chen, 2012). As both Level II and III ADRs are required to follow more stringent requirements on governance and accounting standards versus U.S. firms (Durnev & Kim, 2005; Mitton, 2002), this study uses the dummy variable if firms have Level II and Level III ADRs equal to 1. However, among the 1,452 sample firms, only 12 firms have issued Level II or III ADRs, resulting in a single matrix of regression finding. Thus, we remove this disclosure quality dummy variable.
3. Source: Producer price index: Methods, sources and theory. www.statssa.gov.za.
4. We do consider macroeconomic factors, such as GDP growth rate, unemployment rate, reserve rate, exchange rate to U.S. dollars, government expenditure, business cycle signal, foreign direct investment, and real interest rate, but remove them due to the large correlations among them.
5. We consider industry effect, exchange market effect (Shanghai and Shenzhen), A-share, or B-share, but no significant influences are found.
6. The OLS approach does not account formally for potential simultaneity bias, or does it control explicitly for firm fixed effects or the routine use of lagged dependent variables in regressions. Unlike the OLS approach, the GMM panel estimator exploits the time-series variation in the data, accounts for unobserved firm-specific effects, allows for the inclusion of lagged dependent variables as regressors, and controls for endogeneity of all the explanatory variables. Thus, this study advances the literature on firm performance, firm, and macroeconomic factors by enhancing the quality and quantity of the data and by using econometric techniques that ameliorate biases.
7. Use a GMM estimator also accounts for possible correlations between any of the independent variables. For a thorough description of the various GMM estimators, see Baltagi (2001)
8. Mitton (2002) presents that the Asian financial crisis is from 1997–1998.

9. Choi (2013) pinpoint that 'the St. Louis Federal Reserve Bank starts its financial crisis timeline with the February 27, 2007 announcement made by the Federal Home Loan Mortgage Corporation that it would no longer buy the subprime mortgages and mortgage-related securities. It is often identified with the Great Recession, the subprime mortgage melt-down, the 2008–2009 financial crisis, etc. However I wished to call it the 2007–2010 financial crisis because the Great Recession began in 2007, and its impact was still too strong to be ignored in 2010 when the Dodd-Frank Act was passed.'

10. Table 3 lists the 11 industries used in this study.

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References

Admati, A. R., Pfleiderer, P., & Zechner, J. (1994). Large shareholder activism, risk sharing, and financial market equilibrium. *Journal of Political Economy, 102*, 1097–1130.

Aebi, V., Sabato, G., & Schmid, M. (2012). Risk management, corporate governance, and bank performance in the financial crisis. *Journal of Banking and Finance, 36*, 3213–3226.

Akhigbe, A., Madura, J., & Marciniak, M. (2012). Bank capital and exposure to the financial crisis. *Journal of Economics and Business, 64*, 377–392.

Alfaro, L., & Chen, M. X. (2012). Surviving the global financial crisis: Foreign ownership and establishment performance. *American Economic Journal: Economic Policy, 4*, 30–55.

Amiti, M., & Weinstein, D. E. (2011). Exports and financial shocks. *Quarterly Journal of Economics, 126*, 1841–1877.

Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *The Review of Economic Studies, 58*, 277–297.

Baek, J. S., Kang, J. K., & Park, K. S. (2004). Corporate governance and firm value: Evidence from the Korean financial crisis. *Journal of Financial Economics, 71*, 265–313.

Baharumshah, A. A., Mohd, S. H., & Yol, M. A. (2009). Stock prices and demand for money in China: New evidence. *International Financial Markets, Institutions and Money, 19*, 171–187.

Ball, R. (1978). Anomalies in relationships between securities' yields and yield surrogates. *Journal of Financial Economics, 6*, 103–126.

Baltagi, B. H. (2001). *Econometric analysis of panel data* (2nd ed.). Chichester: John Wiley & Sons.

Bartram, S. M., & Bodnar, G. M. (2009). No place to hide: The global crisis in equity markets in 2008/2009. *Journal of International Money and Finance, 28*, 1246–1292.

Basu, S. (1983). The relationship between earnings' yield, market value and return for NYSE common stocks: Further evidence. *Journal of Financial Economics, 12*, 129–156.

Bauman, W. S., Conover, C. M., & Miller, R. E. (1998). Growth versus value and large-cap versus small-cap stocks in international markets. *Financial Analysts Journal, 54*, 75–89.

Beltratti, A., & Stulz, R. M. (2012). The credit crisis around the globe: Why did some banks perform better? *Journal of Financial Economics, 105*, 1–17.

Berger, A., Bonime, S. D., Covitz, D. M., & Hancock, D. (2011). Why are bank profits so persistent? The roles of product market competition, information opacity, and regional/macroeconomic shocks. *Journal of Banking and Finance, 24*, 1203–1235.

Binks, M. R., & Ennew, C. T. (1996). Growing firms and the credit constraint. *Small Business Economics, 8*, 17–25.

Bloomfield, R., Libby, R., & Nelson, M. W. (1999). Confidence and the welfare of less-informed investors. *Accounting, Organizations and Society, 24*, 623–647.

Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics, 87*, 115–143.

Bowman, R. G., Chan, K. F., & Comer, M. R. (2010). Diversification, rationality and the Asian economic crisis. *Pacific-Basin Finance Journal, 18*, 1–23.

Bozec, Y., & Laurin, C. (2008). Large shareholder entrenchment and performance: Empirical evidence from Canada. *Journal of Business Finance and Accounting, 35*, 25–49.

de Bussy, N. M., & Suprawan, L. (2012). Most valuable stakeholders: The impact of employee orientation on corporate financial performance. *Public Relation Review, 38*, 280–287.

Byström, H., Worasinchai, L., & Chongsithipol, S. (2005). Default risk, systematic risk and Thai firms before, during and after the Asian crisis. *Research in International Business and Finance, 19*, 95–110.

Cai, J., Qian, Y., Liu, Y. (2009). Information asymmetry and corporate governance. Retrieved from www.ssrn.com

Calomiris, C. W., Love, I., & Pería, M. S. M. (2012). Stock returns' sensitivities to crisis shocks: Evidence from developed and emerging markets. *Journal of International Money and Finance, 31*, 743–765.

Chen, S. S. (2011). Consumer confidence and stock returns over market fluctuations. *Quantitative Finance, 12*, 1585–1597.

Chen, M. P., Chen, P. F., & Lee, C. C. (2014a). Frontier stock market integration and the global financial crisis. *The North American Journal of Economics and Finance, 29*, 84–103.

Chen, H. L., & de Bondt, W. (2004). Style momentum within the S&P-500 index. *Journal of Empirical Finance, 11*, 483–507.

Chen, P. F., Lee, C. C., Lee, C. C., & Huang, J. X. (2016b). A dynamic analysis of exchange rate exposure: The impact of China's Renminbi. *The World Economy, 39*, 132–157.

Chidambaran, N., & John, K. (2000). *Relationship investing and corporate governance* (Working Paper). Tulane University and New York University.

Choi, J. W. (2013). The 2007–2010 US financial crisis: Its origins, progressions, and solutions. *The Journal of Economic Asymmetries, 10*, 65–77.

Chor, D., & Manova, K. (2012). Off the cliff and back? Credit conditions and international trade during the global financial crisis. *Journal of International Economics, 87*, 117–133.

Chung, H., & Lee, B. S. (1998). Fundamental and nonfundamental components in stock prices of Pacific-Rim countries. *Pacific-Basin Journal of Finance, 6*, 321–346.

Claessens, S., Djankov, S., & Nenova, T. (2000). *Corporate risk around the world* (The World Bank, Policy Research Working Paper Series, 2271). Washington, DC: The World Bank.

Clarke, G. R. G., Cull, R., & Kisunko, G. (2012). External finance and firm survival in the aftermath of the crisis: Evidence from Eastern Europe and Central Asia. *Journal of Comparative Economics, 40*, 372–392.

Coad, A., Segarra, A., & Teruel, M. (2013). Like milk or wine: Does firm performance improve with age? *Structural Change and Economic Dynamics, 24*, 173–189.

Corredor, P., Ferrer, E., & Santamaria, R. (2013). Investor sentiment effect in stock markets: Stock characteristics or country-specific factors? *International Review of Economics and Finance, 27*, 572–591.

Cragg, J. G., & Malkiel, B. G. (1982). *Expectations and the structure of share prices*. Chicago, IL: University of Chicago Press.

Cutler, D. M., Poterba, J. M., & Summers, L. H. (1991). Speculative dynamics. *Review of Economic Studies, 58*, 529–547.

Daniel, F., Lohrke, F. T., Fornaciari, C. J., & Turner, R. A., Jr (2004). Slack resources and firm performance: A meta-analysis. *Journal of Business Research, 57*, 565–574.

Danielson, M. G., & Dowdell, T. D. (2001). The return-stages valuation model and the expectations within a firm's P/B and P/E ratios. *Financial Management, 30*, 93–124.

Davis, G., & Stout, S. (1992). Organization theory and the market for corporate control: A dynamic analysis of large takeover targets, 1980-1990. *Administrative Science Quarterly, 37*, 605–633.

Dechow, P. M. (1994). Accounting earnings and cash flows as measures of firm performance: The role of accounting accruals. *Journal of Accounting and Economics, 18*, 3–42.

Demsetz, H., & Villalonga, B. (2001). Ownership structure and corporate performance. *Journal of Corporate Finance, 7*, 209–233.

Dietrich, A., & Wanzenried, G. (2011). Determinants of bank profitability before and during the crisis: Evidence from Switzerland. *Journal of International Financial Markets, Institutions and Money, 21*, 307–327.

Ding, D. K., Chua, J. L., & Fetherston, T. A. (2005). The performance of value and growth portfolios in East Asia before the Asian financial crisis. *Pacific-Basin Finance Journal, 13*, 185–199.

Dodd, P., Dopuch, N., Holthausen, R., & Leftwich, R. (1984). Qualified audit opinions and stock prices: Information content, announcement dates, and concurrent disclosures. *Journal of Accounting and Economics, 6*, 3–38.

Douma, S., George, R., & Kabir, R. (2006). Foreign and domestic ownership, business groups, and firm performance: Evidence from a large emerging market. *Strategic Management Journal, 27*, 637–657.

Du, D. (2006). Monetary policy, stock returns and inflation. *Journal of Economics and Business, 58*, 36–54.

Durnev, A., & Kim, E. H. A. N. (2005). To steal or not to steal: Firm attributes, legal environment, and valuation. *Journal of Finance, 60*, 1461–1493.

Dyck, A., & Zingales, L. (2004). Private benefits of control: An international comparison. *Journal of Finance, 59*, 537–600.

Ehrmann, M., Fratzscher, M., & Mehl, A. (2009). *What has made the current financial crisis truly global?* Mimeo: European Central Bank.

Erkens, D. H., Hung, M., & Matos, P. (2012). Corporate governance in the 2007-2008 financial crisis: Evidence from financial institutions worldwide. *Journal of Corporate Finance, 18*, 389–411.

Ferreira, M. A., & Matos, P. (2008). The colors of investors' money: The role of institutional investors around the world. *Journal of Financial Economics, 88*, 499–533.

Fidrmuc, J., & Korhonen, I. (2010). The impact of the global financial crisis on business cycles in Asian emerging economies. *Journal of Asian Economics, 21*, 293–303.

Forbes, K. J. (2002). *How do large depreciations affect firm performance? MIT Sloan School of Management* (Working paper 4379-02). Retrieved from

Freund, C., & Pierola, M. D. (2012). Export surges. *Journal of Development Economics, 97*, 387–395.

García-Herrero, A., Gavilá, S., & Santabárbara, D. (2009). What explains the low profitability of Chinese bank? *Journal of Banking and Finance, 33*, 2080–2092.

Gaver, J. J., & Gaver, K. M. (1993). Additional evidence on the association between the investment opportunity set and corporate financing, dividend, and compensation policies. *Journal of Accounting and Economics, 16*, 125–160.

Gillan, S. L., & Starks, L. T. (2003). Corporate governance, corporate ownership, and the role of institutional investors: A global perspective. *Journal of Applied Finance, 13*, 4–22.

Gomez-Mejia, L. R. (1992). Structure and process of diversification, compensation strategy, and firm performance. *Strategic Management Journal, 13*, 381–397.

Grammatikos, T., & Vermeulen, R. (2012). Transmission of the financial and sovereign debt crises to the EMU: Stock prices, CDS spreads and exchange rates. *Journal of International Money and Finance, 31*, 517–533.

Gunasekarage, A., Hess, K., & Hu, A. J. (2007). The influence of the degree of state ownership and the ownership concentration on the performance of listed Chinese companies. *Research in International Business and Finance, 21*, 379–395.

Gupta, K., Krishnamurti, C., & Tourani-Rad, A. (2013). Is corporate governance relevant during the financial crisis? *International Journal of Financial Markets, Institution, and Money, 23*, 85–110.

Halkos, G. H., & Tzeremes, N. G. (2007). Productivity efficiency and firm size: An empirical analysis of foreign owned companies. *International Business Review, 16*, 713–731.

Haron, S. (1996). Competition and other external determinants of the profitability of Islamic banks. *Islamic Economic Studies, 4*, 49–64.

Hart, S. L., & Ahuja, G. (1996). Does it pay to be green? An empirical examination of the relationship between emission reduction and firm performance. *Business Strategy and the Environment, 5*, 30–37.

Hartmann, D., Kempa, B., & Pierdzioch, C. (2008). Economic and financial crises and the predictability of U.S. Stock returns. *Journal of Empirical Finance, 15*, 468–480.

Iannotta, G., Nocera, G., & Sironi, A. (2007). Ownership structure, risk and performance in the European banking industry. *Journal of Banking and Finance, 31*, 2127–2149.

Iatridis, G. E. (2011). Accounting disclosures, accounting quality and conditional and unconditional conservatism. *International Review of Financial Analysis, 20*, 88–102.

Jaffe, J., Keim, D. B., & Westerfield, R. (1989). Earnings yield, market values, and stock returns. *Journal of Finance, 44*, 284–302.

Jin, J. Y., Kanagaretnam, K., & Lobo, G. J. (2011). Ability of accounting and audit quality variables to predict bank failure during the financial crisis. *Journal of Banking and Finance, 35*, 2811–2819.

Kang, J. K., Lee, I., & Na, H. S. (2010). Economic shock, owner-manager incentives, and corporate restructuring: Evidence from the financial crisis in Korea. *Journal of Corporate Finance, 16*, 333–351.

Kaul, G. (1987). Monetary regimes and the relation between stock returns and the inflationary expectations. *Journal of Financial and Quantitative Analysis, 25*, 307–321.

Kim, B., & Lee, I. (2003). Agency problems and performance of Korean companies during the Asian financial crisis: Chaebol vs. non-chaebol firms. *Pacific-Basin Finance Journal, 11*, 327–348.

Kollmann, R., Ratto, M., Roeger, W., & Veld, J. (2013). Fiscal policy, banks and the financial crisis. *Journal of Economic Dynamics and Control, 37*, 387–403.

La Porta, R., Lopez-de-Silanes, F., & Shleifer, A. (1999). Corporate ownership around the world. *Journal of Finance, 54*, 471–517.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (2000). Investor protection and corporate governance. *Journal of Financial Economics, 58*, 3–27.

Lam, K. S. K. (2002). The relationship between size, book-to-market equity ratio, earnings-price ratio, and return for the Hong Kong stock market. *Global Finance Journal, 13*, 163–179.

Lao, P., & Singh, H. (2011). Herding behavior in the Chinese and Indian stock markets. *Journal of Asian Economics, 22*, 495–506.

Lee, C. C., Chen, M. P., & Hsieh, K. M. (2013). Industry herding and market states: Evidence from Chinese stock markets. *Quantitative Finance, 13*, 1091–1113.

Lee, C. C., Lin, C. W., & Zeng, J. H. (2016). Financial liberalization, insurance market, and the likelihood of financial crises. *Journal of International Money and Finance, 62*, 25–51.

Lemmon, M. L., & Lins, K. V. (2003). Ownership structure, corporate governance, and firm value: Evidence from the East Asian financial crisis. *Journal of Finance, 58*, 1445–1468.

Liu, C., Uchida, K., & Yang, Y. F. (2012). Corporate governance and firm value during the global financial crisis: Evidence from China. *International Review of Financial Analysis, 21*, 70–80.

Lorie, J. H., & Hamilton, M. T. (1973). *The stock market*. Homewood, Illinois: Richard D. Irwin. Chapter 6.

Lu, C., Liao, G. M., & Yang, Y. C. (2007). *Ownership structure, information disclosure and corporate value: An empirical analysis of Taiwan companies*. Proceedings of 13th Asia Pacific Management Conference, Melbourne, Australia (pp. 698–704).

Mashayekhi, B., & Bazaz, M. S. (2008). Corporate governance and firm performance in Iran. *Journal of Contemporary Accounting and Economics, 4*, 156–172.

Miihkinen, A. (2012). What drives quality of firm risk disclosure? The impact of national disclosure standard and reporting incentive under IFRS. *International Journal of Accounting, 47*, 437–468.

Mitton, T. (2002). A cross-firm analysis of the impact of corporate governance on the East Asian financial crisis. *Journal of Financial Economics, 64*, 215–241.

Mitton, T. (2006). Stock market liberalization and operating performance at the firm level. *Journal of Financial Economics, 81*, 625–647.

Molodovsky, N. (1953). A theory of price earnings ratio. *Financial Analysts Journal, 9*, 65–80.

Morck, R., & Yeung, B. (2010). Harmonious corporate governance. *Procedia – Social and Behavioral Science, 2*, 6875–6882.

Mulder, C., Perrelli, R., & Rocha, M. D. (2012). External vulnerability, balance sheet effects, and the institutional framework – lessons from the Asian crisis. *International Review of Economics and Finance, 21*, 16–28.

Ongena, S., Smith, D. C., & Michalsen, D. (2003). Firms and their distressed banks: Lessons from the Norwegian banking crisis. *Journal of Financial Economics, 67*, 81–112.

Pan, L. H., Lin, C. T., & Chen, K. C. (2012). ADR characteristics and corporate governance in the Greater China region. *Review of Development Finance, 2*, 43–52.

Patton, M. (2012). Consumer prices, producer prices and stock performance: A unique perspective. *Forbes*, July 16.

Qi, D., Wu, W., & Zhang, H. (2000). Shareholding structure and corporate performance of partially privatized firms: Evidence from listed Chinese companies. *Pacific-Basin Finance Journal, 8*, 587–610.

Qiu, L., & Welch, I. (2005). *Investor sentiment measures* (Working paper). Providence, RI: Brown University.

Rayton, B. A. (2003). The residual claim of rank and file employees. *Journal of Corporate Finance, 9*, 129–148.

Reinhart, C. M., & Rogoff, K. S. (2009). *This time is different: Eight centuries of financial crises*. Princeton, NJ: Princeton University Press.

Robertson, C., & Chetty, S. K. (2000). A contingency-based approach to understanding export performance. *International Business Review, 9*, 211–235.

Rose, A. K., & Spiegel, M. M. (2012). Cross-country causes and consequences of the 2008 crisis: Early warning. *Japan and the World Economy, 24*, 1–16.

Schuppli, M., & Bohl, M. T. (2010). Do foreign institutional investors destabilize China's a-share markets? *Journal of International Financial Markets, Institutions and Money, 20*, 36–50.

Shahrokhi, M. (2011). The global financial crises of 2007–2010 and the future of capitalism. *Global Finance Journal, 22*, 193–210.

Shakina, E., & Barajas, A. (2014). The dynamics of intellectual resources during the economic crisis. *Economic Research-Ekonomska Istraživanja, 27*, 861–881.

Sharfman, M., Wolf, G., Chase, R., & Tansik, D. (1988). Antecedents of organizational slack. *Academy of Management of Review, 13*, 601–614.

Sheikh, M., Bokaei, M. N., Alijani, H., Saadatmand, M., Fard, S. M. H., & Sharahi, I. C. (2011). Investigating relationship between consumer price index and producer price index and dividend per share. *Australian Journal of Business and Management Research, 1*, 121–128.

Singh, D. A. (2009). Export performance of emerging market firms. *International Business Review, 18*, 321–330.

Stone, R. R. (2000). *The corporate sector dynamics of systemic financial crises* (IMF Working Paper).

Sun, Q., & Tong, W. H. S. (2003). China share issue privatization: The extent of its success. *Journal of Financial Economics, 70*, 183–222.

Temouri, Y., Vogel, A., & Wagner, J. (2013). Self-selection into export markets by business services firms – Evidence from France, Germany and the United Kingdom. *Structural Change and Economic Dynamics, 25*, 146–158.

Thomsen, S., & Pedersen, T. (2000). Ownership structure and economic performance in the largest European companies. *Strategic Management Journal, 21*, 689–705.

Tiwari, A. K., Mutascu, M., & Andries, A. M. (2013). Decomposing time-frequency relationship between producer price and consumer price indices in Romania through wavelet analysis. *Economic Modelling, 31*, 151–159.

Vuolteenaho, T. (2002). What drives firm-level stock returns? *Journal of Finance, 57*, 233–264.

Webber, M. (2001). Finance and the real economy: Theoretical implications of the financial crisis in Asia. *Geoforum, 32*, 1–13.

Wei, Z., Xie, F., & Zhang, S. (2005). Ownership structure and firm value in China's privatized firms: 1991–2001. *Journal of Financial and Quantitative Analysis, 40*, 87–108.

Xu, X., & Wang, Y. (1999). Ownership structure and corporate governance in Chinese stock companies. *China Economic Review, 10*, 75–98.

Yan, A., Yang, Z., & Jiao, J. (2010). Conglomerate investment under various capital market conditions. *Journal of Banking and Finance, 34*, 103–115.

Yu, M. (2013). State ownership and firm performance: Empirical evidence from Chinese listed companies. *China Journal of Accounting Research, 6*, 75–87.