

## **Financial Systems, Crisis, and Performance of Non-Financial Firms**

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### **Abstract**



*This study examined the effect of financial crisis on performance of firms selected from divergent financial systems. For empirical analysis, a sample of 1440 non-financial firms was selected from 32 countries. Secondary data of firm level variables were collected from different reliable published sources. Panel regression model was applied for analysis of data and effect of crisis was examined by adding a dummy variable in the regression model. Relative effect of crisis across different categories was probed with the help of appropriate interaction terms. The study didn't find any significant effect of crisis on financial performance of selected firms. Similarly, the differential effect across different categories also remain insignificant. On the basis of results, the study concluded that financial system structure is not much relevant in integrated modern global economies. The study recommended to strengthen the financial systems and develop an integration of all of its components for better and vibrant outcomes. The study further recommended to improve the internal systems and overall infrastructure for achieving sustainable growth and coping with the shocks effectively.*

**Keywords:** Banks, Financial Markets, Crisis, Panel Regression, Interaction Terms

### **Introduction**

The role of financial system in economic advancement of the nations' always remained pivotal. It assists in resource allocation to the productive activities and thus improves the performance of enterprises (Chaudhary, Abbas, & Meer, 2018). Financial markets and intermediaries are the major components of a financial system. Financial intermediaries helps to mobilize the available savings, promote efficient deployment of resources and reduce the level of unproductive assets in the economy (Allen & Santomero, 2001; Bencivenga & Smith, 1991). The presence of intermediaries facilitate to reduce transaction costs and overcome the information asymmetry issues (Benston & Smith, 1976; Diamond, 1984). Moreover, the financial markets also play a positive and productive role in economies (Greenwood & Smith, 1997). The development of markets facilitated the involvement of small investors, which enhanced the volume of transactions and reduced the issues pertaining to reputation of borrowers (Thakor, 1996). The role of intermediaries and markets in mobilization and allocation of resources is much positive and significant (Andrieş, 2009). Indeed, financial intermediaries and markets are the backbone of modern economies.

Firms usually approach banks or capital markets or both of these sources to fulfil the financing requirements, depending upon the relative attractiveness and ease of terms and conditions. This selection also created a dichotomy in the financial systems, which formed a basis of classifying the economies into market and bank based systems. German and U.S. model is a classic example of such dichotomy (Allen & Gale, 1995; Levine, 2002). Considering this aspect of financial systems, the researchers and economists discussed the merits and demerits of each system. Some researchers supported the relevance of this distinction in financial systems and superior role of any one component in economic progression (Caporale, Howells, & Soliman, 2004; Luintel, Khan, Leon-Gonzalez, & Li, 2016; Mishra & Narayan, 2015; Pinno & Serletis, 2007; Rapp & Udoieva, 2018; Tadesse, 2002; Yeh, Huang, & Lin, 2013). On the other hand, some researchers proposed the irrelevance of financial structure and suggested the co-existence and development of the components of financial system for betterment of the economy (Apergis, Artikis, & Kyriazis, 2015; Beck &

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Levine, 2002; Dima, Dinca, & Spulbar, 2014; Lee, 2012; Levine, 2002; Song & Thakor, 2010). This existing discussion mostly concentrated on examining the association of financial structure and economic development. Focus was bit changed in the current study, which aimed to observe the overall and differential effect of crisis on firms performance selected from countries with dissimilar structure and at different stage of development. The study took a sample of 32 countries and placed in developed and underdeveloped as well as bank and market based categories. In the next step, a sample of non-financial firms was selected from the respective countries. The data pertaining to firms and macroeconomic variables were extracted from published sources. The study applied panel regression model with insertion of appropriate dummy variable and interaction terms for probing the total and differential effect of crisis across the sample countries. The analysis results revealed an insignificant negative effect of crisis upon firms' performance taken as the sample. Moreover, the significant difference in the pattern of effect was not observed for firms belonging to different categories.

Investigation of firms' performance across divergent financial structure countries and in crisis episodes made this study a novel one. The study targeted the global financial crisis which was initiated after collapse of some major financial institutions in U.S. (Chaudhury, 2011; Dabrowski, 2010). During 2008, the crisis speedily transmitted to the real sector of global economies (Bahiti, Shkurti, & Babasuli, 2011; Silipo, 2011). The bank financing to non-financial enterprises severely disrupted in crisis time period, which consequently affected the firms' performance and investment (Akbar, Shafiq ur Rehman, & Ormord, 2013; Buca & Vermeulen, 2017; Diana & Carmen, 2014). Existing studies in this domain mostly examined the consequences of crisis for stocks volatility and economic development of the counties (Bianconi, Yoshino, & de Sousa, 2013; Chuliá, Gupta, Uribe, & Wohar, 2017; Malik & Janjua, 2011; Poshakwale & Ganguly, 2015; Sithole, Simo-Kengne, & Some, 2017). Very few studies examined the differential effect of crisis for the countries of varying financial structure and development level (Ashraf, Kayani, & Rafiq, 2012; Mirzaei & Kutun, 2016). The current study uniquely addressed the firm level performance in divergent financial systems during the crisis episodes. The findings will be helpful in developing a better understanding regarding the performance, behavior and resilience pattern of financial systems.

### **Research Objectives**

The study aimed to:

- 1) Examine the effect of financial crisis on performance of non-financial firms selected from different countries.
- 2) Relatively examine the effect of crisis on firms in bank and market oriented economies.
- 3) Relatively examine the effect of crisis on firms in developed and underdeveloped economies.

### **Literature Review**

Theoretical discussion of financial structure is based on four main views. First view, termed as bank based view, supported the dominant, constructive and supportive role of banks in economic advancement of the countries (Gerschenkorn, 1962; Schumpeter, 1911/1934). Banks generally have a leading role in such a system and their presence can help to overcome monitoring costs, free riding and agency problem (Bertocco, 2008; Chakraborty & Ray, 2006; Diamond, 1984). The role of banks was also supported for their contributions in liquidity provisions, generating market signals and better corporate control (Diamond & Dybvig, 1983; James, 1987; Stiglitz, 1985). Second view in this domain is the market based view, which criticized the bank financing (Rajan, 1992) and emphasized the role of capital markets for savings, investments, proper allocation of resources and economic progression (Allen, 1993; Demirguç-Kunt & Maksimovic, 1996; Fisher, 1930; Greenwood & Smith, 1997; Rajan & Zingales, 1998). The third view did not support for dominant role of any single component. Instead, it favors the role of provision of overall financial services. This view, named as financial service view, highlighted the importance and complementary role of financial intermediaries and markets for effective financial service provision and economic betterment (Boyd & Smith, 1998; Levine, 2002; Merton & Bodie, 1995). The view suggested to focus on functional aspect of financial systems instead of institutional one (Allen & Santomero, 1998). The last view of this domain proposed the importance of legal system in functioning of financial institutions and markets as well as economic development (La Porta et al., 1998, 2000). Keeping in view the theoretical base of financial structure views, number of researchers examined the phenomenon from different aspects. Researchers mostly focused to probe the role of financial system structure upon economic growth. Some researchers supported the dominant role of any one component of financial system in economic

progression (Chakraborty & Ray, 2006; Deltuvaite, & Sineviciene, 2014; Hondroyiannis, Lolos, & Papapetrou, 2005; Kim, Lin, & Chen, 2016; Nyasha & Odhiambo, 2017; Rapp & Udoieva, 2018; Salami & Ujunwa, 2009). On the other hand, there are studies which supported the role of overall financial development without any distinction of bank or market orientation (Beck & Levine, 2002; Song & Thakor, 2010; Wang & Ma, 2009). Some others associated it with the level of financial and economic development (Pinno & Serletis, 2007; Solo, 2013; Tadesse, 2002).

The discussion of financial systems was also extended to determine their relative behavior in financial crises times (Ashraf, Kayani, & Rafiq, 2012; Baum, Schäfer, & Talavera, 2011; Fornari & Stracca, 2012; Lartey & Farka, 2011; Mavrotas & Vinogradov, 2007). This was examined in terms of differential effect of crises on economic progression of the countries having distinct structure and level of financial development. Few researchers specifically examined the phenomenon in the backdrop of global financial crisis of 2008-09 (Chaudhary et al., 2018; Chaudhary, Hussain, & Shaheen, 2018; Mirzaei & Kutun, 2016). The existing studies mostly focused to examine the effect of crisis on different macroeconomic variables. Global financial crisis negatively affected almost every country of the world and almost every sector of the economy. Loan supply to the corporate sector substantially declined during the crisis period (Cotugno, Monferrà, & Sampagnaro, 2013; Diana & Carmen, 2014; Ivashina & Scharfstein, 2010). The crisis and associated financing problems negatively affected the performance of non-financial firms (Buca & Vermeulen, 2017; Coulibaly, Saprizza, & Zlate, 2013). To enrich the literature, this study aimed to examine the performance of firms in the framework of financial crisis. The study also probed the differential effect of crisis. For empirical investigation, the study hypothesized:

H<sub>1</sub>: Global financial crisis significantly affected the performance of non-financial firms.

H<sub>2</sub>: The effect of crisis differed significantly in the bank and market based economies.

H<sub>3</sub>: The effect of crisis differed significantly in developed and underdeveloped economies.

### **Methodology**

#### **Sample and Data Collection**

Population of the study was comprised of non-financial firms from all countries of the world. For empirical analysis, the study took a sample of 1440 firms from 32 countries. The countries were initially categorized by considering their financial system structure and stage of development. The study followed world economic outlook for placing the countries into economically developed and underdeveloped categories (International Monetary Fund, 2013). Moreover, following the study of Levine (2002), a structure index was formulated to distinguish the countries as bank and market based. The index was based on the indicators of size, activity, and efficiency which were determined with the help of relevant ratios. Appropriate and balanced representation of each category was assured in the final sample. The selection of firms from each category was then made on the basis of total assets and availability of the consistent data. The data of variables related to categorization mechanism were extracted from international financial statistics and world databank while of firm level variables from datastream, annual audited reports and related sources. The analysis covered the data of 8 years with 3 pre-crisis and 3 after-crisis years. The study marked 2008 and 2009 as crisis years in which financial systems of most world countries effected severely.

#### **Estimation Model**

The study applied following panel regression model to examine the firms' financial performance in the episode of financial crisis of 2008-09.

$$RoA_{it} = \beta_0 + \beta_1 Liq_{it} + \beta_2 Act_{it} + \beta_3 Debt_{it} + \beta_4 Tang_{it} + \beta_5 LnA_{it} + \beta_6 Growth_{it} + \beta_7 Inf_{it} + \beta_8 Crisis + \mu_{it}$$

Panel regression model was used on account of its capacity to address wide ranging issues, handling multifaceted problems, managing the concerns of multicollinearity and omitted variables (Brooks, 2008). In regression model, return on assets (RoA) was the dependent variable and a proxy for financial performance of firms. Some other micro and macro factors were taken as explanatory and control variables. The variables were selected after consultation of some past studies (Ameer, 2014; Castelli, Dwyer, & Hasan, 2012; Fok, Chang, & Lee, 2004; Serrasqueiro, Nunes, & da Silva, 2016; Thanh & Ha, 2013). A dummy variable of "Crisis" was included in the regression model to examine the effect of crisis on performance of sample firms. After examining the effect of crisis on performance of firms, the study expanded the analysis to examine the differential effect across the divergent countries. For this purpose, following regression models were specified.

$$RoA_{it} = \beta_0 + \beta_1 Liq_{it} + \beta_2 Act_{it} + \beta_3 Debt_{it} + \beta_4 Tang_{it} + \beta_5 LnA_{it} + \beta_6 Growth_{it} + \beta_7 Inf_{it} + \beta_8 Crisis + \beta_9 Crisis * Bb + \mu_{it}$$

$$RoA_{it} = \beta_0 + \beta_1 Liq_{it} + \beta_2 Act_{it} + \beta_3 Debt_{it} + \beta_4 Tang_{it} + \beta_5 LnA_{it} + \beta_6 Growth_{it} + \beta_7 Inf_{it} + \beta_8 Crisis + \beta_9 Crisis * Dev + \mu_{it}$$

These models were applied to determine the relative effect of crisis in bank based and market based, developed and underdeveloped category countries, respectively.

### Empirical Results

Before formal regression analysis, the descriptive statistics were examined and reported in table 1.

**Table 1. Descriptive Statistics**

	RoA	Liq	Act	Debt	Tang	LnA	Growth	Inf
Mean	0.058	1.079	12.129	1.833	0.380	16.577	0.022	0.041
Median	0.049	0.936	6.303	1.408	0.360	16.236	0.021	0.032
Maximum	0.859	2.627	57.436	5.584	0.791	22.695	0.136	0.203
Minimum	-0.965	0.335	1.5163	0.294	0.054	12.464	-0.090	-0.013
Std. Dev.	0.080	0.587	14.396	1.402	0.221	2.763	0.037	0.035
Obs.	11520	11520	11520	11520	11520	11520	11520	11520

Summary statistics reported in table 1 indicate a highest mean value of size while lowest value for GDP per capita growth rate. Higher mean value of size of the firms is in accordance with the sample of studies, which was comprised of largest firms on the basis of assets selected from different countries. The lowest mean value of growth rate is due to the representation of underdeveloped economies in the selected sample. On the other hand, highest dispersion was found in inventory turnover. This may be due to the selection of firms from diverse sectors, industries and countries. This is in accordance with a general principle that inventory management policies largely differ across sectors, industries and countries. The lowest dispersion was in inflation rate. These summary statistics also confirmed the normal distribution of data and absence of outliers in the final dataset used for analysis. Once the data examination is complete, the suitable model was selected with the help of likelihood ratio and Hausman tests. Significant test values of each test supported the application of fixed effect model for this dataset. Some other diagnostic tests were also applied to determine the model fitness and suitability of data set. The study then analysed the total and differential effect of crisis on performance of selected firms. Table 2 is portraying the results of the analysis.

**Table 2. Effect of Crisis on Selected Firms Performance**

Dependent Variable: RoA			
	(1)	(2)	(3)
Intercept	0.127*** (0.020)	0.126*** (0.020)	0.128*** (0.020)
Liq	0.024*** (0.002)	0.024*** (0.002)	0.024*** (0.002)
Act	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)
Debt	-0.013*** (0.001)	-0.013*** (0.001)	-0.013*** (0.001)
Tang	-0.040*** (0.008)	-0.039*** (0.008)	-0.039*** (0.008)
LnA	-0.004*** (0.001)	-0.004*** (0.001)	-0.004*** (0.001)
Growth	0.351*** (0.024)	0.356*** (0.024)	0.350*** (0.024)
Inf	-0.081*** (0.031)	-0.081*** (0.031)	-0.086*** (0.031)
Crisis	-0.0003 (0.002)	0.001 (0.002)	0.001 (0.002)
Crisis*Bb		-0.002 (0.002)	
GFC*Dev			-0.002 (0.002)

\*\*\*, \*\*, \* indicates significance at 1%, 5% and 10% levels, respectively. Standard error values are in parenthesis.  
R-squared (adjusted) and DW stat value of all the models is 0.51 and 1.79, respectively.

The study applied three models to examine the total and differential effect of crisis on performance of firms. Model 1 is regarding the effect of crisis, which was determined with the help of adding a dummy variable in the regression model. Results portray a negative but insignificant effect of crisis on firms' financial performance. The results further show a significant positive effect of liquidity and activity ratios on performance of firms. On the other hand, the effect of leverage, tangibility and size remained negative and insignificant. Regarding macroeconomic variables, the effect of GDP per capital growth rate was positive while of inflation rate was negative. These results of firm level and macroeconomic variables are consistent with many past studies (Ajanthan, 2013; Ismail, 2016; Lazar, 2016; Muritala, 2012; Thanh & Ha, 2013; Vithessonthi & Tongurai, 2015; Yazdanfar & Öhman, 2015; Zainudin, 2006). Model 2 and 3 were applied for examining the differential effect of crisis across the countries. Model 2 was used to check the differential effect on firms' performance across bank and market based economies. On the other hand, Model 3 was aimed at examining the differential effect of crisis on firms' performance selected from developed and underdeveloped economies. The results presented in table 2 did not show any significant differential effect of crisis on firms' performance across divergent category countries. Earlier, Demirguç-Kunt and Maksimovic (2002) reported that financial system structure is not much relevant for firms' access to external financing. This study further endorsed the arguments by observing that the financial system structure and its development cannot substantially influence the performance of firms in crisis period.

### **Conclusion**

The study of financial system, its structure, performance and behavior under different circumstances remained a favorite and challenging research domain for researchers all over the world. The association of financial system and economic growth has been explored extensively. The importance of financial system in economic activities of a country has been highlighted by the researchers. The research findings reported by Demirguç-Kunt and Levine (1999), Levine (2002) induced the researchers to explore and examine the financial systems in terms of the relative importance and contributions of its different components. The discussion in this domain further progressed especially with reference to market and bank based structure of the financial system. This study also attempted to contribute in the ongoing debate of comparative financial systems by examining their behaviour in the crisis episode. For empirical analysis, the researchers took a sample of 1440 firms from 32 countries of the world. The countries were initially segregated on the basis of financial development and structure. IMF classification scheme was followed to place the countries in the developed and underdeveloped categories while a structure index was constructed to position the countries in bank and market based groups. The firms were then selected on the basis of size from each category. The secondary data of firm level variables were extracted from different reliable published sources. For capturing the effect of crisis on firms' financial performance, panel regression was applied with the insertion of an appropriate dummy. The interaction terms were used to examine the differential effect for different categories.

The results of panel regression analysis showed a negative but insignificant effect of financial crisis on the performance of selected non-financial firms. Further analysis didn't portray any significant difference in the pattern of effect across the countries categorized on the basis of structure and development of financial system. The findings are not very much surprising as Levine (2002), Beck and Levine (2002) already exposed and proposed the irrelevance of financial structure in economic growth. Findings of the current study endorsed the above proposition by observing that the pattern of the effect of crisis didn't significantly differ across the firms of divergent financial structure and level of development. Findings of the study supports and proposes the development of financial system in a structured and balanced manner. It is suggested that the extreme financial dependence on any single source is not a viable strategy. Moreover, panic in economy can affect the economies invariable so collective measures should be taken to avoid the initiation, transmission and harmful effects of the crisis. The study could be further enriched by examining the financing pattern of the individual firms and their performance in normal and turbulent episodes.

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