

## The Global Financial Crisis and Corporate Financial Policies

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### Abstract

The 2008-2009 global financial crisis (GFC) provides a natural experiment opportunity to analyze its impact on corporate financial decisions. This article first critically reviews the relationship between the GFC and corporate financial policies, then investigates the association between the GFC and leverage, debt maturity, cash holdings, dividends and investment for non-financial listed firms in Borsa Istanbul. Considering the findings in the literature, firms give different responses to the changing dynamics with the GFC across institutional environments and various corporate policies. Regarding the empirical evidence from Borsa Istanbul, the findings show that firms do not significantly change their corporate policies, excluding investment decisions. The reason for this stability may be due to the lessons learned and institutional strengthening after the 2001 financial crisis in Turkey.

**Keywords:** Cash holdings, corporate finance, debt maturity, dividend payouts, financial crisis, investment, leverage

## 1. Introduction

After the Great Depression 1929, the most destructive and global recession was the 2008-2009 Global Financial Crisis (GFC), which is also called “the Great Recession”. The GFC is triggered by the bankruptcy of Lehman Brothers in 2008 and continued its impact till mid-2009 all around the world. There is no doubt that the GFC had impacted financial markets, international banks and trade links across the globe. Specifically, firms have given different responses regarding their corporate policies depending on the institutional environment.

The GFC has various effects on the corporate policies of firms. For example, while firms shorten their debt maturity, cut dividends and decrease investments during the GFC (Campello et al. 2010; Bliss et al. 2015; Coldbeck & Oskan 2018), the results are however mixed for cash and leverage policies (Alves & Francisco 2015; Gonzalez 2015; Chen et al. 2018; Martinez-Sola et al. 2018; D’Amato 2020; Demirgüç-Kunt et al. 2020). This study critically reviews the relationship between the GFC and corporate policies, cash holdings, debt maturity, dividends, investment and leverage. Then we also fill the gap by empirically analyzing corporate policies for firms listed in Borsa Istanbul.

This article empirically investigates how corporate policies differ during and after the GFC. Employing 2,834 firm-years and 275 firms in Borsa Istanbul from 2003 to 2018, the findings show that firms in Borsa Istanbul slightly increase their leverage during the GFC and shorten debt maturity after the GFC. While they significantly change neither their cash nor dividend policy, they decrease their investments both during the GFC and its aftermath. Since firms in Borsa Istanbul

previously face other financial crisis in 1994 and 2001, they may learn lessons from previous crises experience, so that they face lighter problems during the GFC.

The article proceeds as follows. Section 2 reviews the corporate policies literature in the GFC context. Section 3 presents the methodology and data, respectively. Section 4 empirically examines the association between corporate policies and the GFC for firms in Borsa Istanbul. Section 5 concludes.

## **2. Corporate Policies and The Global Financial Crisis**

This section reviews the literature on corporate policies in the GFC context. Corporate policies are (1) leverage, (2) debt maturity, (3) cash holdings, (4) dividends, and (5) investment.

### **2.1. Leverage Policy**

Though firms tend to increase the equity level by growing, they may change their leverage and reduce their leverage during recessions. The literature examines the influence of the GFC on leverage and shows mixed results. Some research shows a positive association between leverage and the GFC. Alves & Francisco (2015) find that the leverage increases during the GFC across the globe. They also mention that the long-term debt substitutes with the short-term debt because of the higher costs of extending the debt maturity. Moreover, Daskalakis et al. (2017) show that small firms expanded the usage of leverage until 2008, but this is minimized after the GFC.

On the other hand, the literature shows a negative relation between leverage and the GFC. Zeitun et al. (2017) realize that the firms in six Gulf Cooperation Council (GCC) countries confront a decline in their leverage owing to lower supply of credit and demand

for credit during the GFC and its aftermath. Van Hoang et al. (2018) imply that French microenterprises confront problems in accessing external finance and depend greatly on internal finance because of increasing financial distress and information asymmetry. D'Amato (2020) shows a reverse trend on leverage in time of the GFC for Italian firms. Providing an international evidence, Demirgüç-Kunt et al. (2020) present a negative effect of the GFC on both leverage and debt maturity for 79 countries. Surprisingly, they reveal decreases in leverage for small firms in high turbulence. They also mention the falls are higher for smaller firms in countries that face higher agency costs and asymmetric information by having a poor legal origin. Tekin (2020d) also finds that travel and leisure firms in Europe decline their leverage during the GFC. More recently, Tekin & Polat (2021b) indicate that East Asian firms drop their leverage during the Asian financial crisis and the GFC.

## 2.2. Debt Maturity Policy

Information asymmetry increases with a rising uncertainty. Thus, long-term debt may be preferred to short-term debt due to the increase in asymmetric information in time of a recession. The literature shows an inverse relationship between long-term debt and the GFC. Gonzalez (2015) shows that the usage of short-term debt increases rather than the long-term debt, thus, the debt maturity decreases as a response to an exogenous shock. Mimouni et al. (2019) mention that firms in GCC countries shorten their debt maturity. Polat (2020) finds that firms in Borsa Istanbul reduce the adjustment speed on debt maturity with the GFC. The international sample of Demirgüç-Kunt et al. (2020) implies that since firms prefer short-term debt to

long-term debt, the debt maturity shortens with the GFC. Tekin & Polat (2021a) recently finds that East Asian firms decrease the adjustment speed of debt maturity in time of financial market turmoil.

### **2.3. Cash Policy**

In crisis periods, firms may hoard more cash due to costly and tightened external finance. Martinez-Sola et al. (2018) show that Spanish small firms with higher growth increase more cash in the GFC. Moreover, financially constrained firms hold more cash than unconstrained firms due to increased asymmetric information (Shiau et al. 2018). However, the literature also indicates that firms decrease their cash stocks during the GFC to mitigate financial difficulties. Guney et al. (2017) reveal that European firms shrank cash hoarding with the emerge of the GFC and the sovereign debt crisis. Chen et al. (2018) demonstrate that not only financially constrained firms but only unconstrained firms reduce cash stocks by the GFC. Tekin (2020b) finds that firms use lower their cash stocks in time of the GFC across a cross-country evidence. Tekin & Polat (2020c) show that firms in the United Kingdom (UK) decrease cash holdings as a response to the GFC and the sovereign debt crisis.

### **2.4. Dividend Policy**

Firms may decline dividend payouts by holding more cash for more investment owing to a sharp increase in uncertainty. Bliss et al. (2015) prove that dividend nonpayers rise during the GFC. The decrease in dividend payouts is substituted with a rise in cash retention or investment. Floyd et al. (2015) mention that firms in the United States (US) cut their dividends as a response to the GFC. Hilliard et al. (2019) confirm Bliss et al. (2015) and Floyd et al. (2015)

by indicating dividend cuts in the US during the GFC. Tekin (2020a) and Tekin & Polat (2020b) find that firms drop dividend payouts in times of the GFC and sovereign debt crisis in Europe and the UK, respectively.

### 2.5. Investment Policy

Previous research implies that there is an absolute decline in capital expenditures as a response to the GFC. As an earlier proof of this argument, Campello et al. (2010) and Duchin et al. (2010) specify that firms drop their investments during the “Great Recession”. Kahle & Stulz (2013) show a decline in investments of US firms by the GFC. Coldbeck & Ozkan (2018) confirm Kahle & Stulz (2013) by implying a reduction in adjustment speed of investments.

**Table 1.** Corporate Policies and the Global Financial Crisis

| <i>Variables</i>     | <i>Positive Role of the GFC</i> | <i>Negative Role of the GFC</i> |
|----------------------|---------------------------------|---------------------------------|
| <b>Leverage</b>      | Alves & Francisco (2015)        | Zeitun et al. (2017)            |
|                      | Daskalakis et al. (2017)        | Van Hoang et al. (2018)         |
|                      | Tekin (2020c)                   | D’Amato (2020)                  |
|                      | Tekin (2021)                    | Demirgüç-Kunt et al. (2020)     |
|                      |                                 | Tekin (2020d)                   |
|                      |                                 | Tekin & Polat (2021c)           |
| <b>Debt Maturity</b> |                                 | Gonzalez (2015)                 |
|                      |                                 | Mimouni et al. (2019)           |
|                      |                                 | Polat (2020)                    |
|                      |                                 | Demirgüç-Kunt et al. (2020)     |
|                      |                                 | Tekin & Polat (2021a)           |
| <b>Cash Holdings</b> | Martinez-Sola et al. (2018)     | Guney et al. (2017)             |
|                      | Shiau et al. (2018)             | Chen et al. (2018)              |
|                      |                                 | Tekin (2020b)                   |
|                      |                                 | Tekin & Polat (2020b)           |
| <b>Dividends</b>     |                                 | Bliss et al. (2015)             |
|                      |                                 | Floyd et al. (2015)             |
|                      |                                 | Hilliard et al. (2019)          |
|                      |                                 | Tekin (2020a)                   |
|                      |                                 | Tekin & Polat (2021b)           |
| <b>Investment</b>    |                                 | Campello et al. (2010)          |
|                      |                                 | Duchin et al. (2010)            |
|                      |                                 | Kahle & Stulz (2013)            |
|                      |                                 | Coldbeck & Ozkan (2018)         |

### 3. Methodology and Data

#### 3.1. Methodology

The literature of corporate finance mainly utilizes panel data methods (Campello et al. 2010; Kahle & Stulz 2013; Tekin 2020c; Tekin & Polat 2021b). Since mainly panel data have a larger number of group  $i$  and a smaller number of time periods  $t$ , Fixed effects (FE) method gives more reliable results than Random effects and Pooled ordinary least squares methods since FE mitigates unobserved heterogeneity (D'Amato 2020).

The empirical models are demonstrated for five corporate policies as follows:

$$\begin{aligned} LEV_{i,t} = & \beta_0 + \beta_1 GFC_t + \beta_2 POST_t + \beta_3 DMAT_{i,t} + \beta_4 CASH_{i,t} + \beta_5 DIV_{i,t} \\ & + \beta_6 INV_{i,t} + \beta_7 SIZE_{i,t} + \beta_8 PROF_{i,t} + \beta_9 MBR_{i,t} + \beta_{10} ETR_{i,t} \\ & + \beta_{11} TAN_{i,t} + \alpha_i F_i + \varepsilon_{i,t} \end{aligned} \quad (1)$$

$$\begin{aligned} DMAT_{i,t} = & \beta_0 + \beta_1 GFC_t + \beta_2 POST_t + \beta_3 LEV_{i,t} + \beta_4 CASH_{i,t} + \beta_5 DIV_{i,t} \\ & + \beta_6 INV_{i,t} + \beta_7 SIZE_{i,t} + \beta_8 PROF_{i,t} + \beta_9 MBR_{i,t} + \beta_{10} ETR_{i,t} \\ & + \beta_{11} TAN_{i,t} + \alpha_i F_i + \varepsilon_{i,t} \end{aligned} \quad (2)$$

$$\begin{aligned} CASH_{i,t} = & \beta_0 + \beta_1 GFC_t + \beta_2 POST_t + \beta_3 LEV_{i,t} + \beta_4 DMAT_{i,t} + \beta_5 DIV_{i,t} \\ & + \beta_6 INV_{i,t} + \beta_7 SIZE_{i,t} + \beta_8 PROF_{i,t} + \beta_9 MBR_{i,t} + \beta_{10} ETR_{i,t} \\ & + \beta_{11} TAN_{i,t} + \alpha_i F_i + \varepsilon_{i,t} \end{aligned} \quad (3)$$

$$\begin{aligned} DIV_{i,t} = & \beta_0 + \beta_1 GFC_t + \beta_2 POST_t + \beta_3 LEV_{i,t} + \beta_4 DMAT_{i,t} + \beta_5 CASH_{i,t} \\ & + \beta_6 INV_{i,t} + \beta_7 SIZE_{i,t} + \beta_8 PROF_{i,t} + \beta_9 MBR_{i,t} + \beta_{10} ETR_{i,t} \\ & + \beta_{11} TAN_{i,t} + \alpha_i F_i + \varepsilon_{i,t} \end{aligned} \quad (4)$$

$$\begin{aligned} INV_{i,t} = & \beta_0 + \beta_1 GFC_t + \beta_2 POST_t + \beta_3 LEV_{i,t} + \beta_4 DMAT_{i,t} + \beta_5 CASH_{i,t} \\ & + \beta_6 DIV_{i,t} + \beta_7 SIZE_{i,t} + \beta_8 PROF_{i,t} + \beta_9 MBR_{i,t} + \beta_{10} ETR_{i,t} \\ & + \beta_{11} TAN_{i,t} + \alpha_i F_i + \varepsilon_{i,t} \end{aligned} \quad (5)$$

where,

$LEV_{ij,t}$ : Total debt for the firm  $i$  at time  $t$ ,

$DMAT_{ij,t}$ : Debt maturity for the firm  $i$  at time  $t$ ,

$CASH_{i,t}$ : Cash holdings for the firm  $i$  at time  $t$ ,

$DIV_{i,t}$ : Dividends for the firm  $i$  at time  $t$ ,

$INV_{ij,t}$ : Investment for the firm  $i$  at time  $t$ ,  
 $SIZE_{i,t}$ : Firm size for the firm  $i$  at time  $t$ ,  
 $PROF_{i,t}$ : Profitability for the firm  $i$  at time  $t$ ,  
 $MBR_{i,t}$ : Market-to-book ratio for the firm  $i$  at time  $t$ ,  
 $ETR_{i,t}$ : Effective tax rate for the firm  $i$  at time  $t$ ,  
 $TAN_{i,t}$ : Tangibility for the firm  $i$  at time  $t$ ,  
 $GFC_t$ : GFC equals 1 for years 2008-2009, otherwise 0,  
 $POST_t$ : POST equals 1 for years 2010-2018, otherwise 0,  
 $\alpha_i F_i$ : Set of dummies for firms,  
 $\varepsilon_{i,t}$ : The error term.

### 3.2. Data

The data is retrieved from Datastream for the period 2003-2018. Financial and utility sector firms are excluded since they have different accounting structures from other firms (Coldbeck & Ozkan 2018; Tekin 2021). The final sample includes 275 firms and 2,834 firm-years in Borsa Istanbul. For brevity, correlation matrices are not reported but there is no multicollinearity problem.

Since this article analyzes five various corporate policies, dependent variables are (1) leverage–LEV, (2) debt maturity–DMAT, (3) cash holdings–CASH, (4) dividends–DIV, and (5) investment–INV. Explanatory variables are firm size–SIZE, profitability–PROF, market-to-book ratio–MBR, effective tax rate–ETR, and tangibility–TAN. GFC is a dummy variable that captures the global financial crisis period. POST is a dummy variable which is equal to one for post-crisis years 2010-2018, and zero otherwise. Table 2 shows variable definitions.



**Table 2.** Variable Definitions

| <i>Variables</i>          | <i>Symbols</i> | <i>Definitions</i>                                      |
|---------------------------|----------------|---|
| Crisis                    | GFC            | Dummy variable 1 for years 2008-2009, otherwise 0       |
| Post-crisis               | POST           | Dummy variable 1 for years 2010-2018, otherwise 0       |
| Leverage                  | LEV            | Total Debt/Total Asset                                  |
| Debt Maturity             | DMAT           | Long-term Debt/Total Asset                              |
| Cash Holdings             | CASH           | Cash and short-term investments/Total Asset             |
| Dividends                 | DIV            | Cash Dividends/Total Asset                              |
| Investment                | INV            | Capital Expenditures/Total Asset                        |
| Firm Size                 | SIZE           | Logarithm of Total Asset                                |
| Profitability             | PROF           | Earnings before Interest and Tax/Total Asset            |
| Market-to-book            | MBR            | [Total Asset - Total Equity + Market Value]/Total Asset |
| Effective Tax             | ETR            | Total Tax Paid/Total Taxable Income                     |
| Tangibility               | TAN            | Net Property and Plants/Total Asset                     |
| <i>Source.</i> Datastream |                |   |

Table 3 presents summary statistics of all variables for the period 2003-2018.

**Table 3.** Summary Statistics

| <i>Variables</i>          | <i>Mean</i> | <i>SD</i> | <i>Minimum</i> | <i>Median</i> | <i>Maximum</i> |
|---------------------------|-------------|-----------|----------------|---------------|----------------|
| LEV                       | 0.228       | 0.204     | 0.000          | 0.190         | 0.983          |
| DMAT                      | 0.356       | 0.300     | 0.000          | 0.330         | 1.000          |
| CASH                      | 0.094       | 0.113     | 0.000          | 0.051         | 0.862          |
| DIV                       | 0.032       | 0.126     | 0.000          | 0.000         | 1.000          |
| INV                       | 0.050       | 0.060     | 0.000          | 0.032         | 0.485          |
| SIZE                      | 12.460      | 1.806     | 6.944          | 12.345        | 18.516         |
| PROF                      | 0.066       | 0.128     | -0.971         | 0.063         | 0.815          |
| MBR                       | 1.489       | 1.191     | 0.248          | 1.168         | 15.015         |
| ETR                       | 0.129       | 0.260     | -0.929         | 0.166         | 0.954          |
| TAN                       | 0.455       | 0.249     | 0.000          | 0.451         | 0.937          |
| <i>Source.</i> Datastream |             |           |                |               |                |

#### 4. Empirical Results

Corporate policies may fluctuate over time. Figure 1 shows the trend in corporate policies of firms in Borsa Istanbul between 2003 and 2018. First, debt maturity–DMAT is 29% in 2003, it becomes 40% in 2018. While DMAT decreases in 2008, it increases in 2009. Second, contrary to DMAT, leverage–LEV rises in 2008, then reduces in 2009.

Also, firms increase their leverage by 18% from 2003 to 2018. Third, the cash ratio–CASH does not vary significantly for the whole period, but it tends to increase after 2008. Fourth, dividends–DIV fluctuate before the GFC, but not after the GFC. Specifically, while firms cut their dividends in 2008, they increase their payments in the following years using dividends as a signaling device. Last, the investment ratio is generally stable, it sharply decreases in 2009. Overall, firms' corporate policies in Borsa Istanbul are affected differently from the GFC experience.

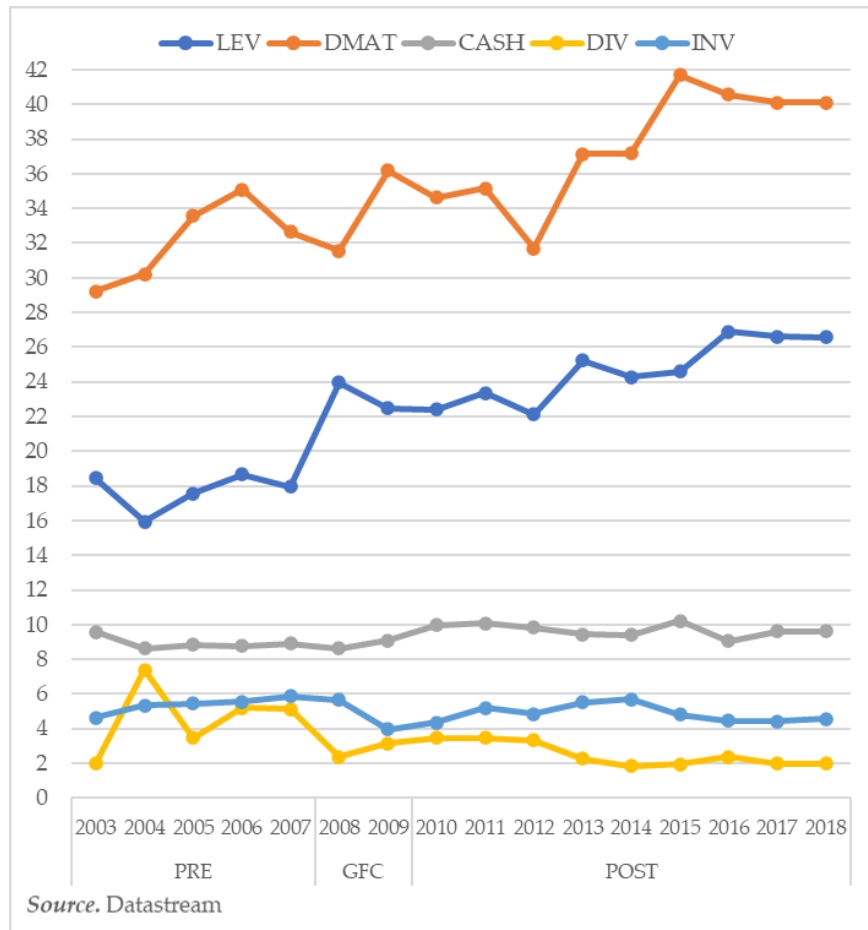


Figure 1. Trend of Corporate Policies

Table 4 presents the regression analyses using FE model for five corporate policies: (1) LEV, (2) DMAT, (3) CASH, (4) DIV and (5) INV. Regarding the impact of the GFC on corporate policies, while LEV slightly increases with the coefficient 0.015 at 10%, INV significantly decreases with the coefficient -0.009 at 5%.

**Table 4.** The Global Financial Crisis and Corporate Policies

| Variables    | Dependent Variables |          |          |          |          |
|--------------|---------------------|----------|----------|----------|----------|
|              | LEV                 | DMAT     | CASH     | DIV      | INV      |
|              | (1)                 | (2)      | (3)      | (4)      | (5)      |
| GFC          | 0.015*              | -0.029   | 0.005    | -0.008   | -0.009** |
|              | (0.008)             | (0.021)  | (0.006)  | (0.007)  | (0.004)  |
| POST         | 0.013               | -0.056** | -0.000   | -0.012   | -0.010** |
|              | (0.012)             | (0.023)  | (0.007)  | (0.008)  | (0.004)  |
| LEV          |                     | 0.426*** | 0.006    | -0.030** | 0.017    |
|              |                     | (0.087)  | (0.023)  | (0.013)  | (0.013)  |
| DMAT         | 0.072***            |          | 0.002    | -0.005   | 0.019*** |
|              | (0.014)             |          | (0.008)  | (0.007)  | (0.007)  |
| CASH         | 0.012               | 0.028    |          | 0.002    | -0.050** |
|              | (0.044)             | (0.093)  |          | (0.036)  | (0.019)  |
| DIV          | -0.041*             | -0.041   | 0.001    |          | 0.005    |
|              | (0.00)              | (0.054)  | (0.026)  |          | (0.013)  |
| INV          | 0.058               | 0.387*** | -0.090** | 0.012    |          |
|              | (0.044)             | (0.136)  | (0.034)  | (0.031)  |          |
| SIZE         | 0.008               | 0.051*** | 0.014*** | 0.003    | 0.006**  |
|              | (0.009)             | (0.017)  | (0.005)  | (0.003)  | (0.003)  |
| PROF         | -0.132***           | 0.107*   | 0.049**  | 0.035**  | -0.005   |
|              | (0.041)             | (0.063)  | (0.021)  | (0.014)  | (0.015)  |
| MBR          | 0.000               | 0.002    | 0.003    | 0.007**  | 0.006*** |
|              | (0.005)             | (0.010)  | (0.003)  | (0.004)  | (0.002)  |
| ETR          | -0.014**            | 0.009    | 0.002    | 0.005    | -0.010** |
|              | (0.007)             | (0.016)  | (0.005)  | (0.006)  | (0.005)  |
| TAN          | -0.592***           | -0.015   | 0.084*** | 0.011    | 0.016    |
|              | (0.038)             | (0.078)  | (0.025)  | (0.013)  | (0.016)  |
| Constant     | 0.382***            | -0.374*  | -0.139** | -0.020   | -0.032   |
|              | (0.119)             | (0.220)  | (0.065)  | (0.038)  | (0.035)  |
| Firms        | 275                 | 275      | 275      | 275      | 275      |
| Observations | 2,834               | 2,834    | 2,834    | 2,834    | 2,834    |

*Note.* This table presents the regression analyses for five corporate policies: leverage (LEV), debt maturity (DMAT), cash holdings (CASH), dividends (DIV) and investment (INV) for firms in Borsa Istanbul from 2003 to 2018. All variables defined in Table 2. \*\*\*, \*\* and \* imply significance at 1%, 5% and 10%, respectively.

However, DMAT, CASH and DIV do not change with the GFC. In the post-crisis period, DMAT and INV significantly decline with the coefficients -0.056 and -0.010 at 5%, respectively, whereas LEV, CASH and DIV do not change significantly in the aftermath of the GFC.

Besides, firm-level control variables vary depending on the dependent variables. First, LEV is negatively associated with DIV, PROF, ETR and TAN but it is positively related to DMAT. Second, there is a positive association between DMAT and LEV, INV, SIZE, PROF. Third, larger, profitable and tangible firms and firms with lower INV have higher CASH. Fourth, firms with higher PROF, higher MBR and lower LEV have more DIV. Finally, CASH and ETR are negatively related to INV, DMAT, SIZE and MBR are positively associated with INV.

## 5. Concluding Remarks

The GFC has a crucial impact on corporate policies. This paper elaborately reviews the literature considering the GFC as a natural experiment opportunity and then empirically analyzes the corporate policies of firms in Borsa Istanbul in the GFC context. First, the review results show that firms give different responses to the GFC depending on the type of corporate policy and the sample. Next, the empirical evidence from Borsa Istanbul Exchange demonstrates that firms change their corporate policies over time. However, the effect of the GFC on the corporate policies of firms in Borsa Istanbul seems limited. Previous financial crises experiences and considerable efforts in improving the institutional environment after the 2001 crisis in Turkey may be considered as the reason for this limited impact, since firms may learn lessons from previous recessions.

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