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# Article

Peer effects, industry concentration and capital structure: Evidence from emerging market economies

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# Peer effects, industry concentration and capital structure: evidence from emerging market economies

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#### ABSTRACT

This study investigates the relationship between peer effects and corporate capital structure with the intervening effect of industry concentration. The methodology involves instrumental variable approach in the regression results from OLS and two-stage least squares (2SLS) with fixed effects. Empirical evidence shows that peers' leverage decisions are significant determinant for a firm's leverage decisions. Moreover, peers matter more when firms are operating in the competitive environments and same is not true for firms belonging to concentrated environment. These findings imply that the financial policymakers may device customized policies for competitive and concentrated markets to restrict the downside risk of debt financing.

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#### **KEYWORDS**

Peer effects: capital structure; emerging market economies; industry concentration

#### 1. Introduction

Optimal capital structure for a firm is still an enigma despite of increasing academic research since a ground breaking work of Modigliani and Miller in 1958. Capital structure literature argues that it's the dynamic nature of leverage that leads to the mismatch between theoretical postulations and practical actions of a firm (Linnenluecke et al., 2017; Zaighum & Abd Karim, 2019). Furthermore, the importance of optimal capital structure decisions is not limited to academic debate, but these decisions have crucial practical implications towards global events, such as rising debt and financial crisis. Financial crisis literature contends that corporate debt financing potentially serves to stimulate the intensity of crisis among countries (Didier et al., 2010, 2012; Kinga, 2013; Zhang et al., 2024). This signifies the importance of capital structure decisions for both a firm's success and country's macroeconomic environment (McKinsey Global Institute, 2015). It is attributed in a way that highly indebted firms are more prone to financial distress (Chen, 2004; Delcoure, 2007), that may lead towards default and decline in a firm's value (Glover, 2016; Qin et al., 2023). As a result, it is more likely that the risk of investors will go high coupled with low stock returns (Campbell et al., 2011; Opler & Titman, 1994). Alternately, the value of a firm

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may significantly rise if capital structure decisions are made appropriately (Adeoye et al., 2020; Jiang et al., 2019; Korteweg, 2010).

At this backdrop, this study aims to revisit the question of optimal capital structure for a firm while investigating the role of peers in a firm's capital structure decisions. Most of the prior literature has focused on firm-level determinants of optimal capital structure (Aghamolla & Thakor, 2022; Fan et al., 2011; Frank & Goyal, 2009; G. Li et al., 2023; Shyam-Sunder & Myers, 1999). However, the study of Rauh and Sufi (2012) detected that peer firms play a very important role in the explanation of firm's leverage policy. Later, the pioneer study of Leary and Roberts (2014) on the U.S. and the study of Francis et al. (2016) on global level concluded that the leverage policy of a firm remains highly reactive towards financial decisions made by peer firms of an industry and this is in international phenomenon which varies country by country. This shows the importance of a role of peers in a firm's capital structure decisions, however, prior studies normally adopted the approach of dummy variable to control the industry effect, ignoring the potential effect of peer's policy on a firm's leverage policy (Aman et al., 2023; Jõeveer, 2013; Kayo & Kimura, 2011).

Additionally, this study aims to investigate the intervening role of industry concentration in the relationship between peer effects and capital structure decisions. The motivation behind this objective is that firms consider the policies of their peers mainly when they want to protect their market share (Bustamante & Frésard, 2021; Lieberman & Asaba, 2006; Rashid & Said, 2021). The financial policies of a firm vary with respect to an industry it belongs to, more on concentrated or less concentrated (Almazan & Molina, 2005; Kumar et al., 2020; Smith et al., 2015). The influence of peers' policies on a firm's capital structure decisions may increase because of the industry concentration as it is witnessed for the investment decisions in China (Chen & Ma, 2017) and the U.S (Park et al., 2017). Thus, it is interesting to see the intervening role of industry concentration between peer effects and capital structure decisions.

To sum up our aims, this study assesses the role of peers in a firm's capital structure decisions with the moderating effect of industry concentrations. Moreover, case of emerging market economies (EME) would be interesting in exploring peer effects in capital structure decisions. Thus, this study contributes in existing literature in multiple ways: First, the limited empirical evidence available on the relationship between peer effects and capital structure decisions is largely confined on developed and single country analysis, particularly the U.S., South Korean and China among others (Chen & Ma, 2017; Chen et al., 2019; Leary & Roberts, 2014; Ozoguz & Rebello, 2013; Park et al., 2017). Also, the global peer effects study of Francis et al. (2016) includes 70 percent of sample from developed world and their results provide little evidence about peer effects in the emerging markets. Therefore, this study conversely focuses on EMEs to contribute new findings in the literature. Although, similar leverage factors are found influential in EMEs' firms' leverage models, the sensitivity and the directions of impacts may vary differently between developed and EMEs' (Booth et al., 2001). The firms in EMEs' may react differently mainly because of significant rise in their global non-financial debt, from 212 percent in prior crisis period of 2008 to 233 percent during the last decade, and much of this rise is attributed to the emerging markets<sup>1</sup> (Bank for International Settlements

[BIS], 2016). Precisely, EMEs' non-financial corporate debt has reached to 100 percent of their GDP during last one decade as compared to 58 percent during 2007–2008, and this significantly exceeds the ratio of debt in developed countries (Atradius Economic Research, 2016; BIS, 2016; Institute for International Finance, 2017). Therefore, the fast accumulation of debt in EMEs' has raised few concerns about the solvency of its corporate sector considering challenging global economic environment, sluggish international trade, decreasing commodity prices, deteriorating profitability, currencies' depreciation and the normalization of the U.S. interest rates. The corporations in EMEs' are now well prepared as compared to previous periods of global market tribulations and may avoid any systematic meltdown. However, on micro level, risks have actually increased subject to the sector and the country in which corporates are operating (Atradius Economic Research, 2016).

**Second**, this study also contributes the moderating (intervening) role of industry concentration in the relationship between peer effects and capital structure decisions. It may be noted that rising industry concentration because of economic expansion in EMEs' and increasing consumer base in these countries may potentially strengthen or weaken the role of peers especially when these firms want to compete and discourage their competitors (Atsmon et al., 2012). Thus, industry concentration presents an interesting venue to test if and how product market competition influences firms to imitate their peers' financing decisions in EMEs'. **Third**, in order to contribute the reliable findings from this study in the literature, this study employs different robustness tests by enhancing the quality of the data of the study and using different proxies for industry concentration. This methodology will increase the confidence level of the findings of the study and in turn produce reliable policy implications.

The brief findings of this study are as follows: the leverage decisions of peer firms are significant determinants for a firm's capital structure policy. Moreover, the effect of peers becomes more significant when there is an industry competition and not concentration. The detailed findings will follow in section IV of the study.

The rest of the study continues as follows: Section II includes theoretical underpinnings and empirical literature review of the study. Next, section III provides detailed description on data and methodology of the study. Section IV explains results, discussions and robustness tests. Finally, the study concludes with the summary of the results and policy implication in the last section V.

## 1.1. Theoretical background and empirical literature review

Theoretically, the seminal literature concludes that the peer firms are among the important determinants of corporate decisions through different ways of product pricing and advertising (Bertrand, 1883; Stigler, 1968). In this vein, particularly the significance of characteristics and behavior of peer firms for corporate decisions have been studied in the literature. Such as, the studies of John and Kadyrzhanova (2008), Bizjak et al. (2009), Leary and Roberts (2014) and Li et al. (2013) investigated the influence of peer effects on corporate governance, mergers and acquisition, corporate capital structure, and tax avoidance, respectively. For instance, the evidence is found that when the leverage ratios of peer firms is increased by one standard deviation, it influences the leverage ratio of firm "i" by

10% approximately, and this influence surpasses the influence of any other determinant of corporate capital structure (Leary & Roberts, 2014).

Similarly, the corporate investment decisions observe strong spillover effect from peer effects as concluded by Foucault & Fresard, (2014). Therefore, the significance of peer effects for corporate decision making cannot be ignored. This significance is theoretically rationalized based on information-based and rivals-based theories (Benoit, 1984; Lieberman & Asaba, 2006; Ren et al., 2023; Zaighum et al., 2024) using the postulation of learning behavior within peer firms. It is argued in information-based theories that a learning behavior is stimulated by an imperfect information available in the market. As a result, the stock prices of peers' provide new information to the managers to make their corporate decisions. Managers take the help from the behavior of peers' in order to reduce their investment and financing uncertainty. It is because following peer's actions and strategies is less time-consuming, less costly and reduces the chances of failure as compared to personal experimentation by a firm while making a corporate decision (Conlisk, 1980). Particularly when an environment is uncertain, the prediction of outcomes of any decision becomes very difficuly which raises the risk of failure and undesirable consequences (Milliken, 1987).

In contrast, the actions of peers provide a reasonable information regarding investment and growth opportunities as well as possible industry fluctuations (Scharfstein & Jeremy, 1990). These benefits cannot be optimally achieved by incorporating as many corporate decision-relevant factors as possible due to an inherent risk of failure. Furthermore, managers remain concerned about their reputation in the corporate world, therefore, they prefer mimic the actions of peers' over personal judgment in the decision making process (Palley, 1995; Scharfstein & Jeremy, 1990).

Considering rivals-based theory, learning behavior diffuses rivals and provides stability in the market against aggressive decisions of rivals. Peers mimic each other while initiating a new product or a process, adopting managerial or organization approach, and in the type and timing of financing and investment decision, since mimicry provides the benefits of competitive advantage (Klemperer, 1992) and reduced corporate uncertainty (Knickerbocker, 1973). It is also noted that firms maintain to have reasonable cash reserves as a reaction of similar practice by the rivals in the market (Chen & Chang, 2012). Moreover, it is rational if firms deal with their market competition through mimicking rivals in important corporate decisions when firms with comparable resource endowments and market positions face each another (Fairhurst & Nam, 2020; Seo, 2021).

With respect to the capital structure decisions, the theories of Trade-off, Pecking Order, Market Timing, and Agency are mainly considered as important for theoretical postulations (Myers, 2001). Trade-off theory postulates that firms do trade-off between debt and equity in a way that the debt is preferred as long as the taxation benefit of the debt outweighs the bankruptcy cost of the debt. Therefore, this theory favors moderate level of debt by firms paying taxes. In contrast, the Pecking Order theory advocates that internal funds of retained earnings are preferred first by firms and then external sources of debt and equity are used. Alternatively, the theory of Market Timing advocates that firms use equity financing option when they are overvalued and those shares are repurchased by firms when their share prices and undervalued. Finally, the Agency theory postulates that firms use debt financing as a source to motivate or control the performance of their managers (Zaighum & Abd Karim, 2019).

As far as the theoretical justification for industry concentration is concerned, there are multiple channels which support the role of industry concentration in the relationship between peer effects and corporate capital structure. The study of Leary and Roberts (2014) finds that when a specific firm imitates financial strategies of peers, it endeavors to avoid falling behind the industry competitors. This imitating behavior becomes prominent in case of competition when competing firms are more homogeneous in terms of resources and market share.

Moreover, a recent study found that there is a significantly positive interaction between peer firms and industry concentration (S. Chen & Ma, 2017; Thakor et al., 2023). Consequently, undertaking similar policies as competitors there are chances that a firm would succeed or fail relative to other. Following the investment behavior of peers would also help in preserving status quo in a competitive market. However, another study by Park et al. (2017) finds that due to the level of competition, the effects of peers vary while making investment decisions. In markets where firms want to differentiate from their competitors and try to discourage others, peer effects in financial decisions is likely to be weak.

Competitive environments also offer an alternate explanation for peer effects. Highly competitive environment increases the bankruptcy risk, firms find it more appropriate to learn from their peers' financial policy (Ozoguz & Rebello, 2013). Moreover, this learning behavior also reduces firm's pressure from competitors to an extent. Hence, learning behavior enables firms to maintain their status quo amongst close competitors, even for the strongly competitive industries.

#### 2. Research design

#### 2.1. Sample construction

In order to analyze if peer effects persist in emerging economies as well as it has been observed in the developed economies, we select 14 EMEs' form MSCI list of emerging markets. This research setting facilitates some important requirements associated with the peer effects phenomenon besides the data availability. Firstly, homogenous peer groups provide better insight for exploring this effect as suggested by MacKay and Phillips (2005). Furthermore, prevailing peer effects literature argues that herding with peers is more common when competing firms have alike resources and market position (Chen & Ma, 2017). Thus, our homogeneous sample seems more appropriate to investigate if peer effects differ across two levels of industry concentration rather than using the industry fixed effects to control for industry variation. Lastly, to maintain the consistency with existing peer effects and capital structure studies, financial firms and utilities are excluded and the food manufacturing sector is selected which is economically important for these 14 EMEs'. Moreover, the data available in the Datastream fulfilling the requirements of peers' homogeneity, food manufacturing sector contains enough number of firms satisfying this criterion. Consequently, specific sector herd behavior analysis suggests better recommendations for respective stakeholders (Choi & Sias, 2009; Demirer et al., 2010).

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The accounting and market data (details available in Appendix A) is extracted from Thomson Routers' Datastream covering the period from 2000 till 2017. Following peer effects literature, our study requires minimum of four firms in the industry with at least three years of the accounting data for firms and their peers.<sup>2</sup> Moreover, the study also needs minimum of 24 months' stock prices and market returns data in *t*-2 years' prior estimation period. In DataStream database, during the mentioned time period there are approximately 269 listed firms in the food manufacturing sector in selected 14 EMEs'. After applying the aforementioned data filters, our final sample is an unbalanced panel comprising 1,378 firm-year observations with 161 food manufacturing firms from 14 emerging economies, Table 1 shows the final sample selection criteria. In our final sample, the number of firms ranges from 4 (for Peru) to 26 (for Malaysia) (sample description is mentioned in Appendix B). The country level macro-economic variables, annual GDP growth and inflation's data are taken from Eikon database.

#### 3. Methods

Our prime objective is to investigate whether EMEs' firms mimic their peers' capital structure choices. Following existing capital structure and peer effects literature, we estimate the following econometric model:

$$y_{ijt} = \alpha_0 + \alpha_1 \bar{y}_{-ijt} + \alpha_2 X_{-ijt-1} + \alpha_3 X_{ijt} + \alpha_4 Z_{jt} + \delta \mu_i + \phi \nu_t + \varepsilon_{ijt}$$
(1)

Here, indices *i,j*, and *t* correspond to firm, country, and time respectively. Moreover,  $y_{ijt}$  is the outcome variable and represents the debt ratio of *i*<sup>th</sup> firm in *j*<sup>th</sup> country at time *t*. Peer effects is represented by independent variables,  $\bar{y}_{-ijt}$  is peers' average debt ratio (excluding *i*<sup>th</sup> firm),  $\bar{X}_{-ijt-1}$  are vectors of lagged averages of peers' characteristics viz. profitability, firm size, asset tangibility and market to book ratio (excluding *i*<sup>th</sup> firm). These factors have been found influential in prevailing peer effects capital structure studies (Francis et al., 2016; Leary & Roberts, 2014).  $X_{ijt}$  are lagged firm-specific characteristics that are also seen important in explaining a firm's capital structure particularly in developing countries (Booth et al., 2001). Finally, vectors  $Z_{jt}$  represent the growth in GDP and inflation which are also found to be associated with debt choices (Booth et al., 2001; Francis et al., 2016). The vectors  $\mu_j$ , and  $v_t$  represent country and year fixed effects,  $\varepsilon_{ijt}$  is the error term.

This study employs two stages of least squares (2SLS) to estimate the statistical model. Initially, OLS analysis is used to estimate the leverage model and compare its results to previous capital structure studies (Frank & Goyal, 2009). Because OLS analysis does not account for both endogeneity and correlations in error terms of the independent variables, 2SLS is used for estimation with the instrument variable (equity shock) to test the study's hypotheses. This method is similar to the commonly used peer effects studies (Francis et al., 2016; Leary & Roberts, 2014; Park et al., 2017).

<sup>&</sup>lt;sup>2</sup>To identify peers, ICB 4-digit industry classification is used which is the most detailed level in Datastream. Also, it's the closet alternate available for SIC classification in Datastream. Likewise, it represents sub-sector of industry whereby the most similar firms are grouped together. Moreover, similar ICB classification have been used by Francis et al. (2016) in their peer effects study.

| Sampling criteria  | Sectors/firms |
|--|---------------|
| Listed manufacturing sectors on 14 EMEs' stock exchanges (2000–2017) | 40            |
| Less: manufacturing sectors with less than four listed firms         | 37            |
| Less: manufacturing sectors with firms for three consecutive years   | 02            |
| Final sample sector  | 01            |
| Listed firms in food manufacturing sector in EMEs' (2000–2017)       | 269           |
| Less: firms with missing data  | 108           |
| Total final sample firms   | 161           |
| Total period (years)   | 18            |

#### Table 1. Sample selection process.

Source(s): Authors estimation.

In a linear regression framework, the two-stage least squares method is used to handle models with endogenous explanatory variables. In the regression model, an endogenous variable is one that is correlated with the error term. The use of endogenous variables contradicts the linear regression assumptions. This type of variable can occur when variables are measured with error. The general principle of the two-stage least squares approach is to estimate model parameters using uncorrelated instrumental variables. These instrumental variables are related to the endogenous variables but not to the model's error term.

Table 2 presents summary statistics with regard to four categories of variables used in estimating Equation (1), where peers' book leverage ratio and their characteristics are our focal variables and remaining are control variables. From the results in Table 2, the mean leverage of peers' and firm specific is similar i.e., 0.280, but the median leverage of peers' is 0.246 which is slightly higher than firm specific median leverage of 0.235. These mean and median peers and firm-specific leverages are comparatively higher that their equivalents of 0.238 and 0.241 as reported by Leary and Roberts (2014) and Francis et al. (2016),

| Variables                     | Mean   | Median | SD    | Max    | Min     | Ν    |
|-------------------------------|--------|--------|-------|--------|---------|------|
| Peer Firm Averages            |        |        |       |        |         |      |
| PL                            | 0.280  | 0.246  | 0.121 | 0.790  | 0.070   | 1378 |
| PFS                           | 14.931 | 15.304 | 2.933 | 22.630 | 10.390  | 1378 |
| PGR                           | 1.269  | 1.179  | 0.685 | 5.611  | 0.393   | 1378 |
| PP                            | 0.108  | 0.104  | 0.096 | 0.571  | -0.366  | 1378 |
| PAT                           | 0.434  | 0.401  | 0.166 | 1.692  | 0.194   | 1378 |
| Firm Level Factors            |        |        |       |        |         |      |
| FL                            | 0.280  | 0.235  | 0.354 | 7.237  | 0.000   | 1378 |
| FFS                           | 14.930 | 14.894 | 3.501 | 24.924 | 0.000   | 1378 |
| FGR                           | 1.266  | 0.867  | 1.522 | 24.629 | 0.079   | 1378 |
| FP                            | 0.107  | 0.100  | 0.429 | 7.967  | -11.713 | 1378 |
| FAT                           | 0.435  | 0.422  | 0.241 | 2.555  | 0.000   | 1378 |
| Industry Concentration Factor |        |        |       |        |         |      |
| HHI                           | 0.256  | 0.209  | 0.140 | 0.534  | 0.021   | 1378 |
| Country Characteristics       |        |        |       |        |         |      |
| INF                           | 0.049  | 0.050  | 0.047 | 0.207  | -0.060  | 1378 |
| GDP Growth                    | 0.033  | 0.042  | 0.037 | 0.111  | -0.091  | 1378 |

Table 2. Descriptive statistics.

Table 2 describes the study's main variables. Peer firm averages represents the PL= Peer Firms Leverage; PFS= Peer Firms Size; PGR= Peer Firms Growth; PP=Peer firms Profitability; PAT= Peer Firms Asset Tangibility; FL= Firm's Leverage; FFS= Firm's Size; FGR= Firm's Growth; FP= Firm's Profitability; FAT= Firm's Asset Tangibility; HHI= Herfindahl-Hirschman Index (measure of industry concentration); INF=Inflation; GDP growth= Gross Domestic Product Growth; N= Number of Observations. Firm leverage is the dependent variables, peer firm leverage, peer firm size, peer firm growth, peer firm profitability, and peer firm tangibility are used as variables of interest, while firm specific, and country level variables are used as control variables. HHI is the measure of industry concentration.

Source: Author's estimation.

respectively. Thus, highlighting that firms in emerging economies are on an average more indebted than most of the developed countries during the sample period (Bank for International Settlements, 2016).

Furthermore, Table 2 also shows that the peers' average firm size is 14.931 which is higher than 2.026 as reported by Francis et al. (2016). Table 2 also reveals that peers average growth, profitability, and asset tangibility are 1.269, 0.108, and 0.434 respectively, all are higher than their counterparts as observed in a multi country (with 70% sample comprises developed market firms) study of Francis et al. (2016) of 1.139, 0.064, and 0.325.

The descriptive statistics of HHI (measure of Industry concentration) is also shown in Table 2. For the construction of HHI, we have followed prevailing capital structure literature (Chen et al., 2019; Hou & Robinson, 2006; Park et al., 2017). Table 2 shows that mean (median) HHI in our sample is 0.256(0.209). The HHI mean (median) values as reported by Chen and Ma (2017) for Chinese firms is 0.935(0.956) which are higher than our sample's respective values. Thus, Chinese market is comparatively more concentrated as compared to many other emerging market economies. Lastly, average GDP growth and inflation rates are 0.033 and 0.049 respectively, showing that inflation is higher as compare to 0.022 mean inflation as seen in global peer effects study of Francis et al. (2016).

The empirical investigation of peer effects suffers from reflection issue (Manski, 1993) particularly endogeneity problem. This challenge arises in our context as we use industry average leverage as a measure of peers' leverage  $\bar{y}_{-ijt}$ . We hypothesize that firms in a peer group constantly adjust their capital structure choices to each other decisions. Thus, the peers' leverage becomes an endogenous variable in Equation (1), as it is determined simultaneously with firm's leverage (the dependent variable). Therefore, to address this problem, we apply instrumental variable approach.

We follow Leary and Roberts (2014) to instrument for peers' average leverage and use idiosyncratic return (peers' equity shock) by using augmented CAPM.<sup>3</sup> Moreover, the idiosyncratic return satisfies basic requirement of relevance and exclusion (Bascle, 2008) for a valid instrument. The model is as follows:

$$r_{ijt} = \alpha_{ijt} + \beta_{ijt}^{M} (rm_{jt} - rf_t) + \beta_{ijt}^{IND} (\bar{r}_{-ijt} - rf_t) + \eta_{ijt}$$
(2)

where  $r_{ijt}$  is the sum of monthly equity returns of firm *i* in the country *j* over time *t*,  $(rm_{jt} - rf_t)$  specifies excess return over market,  $(\bar{r}_{-ijt} - rf_t)$  is the additional return over equally weighted industry portfolio eliminating firm *i*<sup>th</sup> return. To calculate Equation (2) annually we have used historic monthly return with at least 24 months and maximum of 60 on rolling basis, prior estimation period. For example, to calculate estimates for year 2000, we require minimum of 24 months returns between January 1995 and December 1999. After estimating Equation (1) coefficients, the expected and idiosyncratic monthly returns are calculated as shown below: *ExpectedReturn<sub>iit</sub>=* 

 $\hat{r}_{ijt} = \hat{\alpha}_{ijt} + \hat{\beta}_{ijt}^{M} (rm_{jt} - rf_t) + \hat{\beta}_{ijt}^{IND} (\bar{r}_{-ijt} - rf_t)$ (3)

IdiosyncraticReturn<sub>ijt</sub>=

<sup>&</sup>lt;sup>3</sup>Capital asset pricing model.

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$$\hat{\eta}_{ijt} = r_{ijt} - \hat{r}_{ijt} \tag{4}$$

Furthermore, the estimated monthly idiosyncratic returns obtained from Equation (4) are continuously compounded annually. Finally, our instrument for peers' average leverage is the average of these annual idiosyncratic returns for each country excluding the firm i's equity shocks.

$$r_{ijt} = lpha_{ijt} + eta^M_{ijt} (rm_{jt} - rf_t) + eta^{IND}_{ijt} (ar{r}_{-ijt} - rf_t) + \eta_{ijt}$$

Table 3 presents the summary statistics of estimated stock returns coefficients, observations per regression, with the adjusted R-squares of Equation (2) along with average, expected, and idiosyncratic monthly returns. The results in Table 3 show that the value of average market (industry) coefficient is 0.2914 (0.4484), which is comparatively lower than the respective equivalent as observed in the international capital structure study of Francis et al. (2016), 0.3390 (0.6160). However, the average idiosyncratic returns (-0.0001) is close to the one as reported by Francis et al. i.e., 0.000. In our study, 26 monthly observations are used for each regression with median of 24 months (2 years). The mean (median) adjusted R-squares in this study is 0.177 (0.112), which is lower than 0.275 (0.252) observed by Francis et al.

Furthermore, we follow Leary and Roberts (2014) to establish that the peers average leverage instrument variable i.e., idiosyncratic returns (henceforth its peers' equity shock), is uncorrelated with the omitted firm level characteristics and holds no information related to current or future values about firm's characteristics. Although, such correlation is not threatening as we have included them as control variables in the model. Table 4 presents the regression results of peers' equity shocks on contemporaneous and one-period lead peers' and firm specific characteristics.

The results of Table 4 show that peers' equity shock does not contains any significant information about contemporaneous firm characteristics. In regard with the 1-period lead firm characteristics, peers' equity shock is only related significantly with asset tangibility and growth, but the coefficients are 0.0058 and 0.0008

| · · · · · · · · · · · · · · · · · · · |         |         |        |
|---------------------------------------|---------|---------|--------|
| Variables                             | Mean    | Median  | SD     |
| a-t                                   | 0.0080  | 0.0055  | 0.0319 |
| β-M                                   | 0.2914  | 0.2233  | 0.7936 |
| β-IND                                 | 0.4484  | 0.3983  | 0.7647 |
| Observations per regression           | 26      | 24      | 9      |
| Adjusted R <sup>2</sup>               | 0.1771  | 0.1123  | 0.2191 |
| Average monthly return                | 0.0064  | 0.0000  | 0.1310 |
| Expected monthly return               | 0.0065  | 0.0057  | 0.0687 |
| Idiosyncratic monthly return          | -0.0001 | -0.0023 | 0.1317 |

| TADIE 5. REDIESSION RESULTS FOR SLOCK RETURN FACT | Table | 3. | Regression | results t | for | stock | return | factor |
|---|-------|----|------------|-----------|-----|-------|--------|--------|
|---|-------|----|------------|-----------|-----|-------|--------|--------|

Table 3 presents the averages of factor loadings, adjusted R-squares and the observations of the following augmented CAPM model.

 $r_{ijt}$  represents the total equity return for firm *i* in country *j* over month,  $(rm_{jt} - rf_t)$  gives excess return over market,  $(\bar{r}_{-ijt} - rf_t)$  represents the return excess received on an industry portfolio equally weighted eliminating firm *i*'s return. Moreover, above equation is calculated annually on a rolling bases using at least 24 months and at most 60 previous monthly returns. The idiosyncratic equity returns are calculated as the difference between realized and Idiosyncratic (expected) returns.

Expected Return<sub>ijit</sub> = 
$$\hat{r}_{ijt} = \hat{a}_{ijt} + \hat{\beta}_{ijt}^{M}(rm_{jt} - rf_t) + \hat{\beta}_{ijt}^{IND}(\bar{r}_{-ijt} - rf_t)$$
  
Idiosyncratic Return<sub>ijt</sub> =  $\hat{\eta}_{ijt} = r_{ijt} - \hat{r}_{ijt}$   
Source: Author's estimation

|                         | Peers' Equity                         | Shock                              |
|-------------------------|---------------------------------------|------------------------------------|
|                         | Contemporaneous independent variables | 1-Period lead independent variable |
| Firm Level Factors      |                                       |                                    |
| Firm Size               | -0.0005                               | -0.0002                            |
| Firm Profitability      | 0.0004                                | 0.0001                             |
| Firm Asset Tangibility  | -0.0021                               | -0.0058**                          |
| Firm Growth             | -0.0002                               | 0.0008***                          |
| Firm equity shock       | -0.0002                               | 0.0023                             |
| Peers' Averages         |                                       |                                    |
| Firm Size               | -0.005*                               | -0.0011                            |
| Profitability           | 0.009*                                | -0.011                             |
| Asset Tangibility       | -0.005                                | -0.073**                           |
| Firm Growth             | -0.001                                | 0.0104***                          |
| Country Characteristics |                                       |                                    |
| Inflation               | -0.048**                              | 0.087**                            |
| GDP growth              | -0.170**                              | 0.048*                             |
| Constant                | 0.097*                                | 0.027                              |
| Observations            | 1378                                  | 1220                               |
| R-squared               | 0.1437                                | 0.1509                             |

#### Table 4. Properties of peers' equity shock.

Table 4 presents the results of contemporaneous and one period lead regression of the peer firms average equity shock on both the firm level and industry peers average characteristics. The dependent variable is the peer firm average equity shock in years' t and t+1, as specified in the table headings. The independent variables are measured in year t. The estimated coefficients presented in the Table 4 are Driscoll and Kraay's robust to heteroscedasticity, autocorrelation and cross-sectional dependence. Peer firm averages are the averages of all firms except for firm *i*, within the same ICB (4-digit) industry in the same country and year. Statistical significance at the 10%, 5%, and 1% is denoted by \*, \*\*, and \*\*\*, respectively.

Source: Author's estimation.

respectively, are very small almost zero. Additionally, we include firm's idiosyncratic returns in Equation (1) estimations to control for any remaining correlation between peers' equity shocks and firm's characteristics. To facilitate the easier interpretation of the results and maintain coherence with existing studies, all continuous variables are scaled by their standard deviations (Chen & Ma, 2017; Francis et al., 2016; Leary & Roberts, 2014).

#### 4. Results and discussion

## 4.1. Peers and firm's capital structure decisions

Next we run few important diagnostics to determine the appropriate model estimation of Equation (1). Firstly, we use Hausman specification test to decide between fixed and random effects model and result suggests that fixed effects model suits our data. Furthermore, we have applied modified Wald test with Breusch Pagan test and Wooldridge autocorrelation test to check for homoscedasticity and autocorrelation respectively. These tests show the presence of heteroscedasticity and autocorrlation. Finally, we apply Pesaran CD test and it shows the existence cross-sectional dependence. In light of the aforementioned diagnostics, Table 5 presents the regression results from OLS and two-stage least squares (2SLS) with fixed effects using Driscoll and Kraay standard errors robust to heteroscedasticity, autocorrelation and cross-sectional dependence (Al-Gamrh et al., 2018; Hoechle, 2007) for estimating Equation (1). Initially we use OLS to

estimate the reduced form<sup>4</sup> of Equation (1) as presented in Table 5. By looking at the OLS results in Table 5, the peers average equity shock's coefficient is negative and significant, similar to outcomes obtained in Leary and Roberts (2014) and Francis et al. (2016). Moreover, the firm level equity shock also shows a negative coefficient, indicating that both peers and firm level equity shocks effect in same direction. But, it is difficult to have an exact interpretation of these coefficients.

Now to understand the role of peers in a firm's capital structure decisions, we focus on the structural estimates obtained through 2SLS as presented in Table 5. The first stage coefficient of instrument variable, peers' equity shock reveals a significant negative association with the peers' average leverage. This finding is consistent with existing peer effects and financial decision making studies (Leary & Roberts, 2014; Park et al., 2017). Next, we analyze if the two channels, peers' leverage and their characteristics influence a firm's capital structure decisions. The second stage findings from Table 5 show that peers average leverage is positively and strongly associated with a firm's capital structure decisions. Thus, change of one standard deviation in peers' leverage causes the firm's leverage to increase by approximately 11.4 percent. This change is comparatively larger than the Francis et al. study that mainly represents developed economies.

Peer firms' characteristics are the second channel through which they impact a firm's capital structure decisions. Among the four characteristics, peers' profitability and growth are positively and significantly related to a firm's capital structure decision. Moreover, Table 5 shows that one standard deviation change in peers' profitability and growth leads to 1.5 and 0.53 percentage points increase in a firm's leverage. Together, these findings suggest that peers strongly influence a firm's capital structure decisions via their actions i.e., peers' leverage, but the same is not unanimously true for their characteristics (Francis et al., 2016; Leary & Roberts, 2014). Moreover, peers' leverage impact is higher than all four traditional capital structure factors as seen in Table 5. Similar to developed countries like the US, peers leverage decisions also serve as an important determinant of a firm's capital structure decision in emerging economies (Francis et al., 2016). Thus, herding behavior is observed among firms in emerging economies when they decide their capital structure.

#### 4.2. Peer effects and industry concentration

After ascertaining that firms are vigilant to their peers' leverage while making their own capital structure decision, we check if levels of industry concentration manifest these effects. For measuring the industry concentration, we use Herfindahl – Hirschman Index (HHI), the most popular industry concentration gauge in literature (Valta, 2012). The details about the about the construction of HHI is provided in Appendix A. For achieving our objective, we divide the sample into two sub-samples based on if value of HHI falls below conventional benchmark of 0.15 (Park et al., 2017) as low concentration (referred as concentrated market thereafter). According to Hou and Robinson (2006), level of

<sup>&</sup>lt;sup>4</sup>In our study reduced form estimates provide a preliminary understanding in regard with the source of variation in firm's leverage (dependent variable). Furthermore, it also helps in distinguishing peer effects from omitted variables or endogenous selection for common industry capital structures (Manski, 1993). Thus, the reduced form also checks the peer effects presence in the study.

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|                         | OLS          | 2SLS             |
|-------------------------|--------------|------------------|
|                         | Firm         | Leverage         |
| Peer Firms' Averages    |              |                  |
| Equity shock            | -0.595***    |                  |
|                         | (-2.020)     |                  |
| Leverage                |              | 0.114***         |
|                         |              | (5.130)          |
| Firm Size               | 0.006        | -0.086           |
|                         | (0.370)      | (-1.530)         |
| Profitability           | 0.012        | 0.015***         |
|                         | (0.680)      | (4.390)          |
| Asset Tangibility       | -0.100       | -0.008           |
| 5 ,                     | (-1.160)     | (-0.640)         |
| Firm Growth             | -0.011*      | 0.005*           |
|                         | (-1.700)     | (1.770)          |
| Firm Level Factors      |              |                  |
| Equity shock            | -0.087***    | -0.008***        |
| . ,                     | (-2.860)     | (-2.760)         |
| Firm Size               | -0.001       | -0.015           |
|                         | (-0.180)     | (-0.640)         |
| Profitability           | -0.127***    | -0.052***        |
|                         | (-6.890)     | (-6.170)         |
| Asset Tangibility       | -0.008       | -0.002           |
| 5,                      | (-0.200)     | (-0.200)         |
| Firm Growth             | 0.040***     | 0.072***         |
|                         | (2.660)      | (2.800)          |
| Country Characteristics |              |                  |
| Inflation               | 0.367***     | 0.008            |
|                         | (3.440)      | (1.340)          |
| GDP growth              | -0.086       | -0.006           |
| 5                       | (-0.610)     | (-0.690)         |
| First-Stage Instrument  | · · ·        |                  |
| Peer Firms Equity Shock |              | -0.009**(-2.100) |
| Observations            | 1220         | 1184             |
| within R-squared        | 0.145        | 0.12             |
| F-Stats (Prob.)         | 1694 (0.000) | 4690 (0.00)      |
|                         |              |                  |

| Table 5. Peer effects in capital structure policy in em | nerging countries: structural | estimates. |
|---|-------------------------------|------------|
|---|-------------------------------|------------|

This table presents the results of estimating Equation (1):

 $y_{ijt} = a_0 + a_1 \overline{y}_{-ijt} + a_2 \overline{X}_{-ijt-1} + a_3 X_{ijt} + a_4 Z_{jt} + \varphi \eta_j + \delta \mu_t + \varepsilon_{ijt}$ 

The dependent variable  $y_{ijt}$  is firm leverage mentioned in the top row. The independent focal variables  $\bar{y}_{-ijt}$  and  $\bar{X}_{-ijt-1}$  are the average of industry leverage ratio and the averages of peer firms' characteristics respectively.  $\bar{X}_{-ijt-1}$  and  $Z_{jt}$  are firm specific characteristics and country level control variables,  $\eta_j and\mu_t$  correspond to country and year fixed effects, and  $\varepsilon_{ijt}$  is the error term.

The table shows estimated results of OLS fixed-effects and 2SLS. The estimated coefficients (scaled by their respective standard deviations for easier interpretation) and t-statistics (in parentheses) are robust to hetero-scedasticity, autocorrelation, and cross-sectional dependence. Peer firm averages are the averages of all firms except for firm i, within the same ICB (4-digit) industry in the same country and year. Peers' averages are one period lagged with respect to the outcome variable. Statistical significance at the 10%, 5%, and 1% is denoted by \*, \*\*, and \*\*\*, respectively.

Source: Author's estimation.

industry competition explains a firm's risk related with raising additional capital. In this study's context, our interest is to know in what type of industry concentration is it more benficial for firms to follow their peers. In order to understand this, we split the sample into two sub-samples based on the threshold mentioned above, and use 2SLS in re-estimating Equation (1) with the results presented in Table 6.

|                         |                | Firm Leverage |
|-------------------------|----------------|---------------|
|                         | Competitive    | Concentrated  |
| Peer Firms Averaaes     |                |               |
| Leverage                | 0.235**        | -0.341        |
| 5                       | (2.04)         | (-0.44)       |
| Firm Size               | -0.05 (-0.340) | 0.112         |
|                         |                | (0.340)       |
| Profitability           | 0.029***       | 0.062         |
| ·                       | (2.840)        | (0.550)       |
| Asset Tangibility       | -0.02          | -0.196        |
|                         | (-0.220)       | (-0.560)      |
| Firm Growth             | -0.001         | -0.181        |
|                         | (-0.090)       | (-0.530)      |
| Firm Level Factors      |                |               |
| Equity shock            | -0.035         | -0.002        |
|                         | (-1.580)       | (-0.610)      |
| Firm Size               | -0.034         | 0.093***      |
|                         | (-0.810)       | (3.130)       |
| Profitability           | -0.068***      | -0.208***     |
|                         | (-5.320)       | (-2.850)      |
| Asset Tangibility       | 0.009          | -0.032        |
|                         | (0.240)        | (-0.760)      |
| Firm Growth             | 0.053**        | -0.006        |
|                         | (2.310)        | (-0.160)      |
| Country Characteristics |                |               |
| Inflation               | -0.019         | 0.011         |
|                         | (-1.580)       | (0.870)       |
| GDP growth              | 0.015          | -0.011        |
|                         | (0.770)        | (-1.230)      |
| Observations<br>5 Ctate | 441            | 770           |
| F-Stats                 | 18.6***        | 89.83***      |

| Table 6. | Peer | effects | and | industry | concentration |
|----------|------|---------|-----|----------|---------------|
|----------|------|---------|-----|----------|---------------|

This table presents the results of estimating Equation (1):

$$y_{ijt} = a_0 + a_1 \overline{y}_{-ijt} + a_2 X_{-ijt-1} + a_3 X_{ijt} + a_4 Z_{it} + \varphi \eta_i + \delta \mu_t + \varepsilon_{ijt}$$

The dependent variable  $y_{ijt}$  is firm's book leverage mentioned in the top row. The independent focal variables are  $\bar{y}_{-ijt}$  and  $\bar{X}_{-ijt-1}$  the average of industry leverage ratio and the averages of peer firms' characteristics respectively.  $X_{ijt}$  and  $Z_{jt}$  are firm specific characteristics and country level control variables,  $\eta_j and \mu_t$  correspond to country and year fixed effects, and  $\varepsilon_{ijt}$  is the error term.

The table shows the estimated coefficients, scaled coefficients (scaled by their respective standard deviations for easier interpretation) and t-statistics robust to heteroscedasticity, autocorrelation, and cross-sectional dependence. The dependent variable is firm leverage (debt to total assets) mentioned in the top row. Peer firm averages are the averages of all firms except for firm i, within the same ICB (4-digit) industry in the same country and year. Peer firms' averages are one period lagged with respect to the outcome variable. Statistical significance at the 10%, 5%, and 1% is denoted by \*, \*\*, and \*\*\*, respectively.

Table 6 shows that firms in competitive markets imitate their peers' capital structure decisions in EMEs'. Whereas, firms operating in concentrated markets do not exhibit such behavior. Also, the main channel through which firms observe their peers is via their leverage and not their characteristics as such. Specifically, one standard deviation raise in peers' leverage is accompanied by 23.5 percentage points increase in firms' leverage that operates in competitive markets. Existing peer effects literature also shows that firms' belonging to competitive industries follow their peers' investment decisions (Chen & Ma, 2017; Park et al., 2017) and corporate innovation (Machokoto et al., 2021). According to Lieberman and Asaba (2006), market competition is an

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important driver for firms to imitate their industry rivals. Therefore, rival-based theory is helpful in understanding firms' motivation to mimic their peers' financial decisions in the competitive markets. The theory argues that there are two reasons that make firms' to follow their peers' capital structure decisions in the competitive environments. Firstly, firms' want to ease the rivalry and secondly, they do so in order to conserve their relative market position. Furthermore, mimicking behavior is more common among firms that compete for similar resources and market share (Rauh & Sufi, 2012). Alternatively, the risk of bankruptcy increases in competitive environments, making firms to learn from their peers' while making risk decisions such capital structure and investment for corporate innovation as a better choice (Machokoto et al., 2021; Ozoguz & Rebello, 2013). Likewise, this learning motive enables firms to ease the competitive pressure and retain the status quo. Thus, firms are more likely to mimic their peers' leverage decisions to defend their market positon.

#### 4.3. Robustness tests

In this section, we briefly report and discuss the robustness analysis of our baseline analysis and peer effects with respect to the level of industry concentration using data winsorizing and an alternative measure of industry concentration. The results in the column 1 of Table 7 are obtained by re-estimating Equation (1) with all the ratios winsorized at 1<sup>st</sup> and 99<sup>th</sup> percentiles. This approach generally minimizes the effect of extreme values along with removal of possible data coding errors (Leary & Roberts, 2014). According to the results presented in column 1 of Table 7, peers' leverage shows a

|                            | (1)              | (2)              | (3)           |
|----------------------------|------------------|------------------|---------------|
| Peer firms averages        |                  |                  |               |
| Leverage                   | 1.04*** (5.140)  | 1.403*** (4.010) | 0.174 (0.650) |
| Firm Size                  | -0.02 (-1.220)   | -0.119*          | -0.002        |
|                            |                  | (-1.860)         | (-0.180)      |
| Profitability              | 0.164*** (4.690) | 0.222            | 0.034         |
|                            |                  | (1.500)          | (0.760)       |
| Asset Tangibility          | -0.046           | 0.127            | -0.375        |
|                            | (-0.540)         | (0.590)          | (-2.360)      |
| Firm Growth                | 0.008            | 0.029            | -0.027        |
|                            | (0.670)          | (1.340)          | (-1.620)      |
| First-Stage Instrument     |                  |                  |               |
| Peers Average Equity Shock | -0.573**         | -0.736**         | -0.354***     |
|                            | (-2.440)         | (-2.53)          | (-3.96)       |
| Firm Level Factors         | Yes              | Yes              | Yes           |
| Control Variables          | Yes              | Yes              | Yes           |
| Observations               | 1220             | 608              | 612           |

 Table 7. Robustness analysis.

This table presents the robustness results of two stage least squares estimating Equation (1). For all models, firm's book leverage is the dependent variable. Firm level factors include, firm's equity shock, firm size, profitability, asset tangibility, and firm growth with GDP growth and inflation as control variables. In Model 1, all the data is winsorized at 1<sup>st</sup> & 99<sup>th</sup> percentile. Models 2 and 3 show the 2SLS results for two levels of *Industry Concentration* measured with HHI values below 0.15 as *competitive* and HHI values equal or greater than 0.15 as *concentrated* respectively.

The presented estimated coefficients (are scaled by their respective standard deviations for easier interpretation) and t-statistics (in parentheses) are robust to heteroscedasticity, autocorrelation, and cross-sectional dependence. Peer firm averages are the averages of all firms except for firm i, within the same ICB (4-digit) industry in the same country and year. Peer firms' averages are one period lagged with respect to the outcome variable. Statistical significance at the 10%, 5%, and 1% is denoted by \*, \*\*, and \*\*\*, respectively.

Source: Author's estimation.

significant positive impact on firm's leverage and peers' characteristics are not unanimously influential in explaining firm's capital structure.

Furthermore, we have used an alternate measure of industry concentration as suggested by Hou and Robinson (2006) as a robustness check. Here HHI is each firm's sum of squared relative assets in a country and threshold value of 0.15 below which its competitive markets and above 0.15, its concentrated markets. Columns 2 and 3 in the Table 7 reaffirms the results of our main analysis that peers financial decision matters in the competitive markets (Model 2) but not in concentrated markets (Model 3) respectively.

## 5. Conclusion

Peer effects and financial decisions literature have mainly focused on investigating the phenomenon using a single country analysis like the U.S, South Korea and China among others (S. Chen & Ma, 2017; Leary & Roberts, 2014; Park et al., 2017) or international dataset predominately from the developed economies (Francis et al., 2016). We follow instrumental variable approach by Leary and Roberts's (2014), and test whether peers matter for firm's capital structure decisions in the emerging economies and if yes, under what circumstances. Using the sample of food manufacturing firms from 14 emerging economies from 2000 to 2017, we find evidence that peers leverage decisions are significant determinant for a firm's leverage decisions. Moreover, peers matter more when firms are operating in the competitive environments and same is not true for firms belonging to concentrated environment. These findings shed light on two motives that drives firms to follow their peers, the learning motive and reputation building motive.

Furthermore, our study suggests that corporate decision makers from emerging economies can use the timely and cost free information from the peers' financial decisions, as they face comparatively uncertain and ambiguous environments in their countries. Specially, peers' actions may serve as a strategic tool to ease the competitive pressure in the competitive markets. Likewise, as study points towards reputational and learning motives for financial policy imitation, investors may use appropriate internal controls through the board to avoid additional risk associated with debt financing. Lastly, these EMEs' financial policymakers may device customized policies for competitive and concentrated markets to restrict the downside risk of debt financing. Moreover, the study also opens up additional dimensions for future researchers. As, it becomes evident from that peers matter in EMEs' financial decision, so, future studies can explore if firms following their peers can significantly outperform the firms' that do not mimic their peers. In EMEs', private firms constitute a sizeable part of overall business canvas, thus, future researches may also explore if and when peers' financial decisions matter for them.

Banks, in addition to investors, may find this study useful in determining why and when a firm uses more debt. Bank loans account for the majority of corporate debt, which has increased fourfold between 2004 and 2014. As a result, peer effects provide an additional explanation when firms increase their debt levels, allowing creditors (banks) to devise appropriate policies. This way, banks can avoid many of the multiplier effects that result from rapidly rising corporate debt followed by any future financial crisis in emerging economies. Finally, each country's financial regulatory authorities, such as central banks. They could use this as a marketing strategy known as "social norms" (Beshears et al., 2015) to encourage peer effects among corporate leverage decisions that have a clear policy. Furthermore, policymakers may use cultural norms to motivate certain types of financing behavior among firms in order to avoid overly risky debt financing. Similarly, for industries that are more prone to increasing debt due to peer effects, tailor policies to avoid the backlash of high indebtedness.

Though the findings of our study are pertinent for capital structure theory and practice, further investigation of peer effects using market timing perspective in equity based financing provides an interesting research avenue. Moreover, as studies view religion to be an informal institution that affect managerial decision making, future research may explore its role in driving peer effects in financial decision making. Additionally, peer effects may further be explored in capital budgeting domain using survey research ascertaining if managers consider their peers' actions reliable source of information for risk financial decisions. Likewise, it would be interesting to study if mimicking peers' financial decisions serves as a sustainable source of information for the managers in different economic conditions.

#### **Disclosure statement**

No potential conflict of interest was reported by the author(s).

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# **Appendices**

# **Appendix A: Variables definitions**

The table below presents the variables, their definitions along with the frequency and sources

| Variable                         | Definition   | Frequency | Source     |  |  |
|----------------------------------|--|-----------|------------|--|--|
| Dependent variable               |  |           |            |  |  |
| Firm Leverage                    | Ratio of total debt-to-book value of assets.   | Annual    | Datastream |  |  |
| Firm-level variables             |  |           |            |  |  |
| Firm Size                        | Log of Sales   | Annual    | Datastream |  |  |
| Profitability                    | EBITDA/Book value of assets where, EBITDA is earnings before interest, tax, depreciation and amortization  | Annual    | Datastream |  |  |
| Asset Tangibility                | Net PPT/Book value of assets, where PPT is Net Plant, Property and Equipment   | Annual    | Datastream |  |  |
| Growth                           | Ratio of market value of Assets (market value of equity + total debt) to Book value of Total Assets  | Annual    | Datastream |  |  |
| Industry Concentration variables |  |           |            |  |  |
| HerfHirsh Index (HHI)            | HHI is Herfindahl-Hirshman Index and is calculated as the sum of squares of firm's market share in an industry. Following Hou and Robinson (2006) approach, in our main analysis we take sales as a measure of market share and for robust analysis assets are used. | Annual    | Datastream |  |  |
| Country-level control variables  |  |           |            |  |  |
| GDP growth                       | It is measured as the nation's gross domestic product yearly<br>growth   | Annual    | Eikon      |  |  |
| Inflation                        | Its the change in prices in percentage (based on GDP deflator)   | Annual    | Eikon      |  |  |

# **Appendix B: Sample description**

| No.   | Country      | Firms | Firm observations |  |
|-------|--------------|-------|-------------------|--|
| 1     | Brazil       | 13    | 78                |  |
| 2     | Chile        | 6     | 96                |  |
| 3     | Egypt        | 9     | 45                |  |
| 4     | Greece       | 14    | 84                |  |
| 5     | Indonesia    | 11    | 132               |  |
| 6     | Malaysia     | 26    | 234               |  |
| 7     | Mexico       | 8     | 136               |  |
| 8     | Pakistan     | 9     | 90                |  |
| 9     | Peru         | 4     | 40                |  |
| 10    | Philippines  | 13    | 65                |  |
| 11    | Russia       | 6     | 24                |  |
| 12    | South Africa | 6     | 30                |  |
| 13    | Taiwan       | 20    | 180               |  |
| 14    | Turkey       | 16    | 144               |  |
| Total |              | 161   | 1378              |  |

#### Table B1. Sample description.

Table B1 presents number of firms for each country and their firm-year observations. The accounting data is extracted from the Datastream universe for the time period between 2000 and 2017 with sufficient data. Source: Author's estimation.