

THE ROLE OF AGENCY COSTS IN EXPLAINING FINANCIAL PERFORMANCE DIFFERENCES: AN EMPIRICAL ANALYSIS ON SELECTED PUBLIC FIRMS IN BRIC COUNTRIES

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Abstract

The consequences of the recent corporate scandals have directed the attention of corporations towards the opportunistic behaviors of managers; thus, evaluation of agency costs encountered within the firm. The divergence of interest between the managers and shareholders has a potential to constitute a threat to the firms' financial performance. Due to the rising importance of the topic for both academic literature and practical grounds, this study attempts to evaluate the link between agency costs of equity and financial performance of selected public firms operating in BRIC countries between the years 2003 and 2014, inclusive. Three measures have been utilized to proxy for agency costs of equity; namely, asset utilization ratio, operating expense ratio, and the ratio of free cash flows to total assets. An additional interaction variable is also generated to take into account the existence of investment opportunities when free cash flows are abundant. The findings based on panel data analysis are considered to provide useful insight upon an additional explanation to the presence of financial performance differences among the firms other than simply firm-specific attributes and emphasize the importance of finding mechanisms for alleviating agency costs to attain the overall goal of shareholder wealth maximization.

Keywords: Agency Costs, Financial Performance, BRIC Countries, Panel Data Analysis.

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VEKÂLET MALİYETLERİNİN FİNANSAL PERFORMANS FARKLILIKLARINI AÇIKLAMADAKİ ROLÜ: BRIC ÜLKELERİNDE FAALİYET GÖSTEREN SEÇİLMİŞ HALKA AÇIK FİRMALAR ÜZERİNE AMPİRİK BİR ÇALIŞMA

Özet

Son zamanlarda yaşanan şirket skandallarının sonuçları firmaların dikkatini yöneticilerin fırsatçı davranışlarına ve dolayısıyla firmalarda karşılaşılan vekalet maliyetlerinin değerlendirilmesine yöneltmiştir. Yöneticiler ve hissedarlar arasındaki çıkar çatışmaları firmaların finansal performanslarına yönelik bir tehdit unsuru oluşturmaktadır. İlgili konunun akademik literatür ve uygulama alanındaki artan önemi sebebiyle, bu çalışma öz sermayeye ilişkin vekalet maliyetleri ve finansal performans arasındaki ilişkiyi BRIC ülkelerinde faaliyet gösteren seçilmiş halka açık firmalar üzerinde 2003 ve 2014 yılları arasında değerlendirmeyi amaçlamaktadır. Öz sermayeye ilişkin vekalet maliyetlerini ölçmek için üç farklı değişken kullanılmıştır. Bunlar; varlık kullanım oranı, faaliyet giderleri oranı ve serbet nakim akımların toplam varlıklara oranı olarak belirlenmiştir. Ayrıca, nakit akımlarının bol olduğu durumda yatırım fırsatlarının varlığını göz önünde bulundurmak için de ek bir etkileşim değişkeni oluşturulmuştur. Panel veri analize dayandırılmış bulgular firmalar arasındaki finansal performans farklılıklarına ek bir açıklama getirmiş ve bunların sadece firmaya özgü niteliklerden kaynaklanmadığını vurgulamıştır. Ayrıca, bu çalışma hissedarların varlıklarını maksimize etme amacına ulaşmak için firmaların vekalet maliyetlerini düşürmek adına çeşitli makenizmalar geliştirmenin önemini vurgulamaktadır.

Anahtar Kelimeler: Vekalet Maliyetleri, Finansal Performans, BRIC Ülkeleri, Panel Veri Analizi.

I. INTRODUCTION

Separation of ownership and control; thus, division of firms' shares between managers and owners, is a factor affecting firm value as stressed by the milestone study of Berle and Means [1]. Their study emphasizes that little equity ownership by managers and a widely dispersed ownership by shareholders will lead to the deployment of firms' assets for the benefit of managers. Accordingly, the divergence of interest between managers, who are corporate insiders, and minority shareholders, who are outside investors, has been a significant area of research in academic work gaining momentum with the prominent studies of Ross [2] and Jensen and Meckling [3]; whereby, the later two define agency relationship as a contract under which the principles engage another person to act on their behalf by delegating the authority of decision making to that agent. The agents' actions will not be in the best interests of the principle when the parties in the associated relationship are utility maximizers. Based on the convergence of interest hypothesis, alignment of shareholders' and managers' interest with a rise in managerial ownership is assumed to improve firm value since the conflict of interest arising between managers and shareholders is reduced as insider equity ownership is increased. Contrarily, entrenchment hypothesis predicts corporate assets to be less valuable when market discipline is less sufficient in controlling the managers with an increase in ownership; thus, leading to a reduction in the incentive to maximize value [4].

Henry [5] states that agency costs can occur in various forms some of which can be named as managerial self-serving behaviors, excessive perquisite consumption, non-optimal investment decisions, and corporate fraud. According to Jensen and Meckling [3], two broad categories of agency costs exist in that they can be equity or debt related. To name a few, risk-shifting and underinvestment problems can be shown as examples of debt-related agency costs. However, this study focuses on equity related agency costs that arise when managers pursue their own interests regardless of shareholders' well-being, which indicates misalignment of managers' and shareholders' incentives. The proxies that will be provided in detail in the section related to variable selection are employed to capture agency costs of equity such as managerial extravagance that is defined by Chen and Yur Austin [6] to be an indicator of excessive managerial discretionary spending with potential to distort corporate earnings. Another aspect that is aimed to be measured is poor asset management that may lead to overinvestment with idle cash remaining after all available positive net present value projects have been undertaken and managers utilizing the remaining funds for their own good [7]. According to Florackis [8], agency costs occurring between the claimholders of the firm exist in imperfect capital markets and firm value is diminished on the condition that the market expects that these costs are to be realized. Therefore, poor corporate policy choices arising as a result of incentive conflicts within the firm can distort corporate performance.

This study attempts to evaluate this significant issue to provide further insight as to whether agency costs of equity can be regarded to be one of the determinants of financial performance in BRIC countries. BRIC is the acronym for an association of four major emerging national economies: Brazil, Russia, India, and China which are the fastest growing and largest emerging market economies in the world. They account for almost three billion people, which also accounts for almost half of the total population of the world, with Brazil having a population of 201,046,886, Russia 143,451,702, India 1,210,193,422 and China 1,354,040,000 people. The BRIC's contribution to the total GDP is about \$ 15,412.8 bn. (Brazil \$ 2,242.8 bn., Russia \$ 2,118.0 bn., India \$ 1,870.6 bn. and China \$ 9,181.4 bn.), which shows that BRIC's economies have contributed to the majority of world GDP growth [9]. As noted above, interest in the BRIC countries is not only focused on the size of their economies, but also on their growth potential. In economic terms, China and India are manufacturing-based economies and big importers of natural resources with their development strategies being export led and based on domestic industrialization for export markets. The other two; namely Brazil and Russia, are huge exporters of natural resources with resource-based economies and commodity exporting [9]. Accordingly, BRIC countries are selected as the dataset of the study due to the significant and rising importance of these economies. Soundness and financial performance of the companies operating in these countries are utterly important as they add to the respective countries' GDP growth and well-functioning nature of their economies. Since potential agency costs are detrimental to the firms' financial indicators, their influence on the selected proxy of financial performance is evaluated in the empirical part of the study to see how managers' self-oriented

behaviors are affecting the firm. Depending on the results, further courses of actions should be undertaken to deal with the problems arising as a result of the separation of ownership and management.

As will be provided in detail in the section related to hypothesis generation, the main purpose of the study is to evaluate the link between agency costs of equity and financial performance of selected public firms operating in BRIC countries between the years 2003 and 2014. This study builds on the prominent studies that aim to quantify equity related agency costs such as those of Ang et al. [10] and Sign and Davidson [11] and other studies that attempt to analyze the impact of agency costs on various indicators of firm performance [4], [12], and [13]. Accordingly, the remainder of the study is organized as follows: The following section provides literature review related to the topic. Then, the hypothesis is generated depending on associated theories of agency and free cash flows. The fourth section is dedicated to research design followed by the results of the analyses. Concluding remarks, implications of the study and areas for further research are revealed in the last section.

II. LITERATURE

The link between productive efficiency, which can be considered to stand as a form of performance, and agency costs have been studied in the academic arena as early as the 1970s with the prominent study of Stigler [14] acting as one of the first works drawing attention to the associated notion. One strand of literature that investigates the influence of agency costs on firm performance has used regressions of various performance measures on indicators of leverage. Berger and Patti [15] constitute an outstanding example; whereby, they test whether increasing leverage leads to a reduction in agency costs of outside equity which further leads to an enhancement in firm performance. However, this study implements a more direct approach by studying the influence of selected proxies of agency costs, which will further be described in detail, on the selected financial performance measure.

The prominent study of Ang et al. [10] is one of the first studies attempting to quantify agency costs by the utilization of ratios extracted from the firms' financial statements. Following and building upon their study, numerous other works, which will be provided in the variable selection section, have been conducted to measure agency costs by the utilization of accounting proxies. An array of literature has focused on evaluating the relationship between these costs and firm performance by including various different proxies in their models. Cole and Mehran [12] study the influence of ownership structure and associated agency costs on firm performance by the use of stock returns as the performance measure. The prominent study of Vogt and Vu [16] documents results consistent with the free cash flow hypothesis; whereby, those firms that plow back a considerable amount of free cash flow into the firm for capital spending demonstrate low levels of excess returns. Contrarily, those firms with high dividend yields and

stock repurchases are found to demonstrate positive excess returns. Another study that utilizes stock returns as a performance measure is that of Chang et al. [17]. This study is mainly built around asset substitution and underinvestment problems evaluating the stock valuation effects of secured debt offerings.

Other than focusing on stock returns in the selected dataset of emerging markets, this study uses an accounting based measure of firms' financial performance; namely, earnings before interest, tax, depreciation, and amortization (EBITDA). Wang [13] also includes return on assets (ROA) and return on equity (ROE) as dependent variables in two separate models that mainly attempt to evaluate the relationship between agency costs and performance on a dataset of publicly listed firms on Taiwan Stock Exchange during the 2002-2007 periods. Other models constructed in the same study utilize Tobin's Q for firm value and stock returns for stock market performance as dependent variables. A recent study conducted on Tehran Stock Exchange during the six year period between 2006 and 2012 on a dataset of 63 firms use four different measures as the dependent variables of the models again probing the link between free cash flows, performance and firm value. Where ROA and ROE are used as indicators of firms' financial performance, stock return is used to account for stock market performance. Additionally, Tobin's Q is utilized to capture firm value in a separate model [18]. Another study conducted by Pouraghajan et al. [19] adopts a similar perspective for a dataset of 140 companies listed on Tehran Stock Exchange covering the time span between the years 2006 and 2011. The two models encompass the same efficiency ratios; namely, total asset turnover ratio, operating costs ratio, the ratio of administrative and selling costs to net sales, the ratio of advertising cost and research and development cost to net sales, standard deviation of operating income to net sales, standard deviation of net income to net sales, and the ratio of free cash flows to net sales, which act as the independent variables. The dependent variables of the models are ROA and ROE, which are used to capture firms' financial performance. A prior work performed by Mojtahedzadeh and Nahavandi [20] also conducts an empirical analysis on Tehran Stock Exchange with a perspective to investigate the ability of free cash flows measure in predicting firms' long-term profitability. Additional hypothesis have been structured to test the relationship between agency costs of free cash flow and income management together with the link between major stockholders and income management. The study that is conducted on a dataset set of 106 public companies listed during the 2003-2007 period utilizes Tobin's Q as the measure of long-term profitability. The findings as to the hypothesis related to our study demonstrate the presence of a negative and significant relationship between the selected proxies of agency costs and firm performance.

A study that investigates whether agency problems can explain performance differences of 590 non-financial public firms listed on Korean Stock Exchange during the Asian financial crisis utilizes both stock returns and ROA as performance measures. The selected agency cost proxies are three ownership structure variables, one free cash flow variable, two leverage variables, and one variable related to the degree of diversification. The findings demonstrate

that the measures of agency problems are less closely linked to operating performance with investors paying more attention to agency problems during periods of financial crises as seen by a more strongly pronounced influence on stock market performance. Furthermore, they also document that corporate governance structure of a company is an important determinant of the significant role of agency problems during the crisis period [21].

As far as our literature review is concerned, there are a limited number of studies focusing on the direct link between agency costs of equity and firm performance. Additionally, there is a lack of evidence on the quantification of agency costs and further determining their impact on the financial performance of the firms in the selected group of emerging countries; namely, BRIC. Based on prior empirical analysis conducted, literature review and major theories of agency and free cash flow, this study aims to fill in a gap by focusing on the emerging markets of BRIC countries and attempts to provide further insight onto the link between agency costs and financial performance of the firm.

III. HYPOTHESIS DEVELOPMENT

Depending on previous literature, this subsection is dedicated to the formation of hypothesis that aims to investigate the relationship between the selected proxies for equity related agency costs and financial performance of the firm. By using direct and indirect proxies for agency costs encountered within the firm, this study attempts to investigate the influence of managers' self-motivated behaviors on the selected proxy of financial performance with the variables being explained in detail below.

The building blocks of the study's hypothesis mainly rest upon agency theory and associated free cash flow theory. The work of Jensen and Meckling [3] put forth the costs of an agent's actions that arise due to the misalignment of the agent's and shareholder's interests. The magnitude of these costs depends upon the degree to which the owners and delegated third parties such as monitoring institutions control the actions of outside managers [10].

Previous literature has utilized operating expense ratio as a direct measure of agency costs since the effectiveness of firm's management in keeping operating expenses under control can be captured by this accounting measure [10]. Potential agency costs such as excessive perquisite consumption are assumed to deteriorate financial performance of the firm. A high level of discretionary spending is supposed to be harmful to the wealth of shareholders since these expenses are not related to income-generating activities [22].

As stated by Jensen [23] free cash flow is cash flow in excess of that needed for funding all projects with positive net present value. That excess cash flow may lead to poor investment decisions when it is left to the discretion of management. Shareholders can be confronted with potential agency conflicts when managers overinvest in the firm with the excess cash flow, which does not confirm with the goal of shareholder wealth maximization. Furthermore, diver-

gence of interest between shareholders and managers with respect to payout policies become more severe when the organization has substantial free cash flow. It has to be emphasized that investment opportunities play a significant role for agency costs of free cash flow such that firms with low growth opportunities are more likely to suffer agency costs due to investment in unprofitable projects.

Managers' self-motivated behaviors will also lead to low levels of asset utilization providing further evidence of the presence of agency costs within the firm [3]. Inefficient asset utilization arises due to managers' poor investment decisions and shirking. Sub-optimal investment decisions of management, inadequate commitment, and monitoring will also lead to the rise of agency costs resulting in a loss in firm value.

Accordingly, agency costs have a potential to influence firm performance; thus, can be regarded to be a determinant of firms' financial performance other than the generally referred to firm-specific attributes in literature. Therefore, the divergence of interest between managers and shareholders and associated agency costs are assumed to be detrimental to the firm leading to lower financial performance with the hypothesis being constructed in its alternative form as follows;

H = The higher the level of agency costs encountered by the firm, the lower the financial performance as measured by EBITDA/TA.

IV. RESEARCH DESIGN

IV.1. Data and Sample Selection

This study utilizes a dataset belonging to BRIC countries with an observation period of twelve years between 2003 and 2014, inclusive. The major reason for the exclusion of prior year data rests upon the aim to achieve the largest firm-year observation for a balanced dataset; thereby, an optimal year is selected to act for the beginning of the period. Accordingly, companies that lack consecutive data and financial sector companies are also eliminated from the initial dataset. The final sample is made up of 132 firms with 39, 30, 26, and 37 firms belonging to Brazil, Russia, India, and China; respectively. Bloomberg database is utilized to extract the data with a total of 1584 firm-year observations that are analyzed in the Stata 11 software package.

IV.2. The Variables

This subsection is dedicated to the explanation of the variables included in the models of the study. Table IV.1 below provides the list of the dependent, explanatory, and control variables together with their abbreviations and definitions. Accordingly, detailed explanations as to the reasoning for the selection of the variables are provided accompanied by the previous other studies that have also employed the selected variables.

Table 1. Summary of the Variables, Abbreviations, and Definitions

Variable	Abbreviation	Definition
Panel A: Dependent variable		
Financial performance	EBITDA/TA	The ratio of earnings before interest, taxes, depreciation, and amortization to total assets in year t for firm i
Panel B: Explanatory variables		
Operating expense ratio	OPEXR	The ratio of operating expenses to total assets in year t for firm i
Free cash flows to total assets	FCF/TA	The ratio of free cash flows to total assets in year t for firm i
Asset utilization	ASSTUT	The ratio of net sales to total assets in year t for firm i
Free cash flows and growth prospects	LGRWFCF	The interaction of the firm's growth opportunities with its free cash flows*
Panel C: Control variables		
Weighted average cost of capital	WACC	The weighted average cost of capital of the firm in year t for firm i^{**}
Firm size	LNASST	Natural log of total assets at year t for firm i
Leverage	LEVR	The ratio of total debt to total assets at year t for firm i
Prior year financial performance	LEBITDA/TA	The ratio of earnings before interest, taxes, depreciation and amortization to total assets in year $t-1$ for firm i

* This variable is an interaction variable; whereby, a dummy variable taking the value of 1 if the firm's Tobin's Q is less country median is multiplied by the free cash flows of the firm i in year t

IV.2.1. The Dependent Variable

The dependent variable of this study is selected to be EBITDA to total assets labeled as EBITDA/TA. EBITDA is defined by Bloomberg to be an indicator of financial performance, which is net income with interest, taxes, depreciation, and amortization added back to it. Accordingly, it is used as a proxy of financial performance in prior studies such as those of [24]; [25]. As EBITDA eliminates the effects of financing and accounting decisions, it can be used to evaluate companies' financial performance. Furthermore, differences in tax rates, capital expenditure and capital structure decisions are not taken into account by the use of this measure. This indicator has also been utilized in previous studies as a measure of operating performance [26], financial distress [27]; [28], and firm value [29].

IV.2.2. The Explanatory Variables

Three ratios have been used in this study to proxy for agency costs in the line with previous studies. These ratios are operating expense ratio; free cash flows divided by total assets,

and asset utilization ratio. The first one, which is the operating expense ratio, is defined as operating expenses scaled by total assets and denoted by **OPEXR**. According to Ang et al. [10], the effectiveness of management in controlling agency costs including excessive perquisite consumption and other direct agency costs is captured in this measure. A relatively high operating expense ratio is assumed to be an indicator for the possibility that managers of the firm are expropriating wealth from shareholders as these expenses do not contribute to income generating activities and are incurred to satisfy the managers' excessive personal consumption [30]. This proxy has been utilized by numerous studies in literature; namely, [10], [7]; [22]; [31]; [32]; [33], and [34].

The second proxy for agency costs is related to the magnitude of free cash flows generated by the firm calculated by the ratio of free cash flows to total assets, **FCF/TA**. The free cash flow figures that are extracted from the Bloomberg database are calculated as operating cash flow minus capital expenditures. As emphasized by Henry [5], the presence of free cash flows within the firm has a potential to result in agency problems. Jensen [23] states that generation of substantial free cash flows leads to a more severe conflict of interest between shareholders and managers with respect to payout policies. The recent study of Park and Jang [35] shows that free cash flows deteriorate firm performance with an emphasis on the problems associated with overinvestment problem. Furthermore, an interaction variable is generated to account for the firms' growth opportunities following [36], [37], and [38]. It has to be noted that high growth is defined as the case where the firm's country adjusted Tobin's Q is greater than the country median. Therefore, a dummy variable is generated and takes the value of 1 if the firm's Tobin's Q is less country median, indicating a firm with low growth opportunities. This dummy variable is then multiplied by the firm's free cash flow figure to determine low growth-high free cash flow firms. The dependency of agency costs associated with free cash flows on the firms' investment opportunities are stressed in the study of Chang et al. [17] in that firms with fewer growth opportunities in comparison to others are more likely to have free cash flows. Therefore, firms that qualify for being low-growth and high-cash-flow have a potential to have more agency costs; which is captured in this study by the generation of an interaction variable labeled as **LGRWFCF**.

The third measure of agency costs is asset utilization ratio, which is computed by the ratio of annual sales to total assets and denoted by **ASSTUT**. Sub-optimal investment decisions of management, lack of commitment, effort, and monitoring are regarded to be the major reasons as to why agency costs arise within the firm. The effectiveness of management in utilizing the firm's assets and the degree of shirking is captured by this ratio. Accordingly, the loss of revenue associated with the inefficient use of assets is proxied by this ratio as well [39]. It is important to emphasize that asset utilization ratio is contrary to the previously identified two proxies in terms of the direction of its relationship with agency costs. Whereas OPEXR and FCF/TA are directly related to the degree of agency costs existing in the firm, ASSTUT is inversely related in that firms that exhibit low levels of asset utilization experience high levels of agency costs based

on the reasoning that management diverts investments to nonproductive assets [10]; [7]. Even though this ratio is also utilized in the study of McKnight and Weir [38], they emphasize some potential drawbacks of this measure. The first problem is related to sales' not being synonymous with shareholder wealth as sales may not be depending on profitable activities. Additionally, some of the cash flows being generated by sales may be expropriated by management and not be distributed to shareholders. Nevertheless, numerous prior studies in literature using this measure can be named as those of [10]; [11], [40]; [41]; [7]; [39]; [5]; [42]; [22]; [6]; [43]; [44]; [38]; [33]; [45]; [46]; [34].

IV.2.3. The Control Variables

The models employ various control variables to more accurately evaluate the influence of agency costs on the firms' financial performance. The selected variables that have a potential to influence the main variable of interest, EBITDA/TA, have been identified through an evaluation of previous empirical studies and can be named as weighted average cost of capital, firm size, leverage, prior year financial performance, and the country of origin.

The empirical models control for the firms' weighted average cost of capital denoted by **WACC** as the number of the profitable projects the firm can invest in has a potential to increase when the WACC of the firm is lower, which will be compatible with the shareholder wealth maximization goal of the firm. As suggested by Jung [47], WACC can be used to evaluate the specific performance of top management with respect to their decisions about financing and resource allocation. The framework developed in that study aims to utilize financial information to evaluate the ability of operators in managing business performance and is related to agency problems between top management and operators. Thus, the model in our study accounts for WACC due to the link this proxy has with agency costs and financial performance.

Natural log of total assets denoted by **LNASST** is included in the models to control for firm size. Majumdar [48] emphasizes the advantages possessed by large firms over smaller ones as the broad set of capabilities they possess, the economies of scale and scope they achieve, and the efficient manner in which they conduct their activities. Contrarily, smaller firms can be more flexible; thus, perform better as they are not structured to have many hierarchical levels and are less exposed to the phenomenon of loss of control [49]. Boardman et al. [50] explore performance differences among firms with an emphasis on agency costs and incorporate firm size as a control variable in their analysis. Another study conducted by Chrisman et al. [51] also utilizes firm size as a control variable with a focus on the relationship between performance and agency cost control mechanisms in family firms. Similarly, the recent study of Songini and Gnan [52], which investigate the same phenomenon with respect to family involvement, firm performance, and adoption of agency cost control mechanisms, also stresses the significance of firm size in value creation and; therefore, integrates this control variable into the analysis.

It is important to include debt ratio as a control variable in analyzing the relationship between agency costs and financial performance since higher leverage is associated with a reduction in agency costs of equity by constraining the discretionary behaviors of managers and; thus, leads to an enhancement in firm performance [15]. As emphasized by Grossman and Hart [53], the threat of bankruptcy, which may result in loss of benefits on behalf of the managers, is one of the incentives that can lead to improved managerial performance. However, it has to be noted that agency costs of debt will rise as outside financing increases [3]. Higher expected costs of financial distress and liquidation will result in higher interest expenses to compensate debt holders for any expected losses. Consequently, the reduction in agency costs of equity can be overwhelmed by the increase in agency costs of debt resulting in higher total agency costs. Studies that have investigated the determinants of firm performance have focused on the significance of capital structure decisions. To state a few of the recent studies, Vithessonthi and Tongurai [54] document the non-monotonic impact of leverage on operating performance, which is conditional on firm size with positive and negative impacts seen on small and large firms, respectively. Vaidean [55] finds performance to be higher when firms avoid debt and conduct their operations with a basis on equity. Another study with contradictory findings is that of Park and Jang [35] that focuses on the inter-relationships among capital structure, free cash flow, diversification, and firm performance. The findings show that free cash flows are reduced due to leverage resulting in an enhancement in firm performance. This study utilizes the ratio of total debt to total assets that is labeled by **LEVR** to control for the impact of leverage on financial performance.

The model also controls for the impact of prior year financial performance on current performance due to the potential that good performers can tend to demonstrate superior performance in the future than their non-performing counterparts. This notion is also hypothesized by Kordestani et al. [56], whereby they evaluate the influence of prior year financial performance on current performance as part of their analysis in the area of supply chain processes in the Swedish steel industry. The proxy that accounts for prior year performance differences is denoted by **LEBITDA/TA** in this study.

Finally, it has to be noted that all of the four models are estimated using country dummies to account for the country specific influences that might occur on the link between financial performance and agency costs.

IV.3. The Methodology

The empirical part of this study employs panel data analysis that pools cross-sectional observations over several time periods. Two significant reasons have been emphasized by Arellano [57] for the frequent use of this methodology in micro econometric empirical analyses. These can be stated as the need to control for ‘...unobserved time-invariant heterogeneity in

cross-sectional models and the use of panel data ‘as a way of disentangling components of variance and estimating transition probabilities among states, and more generally to study the dynamics of cross-sectional populations’.

The hypothesis focusing on the link between the firms’ financial performance and agency costs are tested using the below four models. Whereas the dependent variable and associated control variables are the same for each model, the explanatory variable that stands for the agency costs encountered within the firm differs. It has to be noted that the explanatory variable of the last model is an interaction variable measuring the degree of free cash flows in the case that the firm’s growth prospects are poor. The major reason for the inclusion of such an interaction variable relates to the expectation that the presence of free cash flows acting as a proxy for agency costs can prove to be detrimental for firms’ financial performance specifically in the case when there are poor growth opportunities for the firm. The Table IV.2 below depicts a summary of the models applied and variables employed to facilitate a better understanding of the empirical part of the study.

Table 2. Empirical Models Utilized

Model	Dependent Variable	Explanatory Variable	Control Variables
1	EBITDA/TA	OPEXR	WACC, LNASST, LEVR, LEBITDA/TA
2	EBITDA/TA	FCF/TA	WACC, LNASST, LEVR, LEBITDA/TA
3	EBITDA/TA	ASSETUT	WACC, LNASST, LEVR, LEBITDA/TA
4	EBITDA/TA	LGRWFCF	WACC, LNASST, LEVR, LEBITDA/TA

Breusch and Pagan [58] emphasize that invalid inferences may result due to biases in estimated standard errors when the assumptions of homoskedastic disturbances and fixed coefficients are not fulfilled. In this case, the utilization of OLS may result in substantial loss in efficiency. Therefore, Lagrangian multiplier test developed by Breusch and Pagan is applied to each model of the study to test for the presence of heteroskedastic disturbances. When the test results in small enough p -value, corrective action is taken, which is the use of GLS method in our case. The method of GLS is known as ‘*OLS on the transformed variables that satisfy the standard least-squares assumptions*’ [59]. The models are also tested for serial correlation since ignoring serial correlation when it exists will result in consistent but inefficient estimates of the regression coefficients and biased standard errors [60]. The existence of serial correlation in each model is tested for by the use of Wooldridge test. The findings of the associated two tests reveal the presence of heteroskedasticity and autocorrelation in the dataset, which are dealt with by the use of GLS methodology. Furthermore, outliers that exist due to the large ranges in the distribution of data with respect to the variables labeled as OPEXR, ASSETUT, WACC, and LEVR have been eliminated from the initial sample in order to provide more representative re-

sults. Accordingly, the models developed to test the hypothesis associated with the relationship between financial performance and selected proxies of agency costs are constructed as below;

$$(1) EBITDA/TA_{it} = \beta_0 + \beta_1 OPEXR_{it} + \beta_2 WACC_{it} + \beta_3 LNASST_{it} + \beta_4 LEVR_{it} + \beta_5 LEBITDA/TA_{it} + \epsilon_{it}$$

$$(2) EBITDA/TA_{it} = \beta_0 + \beta_1 FCF/TA_{it} + \beta_2 WACC_{it} + \beta_3 LNASST_{it} + \beta_4 LEVR_{it} + \beta_5 LEBITDA/TA_{it} + \epsilon_{it}$$

$$(3) EBITDA/TA_{it} = \beta_0 + \beta_1 ASSETUT_{it} + \beta_2 WACC_{it} + \beta_3 LNASST_{it} + \beta_4 LEVR_{it} + \beta_5 LEBITDA/TA_{it} + \epsilon_{it}$$

$$(4) EBITDA/TA_{it} = \beta_0 + \beta_1 LGRWFCF_{it} + \beta_2 WACC_{it} + \beta_3 LNASST_{it} + \beta_4 LEVR_{it} + \beta_5 LEBITDA/TA_{it} + \epsilon_{it}$$

V. DATA ANALYSIS AND RESULTS

V.1. Descriptive Statistics

This subsection reports the descriptive statistics of the continuous variables included in the models for all four countries during the twelve year period between 2003 and 2014, inclusive. It has to be noted that potentially large variations in financial performance may arise due to different dynamics that emerge in each country. Accordingly, these differences are accounted for by the inclusion of country dummies and through the analysis of outliers to eliminate the occurrence of any misleading results.

Table 3. Descriptive Statistics of the Continuous Variables for the Complete Sample

Variables	Mean	Std. Dev	1 st Quartile	Median	3 rd Quartile	Min	Max
EBITDA/TA	0.1909	0.2066	0.0943	0.1493	0.2206	-0.1718	2.8694
OPEXR	0.3789	0.3362	0.1042	0.2043	0.7297	-0.4588	1.4403
FCF/TA	0.0312	0.1098	-0.0181	0.0259	0.0840	-1.8858	0.4852
ASSETUT	0.7695	0.4652	0.4525	0.6747	0.9619	0.0668	3.7207
WACC	0.0928	0.0440	0.0680	0.0932	0.1170	-0.0044	0.9748
LNASST	10.7749	1.9449	9.5304	10.7677	12.0663	4.4873	16.5353
LEVR	0.2798	0.1774	0.1467	0.2677	0.3971	0.0000	1.8890
LEBITDA/TA	0.1954	0.2138	0.0960	0.1516	0.2248	-0.1718	2.8694

The mean and median of the dependent variable, which stands for financial performance and is labeled by EBITDA/TA is found to be 0.1909 and 0.1493, respectively. Whereas the minimum value is documented to -0.1718, the maximum value for the overall sample is reported to be 2.8694.

As provided in detail in the subsection devoted to variable explanations, three continuous variables are used to proxy for agency costs. The first proxy, which is the operating expense ratio, has a mean and median of 0.3789 and 0.2043, respectively. Since a high standard deviation of 0.3362 indicates the presence of significant variance among the sample firms, outliers with respect to this variable are removed from the sample during the estimation process. Sample firms are identified to generate average annual free cash flows of 3.12% of total assets over

the twelve year period with the median firm demonstrating 2.59% in terms of the same proxy of agency costs. Furthermore, 75% of the firms in the sample have free cash flow to total assets ratio of less than 0.0840. Additionally, the minimum value with respect to this variable is demonstrated to be -1.8858. Outliers have also been removed in the model that utilizes this proxy as the explanatory variable. Lastly, the average asset utilization ratio is documented to be 0.7695 with the median firm operating at efficiency level of 0.6747. As the statistics related to 3rd quartile indicate, the asset utilization ratio of 75% of the firms is less than 0.9619. It can be inferred from the high standard deviation of 0.4652 that there is also significant variation among the sample firms in terms of this proxy. Accordingly, the outliers as to this variable have been removed from the sample during the model estimation process.

When the descriptive statistics as to control variables are evaluated, it can be seen that the mean of sample firms in terms of WACC is 0.0928 with 75% of the firms having a WACC of less than 0.1170. The interquartile range is found to be 0.0490 (=0.1170-0.0680), indicating a low dispersion of estimates for the associated variable. The logarithm of total assets controlling for firm size is found to range between 4.4873 and 16.5353. Furthermore, sample firms are found to exhibit an average debt ratio of 0.2798 with minimum and maximum values of 0 and 1.8890, respectively. Accordingly, outliers with respect to debt ratio have been detected and removed before the model estimation process. The results related to prior year performance denoted by LEBITDA/TA are similar to current performance with mean and median values being 0.1954 and 0.1516, respectively.

V.2. Correlation Coefficients

The Pearson correlation coefficients between pairs of control variables are demonstrated in Table V.2 below. Multicollinearity is regarded to be a serious issue if the pair-wise or zero-order correlation coefficient between two variables is higher than a reference point of 0.8 [61]. An evaluation of the coefficients and associated significance levels of the variables used in each model reveals that the models utilized are not contaminated by the problem of multicollinearity.

Table 4. Pearson Correlation Matrix for the Control Variables

	(1)	(2)	(3)	(4)
(1) WACC	1.0000			
(2) LNASST	-0.0131 0.6017	1.0000		
(3) LEVR	-0.1283* 0.0000	-0.0601* 00167	1.0000	
(4) LEBITDA/TA	-0.3133* 0.0000	-0.0165 0.5306	-0.1732* 0.0000	1.0000

V.3. Panel Data Analysis

Table V.3 provides the results of the panel data analysis based on the estimation of above stated four equations to mainly investigate the influence of agency costs on the financial performance of the firm. As emphasized beforehand, the models differ on the basis of the explanatory variables utilized while the selected control variables are the same under each alternative model. Since the results of all models are the same with respect to the significant control variables and the signs of their coefficients, minor differences among the models as to the coefficient values of these control variables will not additionally be emphasized to save space and prevent repetition. Therefore, the results related to the control variables will be explained on the basis of the first model just as a reference point while the influence of each agency cost proxy on the selected financial performance measure will be evaluated in detail in each model.

Table 5. The Results of the Panel Data Analysis

Dependent Variable : EBITDA/TA				
Estimated coefficients (z-value)				
Variables	Model1	Model2	Model3	Model4
OPEXR	-0.0116 (-2.45)**			
FCF/TA		0.1859 (15.03)		
ASSTUT			0.0182 (6.47)***	
LGRWFCF				-0.0000 (-0.94)
WACC	-0.1210 (-3.79)***	-0.1398 (-4.34)***	-0.0970 (-2.98)***	-0.1097 (-3.50)***
LNAST	-0.0026 (-3.55)***	-0.0020 (-3.23)***	-0.0024 (-3.47)***	-0.0029 (-4.21)***
LEVR	-0.0744 (-9.40)***	-0.0339 (-4.56)***	-0.0676 (-8.74)***	-0.0714 (-9.46)***
LEBITDA/TA	0.7289 (44.76)***	0.7095 (48.81)***	0.7245 (45.58)***	0.7353 (46.55)***
CNTRYDUMMY	Yes	Yes	Yes	Yes
constant	0.1153 (10.69)***	0.0887 (9.47)***	0.0853 (8.15)***	0.1083 (10.74)***
Number of observations	1427	1443	1443	1443
Number of groups	132	132	132	132
Wald chi²	3827.71	5903.35	4676.30	4224.56
Prob > chi²	0.0000	0.0000	0.0000	0.0000
<i>legend</i>	<i>*p<0.10; **p<0.05; ***p<0.01</i>			

When the results of the first model are analyzed, the hypothesized negative influence of agency costs on financial performance is found to be statistically valid, which is evidenced by the negative and significant coefficient of the explanatory variable OPEXR (z -value = 2.45, $p < 0.05$). Therefore, the findings of the analysis associated with the first model show that the null hypothesis is rejected; thus, the financial performance mitigating role of agency costs is found to be valid for BRIC countries during the 2003-2014 period. Confirmatory results have been revealed by the study of Wang [13] with the operating expense ratio having a negative and significant influence on selected proxies of firm performance as measured by ROE and ROA. Pouraghajan et al. [19] also support this finding in the model which investigates the link between firm performance as measured by ROA and agency costs as measured by operating expense ratio.

The findings of the first model in terms of the control variables demonstrate that all of the selected variables have significant influence on EBITDA/TA. The increase in financial performance due to a reduction in the firms' weighted average cost of capital is evidenced by the negative and significant coefficient of the variable WACC (z -value = -3.79, $p < 0.01$). The decisions of top management can be evaluated by analyzing WACC of the firm with reference to two significant dimensions; namely, operating results and the control of risk factors to maintain WACC at an acceptable and reasonable level [47]. As managers make sound financial decisions and do not act for pursuing self-serving behaviors, they can keep WACC low, which leads to an improvement in the financial performance of the firm. The results of our study are prove to be confirmatory with this notion.

The findings related to LNASST demonstrate the negative and significant influence of firm size on financial performance (z -value = -3.55, $p < 0.01$). Consistent findings are documented in the study of Boardman [50]; whereby, the role of agency costs in explaining performance differences are investigated with a focus on foreign ownership. The negative and significant effect of firm size on financial performance is also found by Chrisman et al. [51] in their study probing the influence of agency costs arising due to family ownership on short-term sales growth. Accordingly, it would be appropriate to state that the more flexible nature of small firms and reduced hierarchical levels preventing loss of control can add to the financial performance of the firms.

The decrease in financial performance due to an increase in firms' leverage is demonstrated by the negative and significant coefficient of the variable LEVR (z -value = -9.40, $p < 0.01$). One explanation can be related to what is emphasized by Berger and Patti [15] in that increase in firms' leverage results in an increase in expected costs of financial distress, bankruptcy, or liquidation resulting in an increase in agency costs of debt that overwhelms the decrease in agency costs of equity. Furthermore, the findings provide evidence of the fact that the increase in the amount of debt raises the costs associated with its fulfillment resulting in a decline in the financial performance of the firm. Additionally, as discussed by Berger and Patti [15] high leverage should have a negative influence on performance as a corollary of the agency cost hypothesis. This is also emphasized in the study of Kim and Lee [21] in that the investment decisions of a

firm with high leverage can be inefficient leading to a decrease in value, which is confirmatory with agency theory. Previous works by Chhibber and Majumdar [62], Majumdar and Datta [63], Barbosa and Louri [64], Perini et al. [65], Kapopoulos and Lazaretou [66] signal a significant and negative relationship between the level of debt and firm performance.

Prior year performance is found to improve the coming year's performance as can be seen by the positive and significant coefficient of the variable $LEBITDA/TA$ (z -value = 44.76, $p < 0.01$). This finding is in line with that of Kordestani et al. [56]; whereby, they hypothesize that financial performance of prior years positively influence the financial performance of the current year.

The findings of the second model with respect to the explanatory variable FCF/TA , which demonstrate an insignificant coefficient, are found to be contrary to the expectation that agency costs measured by the ratio of free cash flows to total assets deteriorate firms' financial performance. Another study that also reveals insignificant findings on the link between the measure of free cash flows and firm performance is that of Pouraghajan et al. [19]. Similar contradictory findings have been found by Wang [13] with the positive and significant influence of free cash flows on firms' operating performance, measured by ROA and ROE, indicating no evidence of the free cash flow hypothesis. Contrarily, Henry [5] states greater retention of free cash flows within the firm to be an indicator of potential agency problems. However, the results documented in the second model are not supportive of the free cash flow hypothesis and the general framework of agency theory since the theoretical background emphasizes that a surplus of free cash flows in absence of profitable investment opportunities leads to inefficient use of resources with management increasing perquisite consumption. Thus, the findings with respect to our second model may arise due to the fact that this variable may not be acting as a proper proxy for the selected sample during the specific period analysed. Accordingly, further analysis with respect to free cash flows is conducted in the fourth model; whereby, an interaction variable related to available investment opportunities - as explained in detail in the subsection related to explanatory variables - is utilized.

The explanatory variables utilized in the first two models are stated to be direct proxies of agency costs meaning that as the level of these determinants in the firms increase, agency costs incurred within the firm are supposed to increase. Accordingly, a negative relationship is expected between the selected proxies of agency costs and financial performance within the framework of agency theory. While the findings with respect to the first proxy denoted by $OPEXR$ are confirmatory with this notion, those with respect to the second proxy denoted by FCT/TA are contradictory with the result being not supportive of the free cash flow hypothesis. When the results of the third model that utilizes the indirect measure of agency costs which is labeled by $ASSTUT$ are evaluated, it is seen that firms that use their assets in an efficient manner rank low in terms of agency costs and improve their financial performance. This can be noticed by the positive and significant coefficient of the variable $ASSTUT$ (z -value = 6.47, $p < 0.01$). Thus, in line with the first model, the third model also provides evidence for the re-

jection of null hypothesis in that equity related agency costs are found to deteriorate financial performance. This finding is in line with those of Wang [62] in the model that investigates the influence of free cash flows and other proxies of agency costs on the operating performance of the firm. The significant and positive coefficient of asset utilization ratio documented in this study demonstrates that reduction in agency costs improve the operating performance of the firm as measured by ROE and ROA. This is notion also supported by Henry [5] in that firms that rank low in terms of this ratio are found to create agency costs for shareholders as they make non-optimal investment decisions or use funds to acquire unproductive assets. Confirmatory findings are also revealed in the study of Pouraghajan et al. [19] whereby they demonstrate the positive and significant influence of asset utilization ratio on ROA and ROE as indicators of firm performance.

The findings of the fourth model show the negative but insignificant coefficient of the interaction variable that is utilized as the explanatory variable taking into account the amount of free cash flows in the case of low growth opportunities. This result is also contrary to our expectations and prior literature emphasizing the increase in the agency costs encountered in the firm when low growth prospects and high free cash flows are combined [38]. Thus, this model also provides further evidence for the selected measure of free cash flows and accordingly generated interaction variable to be inappropriate proxies for our main variable of interest, namely agency costs. Prior studies such as those of Doukas et al. [36], Doukas et al. [37], and McKnight and Weir [38] have empirically demonstrated that this interaction variable properly acts as a determinant of agency costs in their studies that investigate the link between agency costs and certain firm characteristics.

VI. CONCLUDING REMARKS

This study attempts to provide additional insight onto the discussions related to principle-agent literature. The dimension that is specifically evaluated adheres to the measurement of the costs arising due to the separation of ownership and management and resulting self-serving behaviors of the agent, who are the managers, and finding out the influence of these costs on firms' financial performance. Accordingly, the hypothesis of the study is mainly based on agency theory and associated free cash flow theory.

The empirical part of the study employs panel data analysis on a dataset of 132 public firms listed on the major stock exchanges of BRIC countries during the twelve year period between 2003 and 2014, inclusive. Four different models have been constructed with each utilizing a different proxy for agency costs of equity. Whereas two of these proxies can be classified as direct measures of agency costs; namely, operating expense ratio and free cash flow ratio; one of them is classified to be an indirect measure, which is the asset utilization ratio. The remaining proxy is an interaction variable that accounts for the presence of free cash flows in the case

of low growth opportunities. The dependent variable of all models is chosen to be the ratio of EBITDA to total assets as this measure is free from the effects of financing and accounting decisions together with differences in tax rates.

The findings of the first and third models are confirmatory with our expectations in that the selected variables quantifying agency costs are found to be significantly related with our financial performance proxy. Whereas the first model incorporates a direct measure; the third model utilizes an indirect measure; namely, operating expense ratio and asset utilization ratio. Therefore, it is expected and meaningful to observe a negative and positive significant relationship with the dependent variable, respectively. It would be appropriate to state that high levels of discretionary spending by management and inefficient use of corporate assets are detrimental to the firms' owners as documented by these two models. Accordingly, the presence of equity related agency costs are documented to deteriorate firm performance as suggested by the agency cost theory.

As emphasized by McKnight and Weir [38], the ability of the capital market to oversee managerial decisions is reduced when cash flows are retained by the firm. Accordingly, the existence of large free cash flows are assumed to be associated with greater managerial discretion and higher agency costs. However, the findings with respect to FCT/TA in the second model are found to be contradictory to the free cash flow hypothesis and general framework of agency theory. Such conflicting results are also revealed by Wang [13]; whereby, two significant but contrary viewpoints are emphasized. The first one is related to managerial incentives with higher amount of free cash flows resulting in managerial perquisite consumption and shirking. However, the second viewpoint stresses that free cash flows are generated due to management's operating efficiency that may lead to an inverse relationship between free cash flows and agency costs. Confirmatory with the findings of the second model but contrary to free cash flow theory and our expectations, the fourth model also provides insignificant results as to the presence of free cash flows when there are low growth opportunities. As the other proxies utilized have documented results confirming agency theory, it would be appropriate to comment that utilization of proxies related with free cash flows is not suitable for our dataset during the selected observation period.

Having found evidence of the negative influence of equity related agency costs on the financial performance of our sample firms, further studies could be performed to identify the determinants of agency costs. If mechanisms that would mitigate these costs could be found and applied in the firms operating in the BRIC countries, financial performance would improve which would add to their already high growth potential. Adopting stronger corporate governance mechanisms, changes in ownership structure, and organizational form could add to the alignment of the interests of managers and shareholders [10]; [38]; [45]. Changes in capital structure and large shareholdings by institutions could also be evaluated [67]. The impact of other additional mechanisms such as analyst monitoring could also be examined in restricting

agency costs within the BRIC countries' setting in line with the work of [36] and [37]. Additional studies can further be conducted by altering data classification such as extending the work on the basis of industrial breakdown. This study could also be extended to analyze the influence of agency costs on stock market performance or firm value.

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