**Corporate Governance, Working Capital Management, and Firm Performance: Some New Insights from Agency Theory**

Muhammad Azeem Naz, PhD Scholar

*Lahore Business School*

 *The University of Lahore, 1-km Raiwind Road off Defence Raod, Lahore*

 *Punjab, Pakistan*

Rizwan Ali, PhD

Assistant Professor of Finance

*Lahore Business School*

*The University of Lahore, 1-km Raiwind Road off Defence Raod, Lahore*

*Punjab, Pakistan*

Ramiz Ur Rehman, PhD

Associate Professor of Finance

*Lahore Business School*

 *The University of Lahore, 1-km Raiwind Road off Defence Raod, Lahore*

*Punjab, Pakistan*

Collins G. Ntim

Professor of Accounting

Centre for Research in Accounting, Accountability and Governance

Department of Accounting

Southampton Business School

University of Southampton

Southampton, UK

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**Abstract**

The role of corporate governance in performance of firms has been widely discussed in the extant literature. In contrast to examining direct relationships, this study investigates the mediating role of working capital management within these connections. Employing a large sample of non-financial firms listed on Pakistan Stock Exchange from 2009-2018, findings suggest that a corporate governance quality index and efficiency of working capital management are positively related to firm performance. Additionally, the results indicate that working capital management partially mediates the relationship between corporate governance and firm performance. These findings extend existing literature by offering new empirical and theoretical insights.

***Keywords*:** Corporate Governance; Working capital management; Firm performance; Emerging markets; Pakistan

1. **Introduction**

Working capital management (WCM) is considered to be one of the of the three core areas of corporate finance (Danso et al., 2021). The other the two – capital structure and capital budgeting – are associated with the management and financing of investments over a long-term period (Ali et al., 2021). WCM is a significant part in corporate finance, which deals with short-term management of financing and investment decisions made by firms. Managing working capital (WC) is to deal with glitches, which arise when endeavoring to manage current assets and liabilities, and the possible interrelationships among them ([Smith & Gallinger, 1988](#_ENREF_89)).

Management of current assets and liabilities is indispensable owing to the vibrant role which WCM do in shaping profitability, market value and risk level of corporations ([Smith, 1980](#_ENREF_88)). There is a direct effect, of how organizations manage their WC, on the tradeoff between profitability and liquidity ([Shin & Soenen, 1998](#_ENREF_83)). To ensure that an organization can meet its short term commitments, liquidity is a prerequisite ([Abuzayed, 2012](#_ENREF_2)). However, if a firm decides to focus only liquidity, then, profitability of the organization can be compromised ([Smith, 1980](#_ENREF_88)). Therefore, finance managers in organizations need to resolve this riddle by maintaining their components of WC at an optimal level ([Nazir & Afza, 2009](#_ENREF_65)).

Performance of a business is dependent upon many financial decisions taken by financial managers in firms ([Aras & Yildirim, 2018](#_ENREF_10)). Corporate boards and their CEOs are liable for framing guidelines for the level of working capital balances and all other strategies in corporations. Consequently, size of corporate boards, independence of boards, frequency of board meetings and dual role of CEO play a key role in business and might result in high cash balances; more amounts of receivables; high volume of trade payables; and a quick cash conversion cycle. Policies to manage WC which are inefficient, prompted by weak corporate governance, have unfavorable influence on corporate owners’ wealth. WC policy adopted by a firm in which firms are maintaining high balance of working capital accounts depict risk averse behavior of management, which may give rise to agency issues, as directors and the CEO might keep balances at that level, which may not maximise the wealth of owners of a corporation ([Gill & Shah, 2012](#_ENREF_34)). Thus, a strong corporate governance mechanism can serve as a check on the handling firms’ resources.

An organization, that is not managing working capital efficiently, prompted by weak or poor corporate governance, will be in need of more resources to manage every day activities of the organization in comparison with peer organizations of the same level and hence, may face adverse financial problems. Moreover, because of cash crisis, an organization may sacrifice future investment opportunities that can create value and might be unable to recompense their investors satisfactorily. Hence, it can be stated that an efficient governance mechanism of an organization might lead to efficient management of its WC, which ultimately stimulate businesses to produce better financial results.

Although the impact of CG on performance of firms has been explored widely in the extant literature, the present study seeks to provide new insights by engaging in a complex modelling of the relationship in comparison with past studies. In particular, the current study focuses on examining the mediating impact of WCM on the CG and firms’ performance link. More specifically, the objective of this study is to assess the influence of CG (represented by a composite CG Index) on WC efficiency (represented by widely used measure of cash conversion cycle, cash conversion efficiency and current ratio), and the influence of efficient/inefficient management of WC on firm performance, measured through return on assets (ROA) and return on equity (ROE).

For the stated objective, relevant data is gathered for a period of 2009-2018 for the listed firms from the non-financial sector of Pakistan. The sample data is in a panel setting comprising of 179 firms with 1,790 firm-year observations. Pakistan is considered to be an appropriate setting to examine the mediating role of WCM on the CG–Firm Performance link for many reasons: Morgan Stanley Capital International (MSCI) has included Pakistan into the emerging market index and Pakistani Market has demonstrated a consistent growth in the index since then. A New York-based global financial markets research firm (marketcurrentswealthnet.com) in its report titled “Denmark and Pakistan: the surprising stock markets that outperformed in 2020”, has declared Pakistan Stock Exchange (PSX) as the best performer in Asia in 2020 and 4th best performing stock market in the world. Bloomberg has also endorsed the mentioned standing of Pakistan Stock Exchange, hence PSX is considered one of the key emergent capital markets of Asia, attracting ever-growing global investments in the past years. Moreover, emerging economies (such as Pakistan) are considered to be distinct than that of developed world in the context of regulatory framework, institutionalization and legal background ([Dittus & Prowse, 1995](#_ENREF_23)). Similarly, governance mechanism of corporations and CG practices adopted by firms in Pakistan, a developing economy, are also different from those developed markets, which have often been extensively studied, and limited opportunities to offer new insights compared with Pakistan. Arguably, these make Pakistan an appropriate case for this study. This study finds that organizations which manage their WC productively are more likely to be employing their surplus funds more efficiently, and hence such organizations are more likely to be able to generate better returns on assets (ROA) and higher returns on equity (ROE).

The structure of the paper is detailed as follows. The review of the past literature will be done in section 2. Discussions on the development of the hypotheses relating to the interrelationships among CG, WCM and firm performance is presented in section 2. The research methodology, data collection technique and sample of the study is discussed in section 3. The findings are reported in section 4, whilst Section 5 offers conclusion of the study, as well as outlines its limitations and recommendations.

1. **Literature Review**

The term “corporate governance” (CG) is frequently used to define the role that those managers play in satisfying their pledged commitments. The fundamental opinion believed by proponents of agency theory is that in any particular situation, financial managers might not perform to maximize wealth of shareholders, until a suitable governance mechanism is deployed to guard the interests of owners ([Davis, Schoorman, & Donaldson, 1997](#_ENREF_20); [Jensen & Meckling, 1976](#_ENREF_46); [Shleifer & Vishny, 1997](#_ENREF_86)). Governance structures assist to align the interests of both principals and agents, and by this way, governance structures can control the opportunistic behvaiour of agents ([Jensen & Meckling, 1976](#_ENREF_46); Li et al., 2021). Working capital is one of the tools through which financial health of a corporation can be assessed and working capital is directly associated with liquidity and profitability ([Sagner, 2014](#_ENREF_76)). WCM is essential and fundamental component of financial management of corporations and short run performance ([Talonpoika, Kärri, Pirttilä, & Monto, 2016](#_ENREF_91)). Working Capital of the firms is comprised of current assets (primarily inventories, receivables and cash) fewer current liabilities (mainly payable & short-term debts). Governance mechanism of the corporation is having its dominant role in managing working capital efficiently by making sound policies, as board of directors’ frames policies for the organization, including working capital management policy (Boateng et al., 2021). Independence of corporate boards duality of CEO and frequency of board meetings are considered to among the most essential constituents of any good corporate governance system ([Arora & Sharma, 2016](#_ENREF_11)).

## **2.1 Corporate Governance and Firm Performance**

Composition of the board is considered to be one of the corporate governance attributes that ensure the existence of appropriate balance of power on the board, for the reason that the dominance of an individual or a group of individuals in the board decision making process can be avoided (Zalata et al., 2021). Boards are considered to be effective and independent, when most of the directors on boards are outside independent directors, when outside independent directors do not share major family relationships, professional services, financial relationships, employment and interlocked directorships with the management team ([Ayuso & Argandoña, 2009](#_ENREF_12); [Shivdasani & Zenner, 2004](#_ENREF_85)).

Outside directors usually referred to as non-executive or independent directors are commonly considered as experts, can play their role in the success of the firms as they will bring their experience, knowledge and expertise onto the board, thereby improving governance outcomes ([Haniffa & Cooke, 2002](#_ENREF_37)). Moreover, levels of voluntary disclosures are increased due to the presence of larger number of outside directors on boards ([Barako, Hancock, & Izan, 2006](#_ENREF_14); [Cheng & Courtenay, 2006](#_ENREF_17)). Further to this, the empirical findings of [Arora and Sharma (2016)](#_ENREF_11) based upon a large sample of companies encompassing 20 important Indian industrial sectors concluded that larger boards with most of the independent directors are linked with better intellectual knowledge and this ultimately assist in achieving improved decision making and performance. In a study carried out by [Im and Chung (2017)](#_ENREF_42) to evaluate the effect of corporate governance characteristics on corporations’ performance it was found that independence of board nurtures long term value of firms. A research to evaluate the impact of independent directors on companies’ performance carried out by [Uribe-Bohorquez, Martínez-Ferrero, and García-Sánchez (2018)](#_ENREF_94) concluded that independence of board and performance of corporations is positively related to each other.

 [Thenmozhi and Sasidharan (2020)](#_ENREF_93) found that board independence enhances firm performance and minimization of agency conflicts and ensuring the protection of minority shareholders’ interests can be done by having more independent directors on boards, act as effective monitors of performance. [Pucheta-Martínez and Gallego-Álvarez (2020)](#_ENREF_72) in their study found that firm value tends to rise with the increased presence of outside directors on the board, which is in line with the propositions of resources dependence and agency theories. Board independence and other corporate board attributes positively impact firm performance ([Prashar & Gupta, 2020](#_ENREF_71)). Study conducted by [Kyere and Ausloos (2021)](#_ENREF_51) concluded that board independence have a positive influence on financial performance of corporations.

Duality of CEO denotes the situation, where CEO is also the chairperson of the board CEO ([Rechner & Dalton, 1991](#_ENREF_75)). According to the agency theory, duality of chair impedes both accountability and transparency and also nurtures behavioral dominance, thereby negatively impacting corporations’ growth and performance ([Finkelstein & D'aveni, 1994](#_ENREF_30)). Duality of chair can lead to lesser check and balance, and thereby creating a temptation for the CEO to undermine the interests of shareholders and pursue his/her self-interests ([Alvarez and Svejenova (2005)](#_ENREF_9). Findings of the study of [Iskander and Chamlou (2000)](#_ENREF_43) noted that amalgamating the two roles will can in moral hazards. Moreover, if the chairperson is also the CEO, then, real conflict might emerge when he/she casts his/her tie-breaking vote. A study carried out by [Duru, Iyengar, and Zampelli (2016)](#_ENREF_24) analyzed US firms through generalized method of moments and found that duality of chair hampers firm performance.

Board members exercise their supervisory role, which is expected of them in board meetings ([Ntim, 2009](#_ENREF_67)). It is stated by [Lipton and Lorsch (1992)](#_ENREF_56) that the frequency of board meetings affects the effectiveness of a board. According to [Vafeas (1999)](#_ENREF_95) and [Conger (1998)](#_ENREF_19) decisions of taken at board meetings are helpful in curtailing the conflict of interests, and thus performance maximizing goal for principals can be achieved through increased frequency of board meetings ([Ntim & Osei, 2011](#_ENREF_68)).

To improve the polices opted by the management at present in organizations and to enhance the executives’ performance, frequency of board meetings has its important role ([Vafeas, 1999](#_ENREF_95)). Since outside directors are not much involved in routine operations of the corporations, and have scarcity of time to inquire about important issues and questions from the executives of the company, thus agency cost is increased due to the limited monitoring role of such directors. According to [Lipton and Lorsch (1992)](#_ENREF_56) and [Jensen (1993)](#_ENREF_45) fewer meetings is the principal reason why outside directors are not able to discuss the core issues that need more attention of board members. The study carried out by [Harymawan, Nasih and Nowland (2020](#_ENREF_38)) asserted meetings of the board positively affect the corporations’ performance and more frequent meetings are also an indicator of the effort being put in by the managerial team, thus those firms which hold frequent meetings perform better than that of their peers. Financial performance of corporations found to have positive relation with frequency of board meetings ([Dato, Hudon, and Mersland, 2020)](#_ENREF_40). [Mishra, Jain, and Manogna (2021)](#_ENREF_60) conducted a study to evaluate the impact of CG characteristics on Indian firms’ performance by formulating a CG index of various CG attributes and concluded that CG index has a strong and positive relationship with performance indicators of corporations. Furthermore, [Nasrallah and El Khoury (2021)](#_ENREF_64) carried out a study to evaluate the impact of CG on financial performance of SMEs and postulated that effective CG produces better financial results.

Based upon the prior literature on the role that corporate governance attributes play in augmenting performance of firms, the present study formulates hypothesis below to evaluate the relationship between CG and firm performance:

**Hypothesis 1:** *There is a positive relation between corporate governance and firm performance.*

* 1. **Corporate Governance and Working Capital Management**

Corporate Governance suggests the ways by which opportunistic behaviour can be controlled and one such system is the board of directors in corporates and its features for example size of the board, CEO’s dual role, fraction of independent directors on board ([Huse, 2007](#_ENREF_41); Fosu et al., 2021). The policy to maintain high balances of working capital accounts may reflect the risk averse attitude of management and may lead to the agency problem as the CEO and board may make polices to maintain such working capital balances which may not maximize shareholders’ wealth ([Gill & Shah, 2012](#_ENREF_34)). Effective corporate governance leads to the effective management of financial resources, whereas weak corporate decisions concerning working capital can badly influence firms’ cash flows and may also aggravate agency problems. Thus, a strong governance mechanism will serve as a check on the managing resources of firms.

[Claessens, Djankov, Fan, and Lang (2002)](#_ENREF_18) postulated that superior corporate structures offer advantage to companies by offering access to finance easy, reducing cost of funds, improving performance and adding value to every stakeholder. CG systems in a corporation, if effective, can guarantee that the resources of the firm are well managed and can generate better financial results in the form of improved profitability ([Kowalewski, 2016](#_ENREF_50); [S. Mishra & Mohanty, 2014](#_ENREF_61); [Shank, Hill, & Stang, 2013](#_ENREF_81)), minimized equity cost ([Teti, Dell’Acqua, Etro, & Resmini, 2016](#_ENREF_92)), improved dividend disbursement ratio ([Abor & Fiador, 2013](#_ENREF_1); [Shamsabadi, Min, & Chung, 2016](#_ENREF_80)), minimizes the stock return’s volatility ([Koerniadi, Krishnamurti, & Tourani-Rad, 2014](#_ENREF_49)), value-added decision making ([Arora & Sharma, 2016](#_ENREF_11)) and favorable analysts’ endorsements for organizations ([Yu, 2011](#_ENREF_98)). Trade-offs among profitability and liquidity of corporations is directly affected by the ways in which organizations manage their working capital ([Shin & Soenen, 1998](#_ENREF_83)). Therefore, if governance mechanism of the organizations is effectual in managing its WC, then better financial results are expected. [Prasad, Narayanasamy, Paul, Chattopadhyay, and Saravanan (2019 )](#_ENREF_70) asserted that, it is the managerial efficiency that will lead to improve WCM as it is an important area of firms’ financial management.

 [Gill and Biger (2013)](#_ENREF_35) postulated that, to run the operations of the organizations smoothly, adequate liquidity is a prerequisite and it is the responsibility of the members of the board to make such polices that will ensure the same. Henceforth, board has a dominant role in decision making relevant to working capital assets. [Zariyawati, Annuar, Taufiq, and Rahim (2009)](#_ENREF_99) postulated that boards with more independence will have more stringent monitoring mechanism in place and the same will result in more efficient working capital management and lower cash conversion cycles. Study conducted by [Gill and Biger (2013)](#_ENREF_35) on 180 production concerns listed on NYSE to examine the interrelationship among CG and the efficiency of WC management. Findings shown, an important role which CG performs in refining efficiency in managing WC. A study of [Jamalinesari and Soheili (2015)](#_ENREF_44) on 115 corporates registered on Tehran Stock Exchange found important role of corporate governance systems that they play to refine efficiency of WC of organizations. The study carried out by [Fiador (2016)](#_ENREF_29) on nonfinancial corporates of Ghanaian Stock Exchange to determine the significance of CG in the pursuit to achieve managerial efficiency in working capital and found an adverse influence of firms’ governance practices on cash conversion cycle (CCC) of corporates.

Attributes of board of directors are vital in explaining effectiveness of management of WC and it seems to be that it is the better governance practices due to which efficiency in management of working capital is arrived at. Coleman et al. (2020) postulated that governance attributes, such as board size and duality have substantial impact on working capital management. Study performed by [Gill and Mathur (2011)](#_ENREF_33) on corporations of Canada to evaluate the relationship among CG characteristics for example size of the board, CEO duality and net working capital. Conclusions drawn from the study showed adverse effect of board size and duality on net working capital of companies. [Prasad et al. (2019 )](#_ENREF_70) postulated that it is the managerial efficiency through which working capital be managed efficiently. It was highlighted by them that poor management of working capital (non-cash) will result in more blockage of funds.

Since, policies linked to management of organizational affairs, including working capital polices are made by corporate boards, it can hypothesize that CG impacts the WC efficiency and based upon former investigations on the topic, the following hypothesis is framed in this study to evaluate this relationship.

**Hypothesis 2:** *There is a positive relation between corporate governance and working capital management*.

* 1. **Working Capital Management and Firm Performance**

 [Jensen and Meckling (1976)](#_ENREF_46) and [Myers and Majluf (1984)](#_ENREF_63) postulated, owing to market imperfections (information asymmetry), outside capital is expensive than internally generated funds, hence the management of working capital to generate internal funds is of prime importance ([Adhikari, Krolikowski, Malm, & Sah, 2019](#_ENREF_3)). Organization that does not manage working efficiently, will be in need of more funds to run its daily operations for similar kind of business activities than that of its peers. Henceforth such firms may confront adverse financial problems, such as organizations may divert funds invested to meet their WC requirements and this cash crunch faced by firm will lead to adverse financial performance and firms may also lose its profitable future investments or may fail to reward its stakeholders sufficiently due to inefficient WCM.

The management working capital is considered to be more crucial since there is a pivotal role of WCM in explaining firms’ profitability, value and risk ([Smith, 1980](#_ENREF_88)). As per the findings of the study carried out by [Ahkam and Alom (2019)](#_ENREF_4) corporations that manage their working capital poorly will remain in trouble in building up reliable and sustainable business activities. The core purpose of an organization is to enhance profitability by maintaining the sound liquidity position. [Shin and Soenen (1998)](#_ENREF_83) stated that WC efficiency is found to have substantial influence on liquidity and profitability of corporations. Numerous researches ([Aktas, Croci, & Petmezas, 2015](#_ENREF_6); [Deloof, 2003](#_ENREF_21); [Garcia‐Teruel & Martínez‐Solano, 2007](#_ENREF_31); [Le, 2019](#_ENREF_53); [Lyngstadaas & Berg, 2016](#_ENREF_57); [Mathuva, 2010](#_ENREF_59); [Shah & Sana, 2005](#_ENREF_78); [Shin & Soenen, 1998](#_ENREF_84); [Wang, 2002](#_ENREF_96); [Wasiuzzaman, 2015](#_ENREF_97)) have scrutinized the influence of management of WC on the on firms’ profitability. Many proxies for WC management have been used by academicians in their empirical work. The proxies for management of WC which are extensively used in the existent researches contain cash conversion cycle ([Alipour, 2011](#_ENREF_8); [Banos-Caballero, García-Teruel, & Martínez-Solano, 2012](#_ENREF_13); [Deloof, 2003](#_ENREF_21); [Enqvist, Graham, & Nikkinen, 2014](#_ENREF_26); [Makori & Jagongo, 2013](#_ENREF_58); [Samiloglu & Demirgunes, 2008](#_ENREF_77)) and current ratio ([Dhole, Mishra, & Pal, 2019](#_ENREF_22); [Eda & Mehmet, 2009](#_ENREF_25); [Shin & Soenen, 1998](#_ENREF_84); [Singh & Pandey, 2008](#_ENREF_87); [Zariyawati et al., 2009](#_ENREF_99))

Profitability of the corporations have been represented in many ways in the past researches, however the return on assets has been extensively utilized proxy of profitability in literature ([Prasad et al., 2019](#_ENREF_70) ). In the meta-analysis performed by [Prasad et al. (2019 )](#_ENREF_70) of highly cited readings in the area of WC, a significant and negative relation amongst firms’ performance and WC has been observed in majority of the researches. In a research carried out by ([Shin & Soenen, 1998](#_ENREF_83)) on American companies, a significant negative impact has been observed among net trade cycle and performance of companies. A study on 1009 Belgian corporations for a period from 1992 to 1996 conducted by [Deloof (2003)](#_ENREF_21) observed the inverse relation among CCC and profitability. In the examination of association among CCC and firm performance a study was carried out by [Lazaridis and Tryfonidis (2006)](#_ENREF_52) on the data of corporations registered in Athens Stock Exchange. They observed an inverse and significant relationship among the variables of the study. The negative association has also been reinforced by numerous other researches for example [Padachi (2006)](#_ENREF_69) constructed on small industrial corporations of Mauritius, [Raheman and Nasr (2007)](#_ENREF_74) grounded on 94 companies of Pakistan, [Charitou, Elfani, and Lois (2010)](#_ENREF_16) built on 43 companies registered on Stock Exchange of Cyprus, [Enqvist et al. (2014)](#_ENREF_26) founded on the data of registered corporations of Finland. [Le (2019)](#_ENREF_53) postulated that WC investments or CCC is negatively related with performance of corporates both for market and accounting based performance measures and it is noted that an optimal level of working capital will trade off the risk and profitability.

[Farhan, Belhaj, Al-ahdal, and Almaqtari (2021)](#_ENREF_27) evaluated the impact of WCM on financial performance of firms and concluded that effective management of working capital by minimizing the CCC has a positive impact on firms’ financial performance, using both accounting based and market-based measures. Study conducted by [Lin and Wang (2021)](#_ENREF_55) on the WCM and corporate performance by using CCC as the measure of WCM concluded better working capital management positively associated with corporations’ performance. The study conducted by [Kayani, De Silva, and Gan (2021)](#_ENREF_48) to evaluate the impact of CG and WCM on performance of firms ended up with findings that CG and WCM both affect firm performance positively.

Though in the extant literature, the inverse interrelationship among WC and profitability is dominant outcome, however, some of the past researches depart from this dominant outcome. A study of 88 American carried out by [Gill, Biger, and Mathur (2010)](#_ENREF_32) has concluded a direct association among WC and profitability/performance. Results of the research carried out by [Sharma and Kumar (2011)](#_ENREF_82) have deviated too from the results of numerous past researches and detected a direct interrelationship among profitability and WC management of corporations in India. Few other researchers have also observed a direct interrelationship among performance and cash conversion cycle, for example [Abuzayed (2012)](#_ENREF_2) and [Akoto, Awunyo-Vitor, and Angmor (2013)](#_ENREF_5).

As the corporate performance increases by managing working capital efficiently, consequently it can be hypothesized that companies which manage working capital in efficient manner maximizes their performance:

**Hypothesis 3:** *There is a positive relation between working capital management and firm performance.*

* 1. **Corporate Governance and Firm Performance – The Mediation Role of Working Capital****Management**

Weak business decisions concerning working capital will lead to adverse impact on firms’ cash flows and aggravate the agency issues and an efficient governance structure lay down the foundations for better financial decisions, accordingly a strong governance structure will serve as a check on managing resources of firms. A question here arises that how monitoring structure of organization supports in making policy for working capital of firms. To answer this question one should understand that it is the board which is responsible for framing all the policies in the organization including policies for level of working capital balances. ([Aras & Yildirim, 2018](#_ENREF_10)) postulated that organizational performance either market value or profitability is a result of many financial decisions taken by firms. There is a direct effect of the way in which working capital is managed by a firm on the tradeoff between profitability and liquidity of firms ([Shin & Soenen, 1998](#_ENREF_83)).

Smooth operations of the businesses is an outcome of proper liquidity and to make such policies comes under the ambit of management team and corporate boards ([Gill and Biger (2013)](#_ENREF_35) According to [Jamalinesari and Soheili (2015)](#_ENREF_44), a dominant role of governance practices is observed in enhancing the efficiency of working capital of firms. [Healy and Palepu (2001)](#_ENREF_39) postulated the same findings too and suggested that better CG practices improves the efficiency in managing the WC which consequently lessens agency issues, agency costs and improves performance. Henceforth, it can be stated that if governance mechanism is efficient to manage WC, then better financial results can be attained. The discussion in the extant literature has highlighted that a good governance system improves the efficiency in managing the working capital and efficient management of WC improves the firm performance, thus efficient management of working capital can play a mediating role between the CG and firm performance. The study conducted by [Shahid, Abbas, Latif, Attique, and Khalid (2020)](#_ENREF_79) on sugar and food industry of Pakistan, concluded that WCM mediates the association among CG characteristics and firm performance.

As the literature has highlighted that the firms that are governed efficiently generate better corporate profits and firms that manage their working capital efficiently are the ones that reflect better result in terms of profitability. Since the decisions related to working capital level are made by the corporate boards, therefore it can by hypothesized that the firms better corporate governance leads to better working capital decisions and hence generate more firm performance:

**Hypothesis 4:** *Working capital management mediates the relationship between corporate governance and firm performance.*

1. **Methodology**

**3.1 Data and Sample**

To carry out the present study data of the companies listed/registered on Pakistan Stock Exchange (PSX) have been collected for a period of ten years from 2009 to 2018. The motivation behind selection of listed/registered companies is the trustworthiness of data. Data of all companies listed/registered on PSX was recovered from their published annual reports at the beginning. Firms for whom data was not available for the whole study period were dropped. By following many prior researches only manufacturing companies were taken and financial firms have been dropped from the sample, because of the reason that their financial reporting requirements are expressively vary from nonfinancial firms and this dissimilarity can make the comparison problematic ([Aktas et al., 2015](#_ENREF_6); Shahab et al., 2021). A total of 535 companies were listed in PSX in year 2020. 125 companies related to financial sector (banks, insurance companies, etc.) were excluded, the reason being that the financial sector has significantly different operating norms as compared to non-financial sector. Further 231 companies were excluded from the final sample due to non-availability of complete information for the study period. The final sample of the study is comprised of 179 firms for ten years and a sum of 1,790 firm year observations.

**[Insert Table 1 here]**

**3.2 Variables and Measurements**

Return on Equity (ROE) and (ROA) are taken as measures of firms’ performance as outcome variables as used by [Banos-Caballero et al. (2012)](#_ENREF_13), ([Akoto et al. (2013)](#_ENREF_5)), [Deloof (2003)](#_ENREF_21), [Garcia‐Teruel and Martínez‐Solano (2007)](#_ENREF_31) and [Lefebvre (2020)](#_ENREF_54). Following [Deloof (2003)](#_ENREF_21) and [Lazaridis and Tryfonidis (2006)](#_ENREF_52), this study has taken Cash Conversion Cycle (CCC) to embody the efficiency of working capital. CCC has been derived by using the adding the inventory holding period (DINV) and receivables collection period (DREC) and subtracting the payables payment period from it (DPAY). For the robustness the other measure for working capital management efficiency are also adopted in this study such as cash flow efficiency is measured by following the [Moussa (2019)](#_ENREF_62) and current ratio is used by following the [Dhole et al. (2019)](#_ENREF_22) and [Zariyawati et al. (2009)](#_ENREF_99).

The main focus of proponents of agency theory was on managerial incentive issues which are prompted by separation of ownership and control ([Jensen & Meckling, 1976](#_ENREF_46)). The basic assumption of the theory was that managers are opportunistic agents who focus on maximizing their wellbeing at the cost of shareholders. Managers may take such decisions about investment in working capital where the interest of owners may be compromised. Maintaining high balances in working capital may be due to the risk averse behavior of management and by maintaining such balances the wealth of shareholders may be compromised ([Gill & Shah, 2012](#_ENREF_34)). Thus, a strong corporate governance mechanism will serve as a check on the managing the resources of firms. As board is responsible for framing all the policies in the organization including policies for level of working capital balances, hence effectiveness of board leads to the effective corporate governance. Thus, the board with less independence, having fewer board meetings and boards with dual role of CEO hint poor corporate governance.

Hence, effectiveness of corporate governance is measured with the help of CG index which following ([Fernando, Li, & Hou, 2020](#_ENREF_28)). CG Index is constructed based upon the score assigned to each of the attributes of CG which are board meetings, independence of board and duality of chair. If annual board meetings are more than four then a score of 1 is assigned, and otherwise 0. As per the requirement of code of corporate governance in Pakistan it is required to hold minimum four meetings. If independent directors are more than 2 then a score of 1 is assigned and otherwise 0.

It is mandatory in the code of corporate governance (CCG 2019) that each listed company shall have at least two or one third members of the Board, whichever is higher, as independent directors. If CEO and chairman of the board are separate then a score of 1 is being assigned and otherwise 0. The code of corporate governance has encouraged the separation of dual role.

The approach presented by [Baron and Kenny (1986)](#_ENREF_15) is used to evaluate the mediating role of WCM between CG–Performance link and these results were additionally confirmed using Sobel Test [Sobel (1986)](#_ENREF_90). According to the approach proposed by [Baron and Kenny (1986)](#_ENREF_15), three regressions have been formulated to investigate the mediating role of a variable: relationship between dependent (Firm performance) and independent variables (CG) is tested in first regression; in the second regression the relationship among independent variable (CG) and proposed mediator (WCM) is explored and in the third regression relationship among independent variable (CG) and mediator variable (WCM) with dependent variable (Firm Performance) is evaluated. The magnitude and statistical significance of the coefficients of CG is examined in all three steps to confirm the mediation role of WCM on CG-Performance link and magnitude of mediation effect is further assessed through Sobel test [Sobel (1986)](#_ENREF_90) with these models.

While exploring the relationship between performance and CCC or individual elements of WC, other variables that may impact should be controlled. The ratio debt to assets (LEV) as used by [Shin and Soenen (1998)](#_ENREF_83), and yearly sales growth (GROW) are taken as control variables in the present study. Since maturation of the firm also effect the performance, hence age of firm is also taken as control variable. Table 2 defines and state how each variable is measured.

**[Insert Table 2 here]**

**3.3 *Model Specifications***

In this research, the models are measured with the industry fixed-effects. Industry fixed-effects is estimated to control for time-specific and industry-specific factors that might impact firm performance. Thus, to examine the mediating effect of working capital management on the relation between corporate governance and firm performance, the following models are formulated:

*Model 1: CG Index and firm performance*

To test the influence of CG Index on the firm performance Model (1) is established as follow:

$\sum\_{i=1}^{2}FP\_{i,t}=a\_{0}+\sum\_{i=1}^{3}β\_{i}CG Index\_{i,t}+\sum\_{j=1}^{3}β\_{i} Controls\_{j,t}+ \sum\_{k=1}^{n}β\_{k}Industrydummy\_{k,t}+ \sum\_{m=1}^{p}β\_{m}Yeardummy\_{m,t}+ϵ\_{i,t}$ (1)

where $a$ represents intercept of the model which reflects the constant value of the model; $β$ represents coefficient of respective independent and control variable;$\sum\_{i=1}^{2}FP\_{i,t}$ represents two firm performance measures, namely *ROA and ROE*; $\sum\_{i=1}^{3}β\_{i}CG Index\_{i,t}$ represents three corporate governance measures namely board independence, board annual meetings, and CEO duality; $\sum\_{j=1}^{3}β\_{i} Controls\_{j,t}$ represents control variable, namely sale growth, firm leverage, and firm age; $Industrydummy\_{k,t}$ represents industry dummy; $Yeardummy\_{m,t}$ represents year dummy; and $ϵ\_{i,t}$ represents error term.

*Model 2*: *WCM and firm performance*

Model (2) is established to test the influence of WCM on firm performance, replacing CG Index in the model (1).

$\sum\_{i=1}^{2}FP\_{i,t}=a\_{0}+\sum\_{i=1}^{3}β\_{i}WCM\_{i,t}+\sum\_{j=1}^{3}β\_{i} Controls\_{j,t}+ \sum\_{k=1}^{n}β\_{k}Industrydummy\_{k,t}+ \sum\_{m=1}^{p}β\_{m}Yeardummy\_{m,t}+ϵ\_{i,t}$ (2)

Where $WCM\_{i,t}$ represents working capital management of firm *i* at time *t*, namely Cash Conversion Cycle; Cash Conversion Efficiency; Current Ratio. Other notations are the same as in model (1).

*Model 3*: *CG Index and working capital management*

To test the impact of CG Index on the working capital management model (3) is established as follows:

$\sum\_{i=1}^{3}WCM\_{i,t}=a\_{0}+\sum\_{i=1}^{3}β\_{i}CG Index\_{i,t}+\sum\_{j=1}^{3}β\_{j}Controls\_{j,t}+ \sum\_{k=1}^{n}β\_{k}Industrydummy\_{k,t}+ \sum\_{m=1}^{p}β\_{m}Yeardummy\_{m,t}+ϵ\_{i,t}$ (3)

Notations used in the model (3) are so far defined in the model (1) and (2) explanation.

*Model 4: Working capital management as a mediator between corporate governance and firm performance*

By combining model (2) and (3), To test the mediating effect of working capital management on the link between corporate governance and firm performance; working capital management is added in the model (1).

$\sum\_{i=1}^{2}FP\_{i,t}=a\_{0}+\sum\_{i=1}^{3}β\_{i}CG Index\_{i,t}+\sum\_{j=1}^{3}WCM\_{i,t}+\sum\_{k=1}^{3}β\_{i} Controls\_{j,t}+ \sum\_{l=1}^{n}β\_{k}Industrydummy\_{k,t}+\sum\_{m=1}^{p}β\_{m}Yeardummy\_{m,t}+ϵ\_{i,t}$(4)

Where *β*n, where n = *i, j, k,* and *m* represent coefficients of independent, mediating, and control variables respectively. Other notations are explained above.

1. **Empirical Results**

**4.1 Descriptive Statistics**

Descriptive statistics are described in Table 3. CG Index has a mean value of 1.66 and average values of *ROA* and *ROE* are 0.05 and 0.06 respectively. Cash conversion cycle has an average of 65 days and cash conversion efficiency and current ration have the mean values of 0.048 and 1.83 respectively. Average leverage of the firms is 0.61 and growth has a mean value of 0.15. Average firm age in the data sent is 35 years.

**[Insert Table 3 here]**

**4.2 Correlation Matrix**

Correlation matrix is presented in Table 4. Maximum value of correlation among variables does not exceed 0.78. VIF values (un-tabulated) were also computed and revealed the fact that the issue of multicollinearity is not prevalent as proposed by ([Gujarati, 2004](#_ENREF_36)). Hence, no multi-collinearity problem can affect the findings.

**[Insert Table 4 here]**

**4.3 Multivariate Analysis**

Results of regression to test the mediation effect of working capital management measured by Cash Conversion Cycle (CCC), Cash Conversion Efficiency (CCE) and Current Ratio (CR) on the relation among *CG* and firm performance are presented in Table 7.

To test the mediation, effect a three-step regression was applied. First, we regressed firm performance measured by *ROA* and *ROE* on Corporate Governance to test the *H1*. The coefficient of corporate governance index in both of the models (Table 5) for *ROA* and *ROE* is positive and significant at the 1% level (b = 0.01, p < 0.05). These results supported our first hypothesis which narrates that corporate governance has a positive impact on firms’ performance. This result is consistent with those of previous studies [Puni and Anlesinya (2020)](#_ENREF_73), [Mishra et al. (2021)](#_ENREF_60) and [Al-Gamrh, Ismail, Ahsan, and Alquhaif (2020)](#_ENREF_7) supporting agency theory as an effective governance system in the corporations will assist in overcoming the agency problems and thus leads to the better performance.

**[Insert Table 5 here]**

We regressed the working capital management measured through Cash Conversion Cycle (CCC), Cash Conversion Efficiency (CCE) and Current Ratio (CR) on Corporate Governance (CG Index) to test the *H2* in second step. The coefficient of the *CG* Index in model 1 (Table 6) is negative and also highly significant at the 1% level for CCC (b = -7.0073, p < 0.01). This is line with the previous studies such as [Njoku (2017)](#_ENREF_66) and [Kayani, De Silva, and Gan (2019)](#_ENREF_47), as better governance mechanism will lead to better management of working capital thus reducing the cash conversion cycle. In the model 2 the coefficient of the *CG* Index is positive and significant at 5% level for *CCE* (b = -0.6842 and p < 0.01). These results endorse the notion an effective governance system will improves the efficiency in management of working capital. In the Model 3 the coefficient of the *CG* Index is negative and highly significant at 1% level for *CR* (b = 0.0107 and p < 0.05), which is also consistent with the earlier studies [Gill and Biger (2013)](#_ENREF_35) as by adopting a well-functioning governance system the current ratio declines as lessor funds are blocked in current assets and more are invested to generate future returns.

**[Insert Table 6 here]**

We regressed *ROA* & *ROE* on *CG* Index, as well as working Capital management (measured through *CCC, CCE* and *CR*) together to test the *H3* and *H4* in third step, finally. Table 7 states the results of all six models. *CCC* is having a negative coefficient and significant at the 10% level (b = -0.000, p < 0.10) for *ROA* whereas it is insignificant for *ROE*. These results are indicative of mediation role of *WCM* between the interrelationship of *CG* index and *ROA. CCE* is having a positive coefficient and highly significant at the 1% level (b = 0.1728, p < 0.01) for *ROA* and the coefficient of *CCE* is positive and highly significant at the 1% level (b = 0.0135, p < 0.01) for ROE. These results are suggestive of mediating role of *WCM* between the relationship of *CG* Index and *ROE*. The coefficient of *CR* is negative and significant at the 5% level (b = -0.0008, p < 0.05) for *ROA* whereas it is insignificant for *ROE*. The above results are supporting the third and fourth hypothesis. This finding is in line with prior studies such as ([Shahid et al., 2020](#_ENREF_79)).

These results are collectively convincing and indicating based on the Sobal test results that working capital management partially mediates the relation among corporate governance and performance of corporates. Moreover, among the control variables growth and firm age were positively related with performance variables and leverage was found to have a negative relation with performance measures.

**[Insert Table 7 here]**

1. **Conclusion and Implications**

The current study explored the influence of corporate governance on firm performance and encompasses the mediating role of working capital management on the association between *CG* and firm performance by using 1,790 firm year observations, covering a period from 2009 to 2018. Corporate governance has been measured by constructing an index of key attributes i.e., board independence, frequency of board meetings and *CEO* duality, whereas the working capital management is measured through cash conversion cycle, a widely used measure in the literature on working capital management. Besides this, current ratio and cash conversion efficiency ratio was also used in this research to measure the efficiency in managing working capital. Firm performance is measured by *ROA* and *ROE*, the most promising measures of accounting based-performance.

Findings of the study show that *CG* had a significant positive influence on firm performance, which means that by improving board independence, increasing frequency of meetings and separating the duality of the chair can result in a better operational management, which in turn, can improves financial results. Moreover, this study supports the proposition that effective *WCM* sets a step towards firm success and growth as sufficient levels of working capital can allow a firm to expand its operations. Further to establishing the direct association between *CG* and firm performance, this study has contributed to the *CG* literature by theoretically suggesting and empirically showing working capital management mediates the effect of corporate governance on firm performance. This study found that working capital management partially mediates the corporate governance–firm performance link. Hence, current study answers the increasing calls to scrutinize the underlying role of corporate governance mechanisms in this relationship.

This study, to the best of researcher’s knowledge, is a novel, as it offers empirical evidence regarding the mediating effect of working capital management on the relationship between corporate governance and firm performance in the emerging economy context of Pakistan. Like other studies, this study also has some theoretical and practical implications. As the current study employed a CG index by including a number of dimensions of corporate governance, so it can be inferred that CG practices of firms in emerging economies like Pakistan play an effective role in the formulation of policies for the management of working capital, and thus impacting performance of firms. Accordingly, the result of present study can serve a motivation for policy-makers, corporations and their shareholders to focus on ensuring improved governance practices at organizations as the same would result in improved financial performance. This implication also supports the theoretical idea that a good governance system can bring improvement in the operating decisions of businesses including, but not limited to, the emphasis on working capital management.

The results of this study also suggest that management of working capital should be given importance by corporate managers to improve the performance of firms, as better governance will lead to improved management of WC, which in turn result in better performance. Current study also highlighted that carefully formulated working capital policies by financial managers of the organization would keep firms away from the negative consequences of ill management of WC in terms of performance. Findings of the current study are also beneficial for the practitioners in developing WC policies (i.e., policies relevant to credit sales, inventory levels to maintain payments to suppliers in organizations considering the fact that longer holding period of inventory and extended credit period to customers will result in longer cash conversion cycles which negatively affect firm’s financial performance). Investors can also use the findings of this study to assess the role of WCM efficiency in understanding the performance of companies. Moreover, the results of the present study can assist a number of stakeholders (i.e., working capital managers, holders of the debt, investors, financial consultants and others for monitoring firms).

Notwithstanding the significance of the evidence presented in the current study, the following are some of its limitations along with suggestions for future directions that are offered for researchers. Firstly, the current study focused precisely on accounting-based measures for firm performance, and so it is believed that, future research can add value by extending the explorations to take into account diverse metrics of financial performance. Secondly, the findings of current study are based on sample from Pakistani firms. However, since operations and management styles of corporations differ extensively from one country to the other, the results of the present research are only generalizable to markets having similar characteristics. Thirdly, the current study has investigated how the working capital management mediates the relationship between CG and firm performance for full sample, without examining industry-specific effects. As each industry, however, has different characteristics, it is possible that our findings may differ by industry. Hence, we suggest that future research can investigate industry-specific effects among these relationships. Finally, the present study has considered corporate governance as a composite measure by constructing an index, however future research can evaluate the effect of CG by constructing a more comprehensive index of CG attributes and the effect of each attribute can also be evaluated individually.

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**Table 1:** Sample Description

|  |  |
| --- | --- |
| Total Listed Companies at Pakistan Stock Exchange (2020) | 535 |
| Less-Companies related to Financial Sector | (125) |
| Less-Companies have missing information | (231) |
| Final sample  | 179 |
| Total firm year observations | 1,790 |

**Table 2:** Variables Description and Measurement

|  |  |  |  |
| --- | --- | --- | --- |
| Nature | Variable | Symbol | Measure |
| Dependent Variables | Return on Equity | ROE | Percentage of Net Profit to Shareholders’ Equity |
| Return on Assets | ROA | Percentage of Net Profit to Total Assets |
| Independent Variable | Corporate Governance Index | CG INDEX | A composite measure of CG attributes |
| Mediating Variables | Cash Conversion Cycle | CCC | Average Collection Period + Inventory Holding Period – Average Payment Period |
| Cash Conversion Efficiency | CCE | Ratio of Operating Cash Flow to Sales |
| Current Ratio | CR | Current assets to current liabilities |
| Control Variables | Sales growth | SGROW | (Difference between Current & prior year’s Sales)/Prior Year’s Sales |
| Leverage | LEV | Percentage of Total Debts to Total Assets |
| Firm Age | AGE | Age of the Firm |

**Table 3:** Descriptive Statistics

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Variables** | **Obs** | **Mean** | **SD** | **Min** | **Max** |
| CG Index | 1790 | 1.6687 | 0.7219 | 0 | 3 |
| ROA | 1790 | 0.0516 | 0.1269 | -1.5790 | 1.7501 |
| ROE | 1790 | 0.0627 | 0.1318 | -1.2713 | 2.1975 |
| CCC | 1790 | 65.7756 | 66.7332 | -147.8898 | 361.4299 |
| CCE | 1790 | 0.0482 | 0.1587 | -0.7617 | 0.5916 |
| CR | 1790 | 1.8324 | 7.1881 | 0.0009 | 211.6173 |
| Lev | 1790 | 0.6190 | 0.7159 | 0.0008 | 14.8908 |
| Growth | 1790 | 0.1588 | 0.8199 | -1.4591 | 19.6084 |
| F\_Age | 1790 | 35.0826 | 16.1440 | 1 | 105 |

**Table 4:** Pearson Correlation

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **CG Index** | **ROA** | **ROE** | **CCC** | **CCE** | **CR** | **Lev** | **Growth** | **F\_age** |
| CG Index | 1 |  |  |  |  |  |  |  |  |
| ROA | 0.069\*\*\* | 1 |  |  |  |  |  |  |  |
| ROE | 0.067\*\*\* | 0.587\*\*\* | 1 |  |  |  |  |  |  |
| CCC | -0.065\*\*\* | -0.016 | -0.034 | 1 |  |  |  |  |  |
| CCE | 0.063\*\*\* | 0.184\*\*\* | 0.236\*\*\* | -0.191\*\*\* | 1 |  |  |  |  |
| CR | -0.059\*\* | -0.019 | -0.036 | 0.006 | 0.061\*\*\* | 1 |  |  |  |
| Lev | -0.016 | -0.243\*\*\* | -0.237\*\*\* | -0.027 | -0.082\*\*\* | -0.078\*\*\* | 1 |  |  |
| Growth | -0.038 | 0.108\*\*\* | 0.056\*\* | 0.010 | -0.029 | -0.030 | -0.013 | 1 |  |
| F\_Age | 0.163\*\*\* | 0.089\*\*\* | 0.066\*\*\* | 0.065\*\* | 0.042\* | 0.040\* | -0.059\*\* | -0.033 | 1 |

**Table 5:** The Impact of CG Index on Firm Performance

|  |  |  |
| --- | --- | --- |
| **Variables** | **(1)****ROA** | **(2)****ROE** |
| **Coefficient** | **t-statistics** | **Coefficient** | **t-statistics** |
| CG Index | 0.0107\*\*\*- | 2.64 | 0.0111\*\*\* | 2.65 |
| Lev | -0.0412\*\*\*- | -10.15 | -0.0435\*\*\* | -10.40 |
| Growth | 0.0090\*\* | 2.56 | 0.0179\*\*\* | 4.92 |
| F\_Age | 0.003\* | 1.89 | 0.005\*\*\* | 3.08 |
| Constant | 0.0456\*\*\* | 4.78 | 0.0480\*\*\* | 4.88 |
| Industry Effect | Yes |  | Yes |  |
| Year Effect | Yes |  | Yes |  |
| N | 1790 |  | 1790 |  |
| Adj. R-sq | 0.0635 |  | 0.0786 |  |

*\*p<0.10, \*\*p<0.05, \*\*\*p<0.01*

**Table 6:** The Impact CG Index on Working Capital Management

|  |  |  |  |
| --- | --- | --- | --- |
| **Variables** | **(1)****CCC** | **(2)****CCE** | **(3)****CR** |
| **Coefficient** | **t-statistics** | **Coefficient** | **t-statistics** | **Coefficient** | **t-statistics** |
| CG Index | -7.0073\*\*\* | -3.18 | 0.0107\*\* | 2.05 | -0.6842\*\*\* | -2.88 |
| Lev | -2.3419 | -2.3419 | -0.0177\*\*\* | -3.39 | -0.7724\*\*\* | -3.27 |
| Growth | 0.7498 | 0.39 | -0.0053 | -1.17 | -0.2788 | -1.35 |
| F\_Age | 0.2727\*\*\* | 2.76 | 0.002 | 1.20 | 0.0201\* | 1.89 |
| Constant | 69.2361\*\*\* | 13.40 | 0.0322\*\*\* | 2.62 | 2.7916\*\*\* | 5.02 |
| Industry Effect | Yes |  | Yes |  | Yes |  |
| Year Effect | Yes |  | Yes |  | Yes |  |
| N | 1790 |  | 1790 |  | 1790 |  |
| Adj. R-sq | 0.0072 |  | 0.0091 |  | 0.0106 |  |

*\*p<0.10, \*\*p<0.05, \*\*\*p<0.01*

**Table 7:** The Impact of CG Index, Working Capital Management and Firm Performance

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Variables** | **(1)****ROA** | **(2)****ROE** | **(3)****ROA** | **(4)****ROE** | **(5)****ROA** | **(6) ROE** |
| **Coefficient** | **t-statistics** | **Coefficient** | **t-statistics** | **Coefficient** | **t-statistics** | **Coefficient** | **t-statistics** | **Coefficient** | **t-statistics** | **Coefficient** | **t-statistics** |
| CG Index | 0.0102\*\* | 2.50 | 0.0106\*\* | 2.54 | 0.0087\*\* | 2.20 | 0.0095\*\* | 2.30 | 0.0121\*\* | 2.49 | 0.0147\*\* | 2.54 |
| CCC | -0.005\* | -1.76 | -0.0007 | -1.16 | - | - | - | - | - | - | - | - |
| CCE | - | - | - |  - | 0.1728\*\*\* | 9.63 | 0.0135\*\*\* | 7.27 | - | - | - | - |
| CR | - | - | - | - | - | - | - | - | -0.008\*\* | -2.20 | -0.006 | -1.49 |
| Lev | -0.0413\*\*\* | -10.19 | -0.0435\*\*\* | -10.43 | -0.0381\*\*\* | -9.61 | -0.0411\*\*\* | -9.94 | -0.0419\*\*\* | -10.30 | -0.0440\*\*\* | -10.49 |
| Growth | 0.0091\*\* | 2.57 | 0.0178\*\*\* | 4.91 | 0.0098\*\*\* | 2.84 | 0.0185\*\*\* | 5.15 | 0.0088\*\* | 2.49 | 0.0178\*\*\* | 4.88 |
| F\_Age | 0.003\* | 1.97 | 0.005\*\*\* | 3.05 | 0.003\* | 1.70 | 0.005\*\*\* | 2.94 | 0.003\*\* | 1.99 | 0.005\*\*\* | 3.14 |
| Constant | 0.0511\*\*\* | 5.11 | 0.0521\*\*\* | 5.07 | 0.0403\*\*\* | 4.32 | 0.0438\*\*\* | 4.51 |  | 5.02 | 0.0497\*\*\* | 5.03 |
| Industry Effect | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  |
| Year Effect | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  |
| N | 1790 |  | 1790 |  | 1790 |  | 1790 |  |  |  | 1790 |  |
| Adj. R-sq | 0.0644 |  | 0.0783 |  | 0.1093 |  | 0.1044 |  | 0.0655 |  | 0.0792 |  |
| Sobel-testZ-stat / (Sig.) |  |  |  |  |  |  |  |  |  |  |  |
| 3.01(0.00) |  | 4.07(0.00) |  | 4.11(0.00) |  | 5.01(0.00) |  | 4.12(0.00) |  | 4.42(0.00) |

*\*p<0.10, \*\*p<0.05, \*\*\*p<0.01*