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Multinational finance journal

Provided in Cooperation with:
Multinational Finance Society

This Version is available at:
http://hdl.handle.net/11159/5507

Corporate Governance, Cash Flows, and Bank Performance: Developed and Developing Countries

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The purpose of the study is to investigate the impact of corporate governance on bank performance and the mediating role of cash flows between corporate governance and bank performance in developed and developing countries. The study collects data for 2006-2015 for 30 commercial banks operating in five countries (Bangladesh, Malaysia, Pakistan, Australia, and the USA) and applies bank, time (year), and country fixed effects regression analysis to determine the direct impact of corporate governance and cash flows on bank performance. Structural equation modeling is employed to investigate the mediating role of cash flows between corporate governance and bank performance. The results suggest that the impact of corporate governance on bank performance is more significant in developed countries than in developing countries. The results also show that investment cash flows mediate the relationship between corporate governance and bank performance in developed as well as developing countries, while operating cash flows mediate the relationship between bank performance and corporate governance in developing countries only. (JEL: C23, G30, G34)

Keywords: corporate governance; cash flows; bank performance; panel data

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I. Introduction

The path to the global stability of financial institutions such as banks lies in corporate governance (*CG*). The presence of *CG* in the system advances, expands, and stabilizes performance in financial sectors, as *CG* ensures accountability as well as transparency. In the absence of *CG*, it may not be possible to measure the accountability and transparency of corporate systems. According to many researchers, the nature of *CG* and its standards in a system influences the development and advancement of not only individual firms but of the economy as a whole (Erkens, Hung and Matos, 2012, Wei-an, 2005, Williamson, 1988). *CG* is defined as a mechanism that ensures that capital suppliers of firms receiving fair returns on their investments (La Porta et al., 1997). Most terms mentioned in the principles of *CG* relate to the power and authority of a company to influence human behavior towards a company's value maximization. Aside from these definitions, *CG* also concerns the 'control' or 'supervision' of a firm. *CG* is also referred as the use of legal systems, rules, and regulations for the management and guidance of an organization (Das, 2010).

Every country employs its own codes, systems, standards, and practices of *CG* based on its social, political, and religious needs. Some forms of *CG* appear as laws or rules or as social standards (La Porta et al., 1998). While a large body of empirical work on *CG* has been developed on developed countries, less work has been carried out on the significance of *CG* in developing countries (Williamson, 1988, Klein, Shapiro and Young, 2005, Januszewski, Köke and Winter, 2002, Connor and Byrne, 2015). Further, the research carried out on developed and developing countries investigates the impact of *CG* on capital structures (Ahmed Sheikh and Wang, 2012, Anderson, Mansi and Reeb, 2004, Berger, Ofek and Yermack, 1997) and on the performance of firms (Dharmadasa, Gamage and Herath, 2014, Januszewski, Köke and Winter, 2002, Klapper and Love, 2004, Kumar and Zattoni, 2015). Few studies, however, have focused on the impact of *CG* on bank performance (Aebi, Sabato and Schmid, 2012, Berger et al., 2005, Berger, Imbierowicz and Rauch, 2016, Adeabah, Gyeke-Dako

and Andoh, 2018). While key aspects of bank governance do not vary greatly in terms of the governance of organizations, *CG* in banks plays a special role due to the complexities of banking systems and due to the regulatory operating environments of banks and financial institutions (De Andres and Vallelado, 2008). Complexities in banking systems can arise from various factors (e.g., from loan quality not being perceived clearly; from the use of complex financial statements; from easily modified investment risks and from nontransparent financial engineering). Such complexity aggravates information asymmetries and compromises stakeholders' capacities to monitor bank management (Levine, 2004). Further, banks' regulatory environments play an idiosyncratic role, as such regulators are major stakeholders. Such regulators may serve as an external governance mechanism while potentially worsening governance by discouraging competition and by disciplining banks by imposing restrictions on ownership structures (Macey and O'hara, 2003, Prowse, 1997).

Moreover, Ross (2013) explains that the value of assets is determined by the returns or cash flows it generates. Hence, the value or performance of an organization is dependent upon its cash flows. On the other hand, agency costs regarding the use of cash flows determine the relationship between *CG* and the performance of firms or banks (Jensen, 1986). Therefore, cash flows may play a mediating role in *CG* and bank performance, an issue that has not yet been investigated. Accordingly, this study contributes to the literature on the governance mechanisms of banks in several ways. First, the study investigates the impact of *CG* on bank performance for a sample from five countries (Australia, Bangladesh, Malaysia, Pakistan, and the USA) from 2006 to 2015. Second, the study investigates the mediating role of cash flows in *CG* and bank performance. Third, the study compares the mediating role of cash flows in developed and developing countries, as levels of external governance according to global governance indicators differ greatly between the two types of countries (table 2).[1] To asses these relationships, an appropriate bank, year, and country fixed effects regression is employed to investigate the direct impact of *CG* and cash flows on bank performance in developed and developing countries. Semi-elasticities of the statistically significant regression coefficients are calculated to show their economic significance. Finally, Structural

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1. Table 2 provides mean values of worldwide governance indicators for all of the countries included in our study for 2006-2015.

equation modeling (SEM) is employed to identify the mediating role of cash flows in *CG* and bank performance. The results of the study show that the impact of *CG* on bank performance is more significant in developed countries than in developing countries. The results also show that investment cash flows have a significantly negative impact on bank performance, while financing cash flows have a significantly positive impact on bank performance in developed countries. Further, investment cash flows partially mediate the relationship between *CG* and bank performance for developed countries and fully mediates the relationship between *CG* and bank performance in developing countries. Furthermore, operating cash flows partially mediate the relationship between *CG* and bank performance for developing countries.

The organization of the rest of the paper is as follows. The following section presents literature on corporate governance, bank performance, and cash flows. Section III describes data and methodology used, and the results are presented in Section IV. Section V provides the conclusion followed by references.

II. Literature Review

An area widely discussed in recent years focuses on *CG* and on its impact on corporate performance. The previous literature on *CG* shows that considerable work has been carried out on the relationship between *CG* and firm and bank performance. The main concern is the intensity of the impact of different dimensions of *CG* on corporate performance. The empirical research carried out over the past few years indicates that there is a significant relationship between various dimensions of *CG* and bank performance. Most of the empirical research on *CG* is based on the theoretical framework of agency theory (Fama, 1980, Jensen and Meckling, 1976, Jensen, 1986). Further, studies explain that the impact of *CG* is different for developed markets than for developing markets. This is the case because mechanisms vary among different countries based on their cultural, historical and regulatory features and laws and rules (Prowse, 1999). Research studies on different dimensions of *CG* and on their relationships to firm performance also find an insignificant relationship between *CG* and firm performance (Hermalin and Weisbach, 1991, Klein, Shapiro and Young, 2005). In investigating the impact of *CG* on performance, empirical studies have used different proxies to measure performance and various dimensions of *CG*. Most

researchers have used two preferred measures (ROA_{it} (return on assets) and ROE_{it} (return on equity) to measure performance (Williamson, 1988, Klapper and Love, 2004, Connor and Byrne, 2015, Yasser, Entebang and Mansor, 2015, Al-Gamrh, Ku Ismail and Al-Dhamari, 2018).

Various studies have been conducted on the impact of board size on financial performance (de Oliveira Gondrige, Clemente and Espejo, 2012, Fauzi and Locke, 2012, Ujunwa, 2012). According to their results, there is a significant association between board size and firm performance. Larger boards offer more knowledge, diverse opinions, and of course different investment opportunities that can ultimately benefit stakeholders. Other researchers, in studying new avenues of *CG*, explain that smaller boards make inefficient strategic decisions (Hambrick, Werder and Zajac, 2008). Due to the limited knowledge of directors, they only consider a few possible alternatives to enhance firm growth and performance. On the other hand, some researchers have favored smaller boards in exploring the relationship between *CG*, board structures, board characteristics, and firm performance (Jensen, Solberg and Zorn, 1992, Drakos and Bekiris, 2010, Dharmadasa, Gamage and Herath, 2014). The results of these studies show that larger boards are less effective than smaller boards due to a lack of cooperation between board members, their lengthier decision-making processes, and a lack of capacity to fully utilize board members' knowledge and skills. Accordingly, a positive relationship is expected between board size and bank performance for developing countries because in developing countries, systems are underdeveloped and larger boards may serve as a means from which to obtain support from the external environment. By contrast, large boards may be less effective in developed countries because such countries employ developed systems, and thus more directors may not be required and some may free ride (Ahmed Sheikh and Wang, 2012). A recent study carried out on Ghana finds a positive relationship between board size and bank performance (Adeabah, Gyeke-Dako and Andoh, 2018).

According to Fama and Jensen (1983), the main responsibility of a board of directors is to monitor the performance of managers and to protect the interest of shareholders. Different professional and regulatory committees propose that the involvement of more independent directors with appropriate experience can improve board performance. To ensure board effectiveness, monitoring, and the different strategic roles of directors, board independence is viewed as

an important factor (Van den Berghe and Baelden, 2005). Determining a maximum number of independent directors who can serve on a board supports independent decision-making. A study carried out in India by Garg (2007) explains that when the monitoring role of independent directors is poor, board independence may not improve firm performance. Studies offer varying results on the impact of independent directors on firm performance. Hermalin and Weisbach (1991) measure firm performance with Tobin's q and investigate the relationship between outside directors and firm performance. Their results do not show any significant relationship between outside directors and firm performance. On the other hand, Abdullah (2004), from data for 412 companies registered at KLSE, finds that independent directors are significantly and directly related to profit margins, ROA_{it} (return on assets), and EPS_{it} (earnings per share). However, a recent study based on data for 21 banks shows a negative relationship between board independence and bank performance in Ghana (Adeabah, Gyeke-Dako and Andoh, 2018). Pfeffer (1972) explains that board size and composition are structured as organizational responses to the conditions of the operating environment that differ greatly between developed and developing countries (table 2, worldwide governance indicators). Therefore, board independence may affect bank performance differently in different economies.

Board committees constitute another important dimension of *CG* that has been studied widely. The purpose of these committees is to monitor management and to alleviate agency conflicts. Independent audit committees monitor management more effectively and improve firm performance (Fama and Jensen, 1983). A study carried out by Roe (1993) finds a significant and direct relationship between audit committee size and firm performance. Anderson, Mansi and Reeb (2004) in focusing on board characteristics and debt financing, show that the independence of an audit committee reduces the cost of debt financing and consequently increases profitability. Other researchers, in using different proxies of performance such as profit margins and Tobin's q, also find a significant direct relationship between performance and audit committees (Saibaba and Ansari, 2011, Yasser, Entebang and Mansor, 2015). On the other hand, effective monitoring by an independent audit committee discourages earnings management and accordingly may weaken accounting measures of firm performance (Klein, 2002). According to the results of an empirical study, an increase in the percentage of insider directors involved in different

committees increases stock returns and returns on investment (Klein, 1998).

The role of cash flows is also very important in determining the profitability or performance of a firm. The results of a study carried out by Efobi (2008) reveal a clear relationship between cash flows and the performance of a company. Therefore, to enhance and maximize the value of shareholders, organizations must develop an appropriate cash flow mix (Efobi, 2008). The same study also shows that the capacity of any company to finance its operations lies in its ability to identify adequate sources of financing. The study also differentiates between strong and weak modes of cash flow governance. Uremadu (2004), focusing on financial management and related concepts, shows that cash flows are used as funds to finance fixed assets, inventories, and marketable securities that enhance the profits of a corporation. Consequently, it is preferable for organizations to use their cash flows in a well-structured and effective manner. To enhance its productivity and achieve stronger performance, a firm must select the best components for its cash flows, which can further be used to finance its operations. Further, the author explains that after conducting a complete analysis of a firm's financial planning and control systems, a finance manager must develop a process for enhancing its performance. Practitioners argue that poor cash flow governance is observed in industries that allow managers to achieve their individual objectives to the detriment of shareholders (Mazloom, Azarberahman and Azarberahman, 2013, Thanh and Ha, 2013, Tsuji, 2013). Additionally, they argue that cash flows do have a significant but negative effect on corporate performance. Researchers counter these arguments in finding a significant and direct relationship between cash flows and firm performance (Adelegan, 2003, Brush, Bromiley and Hendrickx, 2000).

According to the literature discussed above, *CG* affects the performance and cash flows of firms. Further, firm cash flows also affect firm performance. Therefore, the purpose of this study is to examine the mediating impact of cash flows between *CG* and bank performance and to compare this impact across developed and developing economies. Accordingly, the empirical framework developed above is represented by figure 1.

As dimensions of *CG* the study considers board size, board independence, board meetings, audit committee size, and audit committee independence. Returns on assets (ROA_{it}) and returns on equity (ROE_{it}) are used as proxies to measure bank performance. Bank
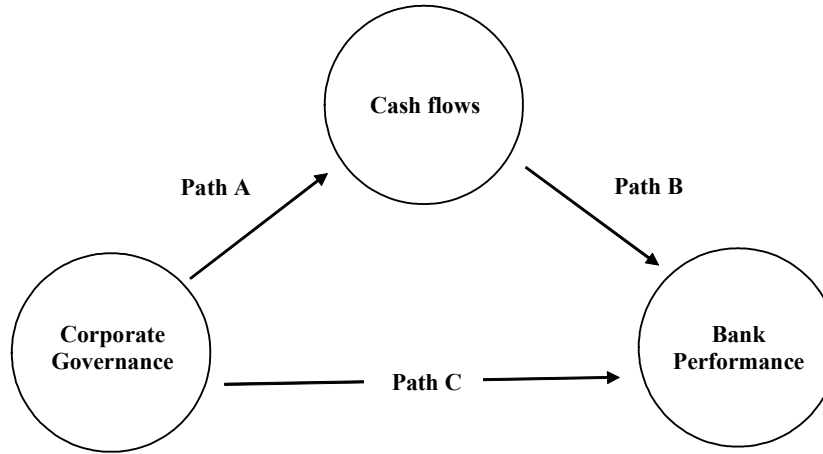
FIGURE 1.— Theoretical Model

size, age, and the capital adequacy ratio are taken as bank-level control variables and inflation and *GDP* growth as country-level control variables. Operating, investment, and financing cash flows are used as measures of cash flows. These dependent, mediating and independent variables are adopted based on prominent research studies conducted in this field (Januszewski, Köke and Winter, 2002, Klapper and Love, 2004, Dharmadasa, Gamage and Herath, 2014, Connor and Byrne, 2015, Berger, Imbierowicz and Rauch, 2016, Adeabah, Gyeke-Dako and Andoh, 2018). Descriptions of the variables with notations and proxies are presented in table 1.

Developed and developing countries as a context of analysis

The study compares developed and developing countries because according to worldwide governance indicators (WGI),[2] the quality of external governance is superior in developed countries due to the presence of developed legal and judicial institutions than it is in developing countries. Further, external governance acts as an additional monitoring factor for firms. Therefore, it is important to compare the impact of internal governance mechanisms on bank performance across two different operating environments. Worldwide governance indicators

2.   www.govindicators.org

TABLE 1. Description of variables

Variables	Notations	Proxies
Dependent		
Return on assets	ROA_{it}	The ratio of profit before taxation / Total assets
Return on equity	ROE_{it}	The ratio of profit before taxation / Total equity
Independent (Corporate Governance)		
Board size	BS_{it}	Total number of board members
Board Independence	BI_{it}	Number of independent directors / Total number of board members
Board meetings	BM_{it}	Number of meetings attended by all the board members / Total number of board meetings in one year
Audit committee size	ACS_{it}	Total number of audit committee members
Audit committee independence	ACI_{it}	Number of independent directors in audit committee / Total number of audit committee members
Mediating		
Operating cash-flows	OCF_{it}	The ratio of operating cash flows / Total assets
Investment cash-flows	ICF_{it}	The ratio of investment cash flows / Total assets
Financing cash-flows	FCF_{it}	The ratio of financing cash flows / Total assets
Control		
Size	$SIZE_{it}$	Natural logarithm of total assets
Age	AGE_{it}	Natural logarithm of the number of years since listing
Capital adequacy ratio	CAR_{it}	Total Equity / Total Assets
Inflation rate	INF_t	Consumer prices (annual %)
GDP growth	GDP_t	GDP per capita growth (annual %)
Dummy		
Year	YR_t	Year dummies, to control for year effect
Country	CNT_i	Country dummies, to control for country effect
Region	RG_i	Dummy 0 for developed countries and 1 for developing

TABLE 2.   Mean values for worldwide governance indicators

Country/ Region	Voice & Accountability	Political Stability	Governance Effectiveness	Regularity Quality	Rule of law	Control over Corruption
Australia	1.4240	0.9350	1.6950	1.7670	1.7740	1.9870
USA	1.0970	0.5410	1.5360	1.4100	1.5970	1.3240
Bangladesh	–0.4200	–1.3830	–0.7570	–0.8980	–0.7900	–1.0140
Malaysia	–0.4230	0.1110	1.0760	0.5760	0.5130	0.2080
Pakistan	–0.8580	–2.5370	–0.6850	–0.6000	–0.8520	–0.9030
Developed	1.2605	0.7380	1.6155	1.5885	1.6855	1.6555
Developing	–0.5670	–1.2697	–0.1220	–0.3073	–0.3763	–0.5697

Note: The table presents mean values of worldwide governance indicators (2006-2015) for all the countries included in our sample and for the two groups (developed and developing). These Governance Indicators range from –2.5 (weak) to 2.5 (strong).

measure governance quality based on six governance dimensions (voice and accountability, political stability, governance effectiveness, regularity quality, rule of law, and control over corruption). The study selects Australia and the USA as a representative developed countries and Bangladesh, Pakistan and Malaysia as representative developing countries. The study takes these countries to compare the two extremes (strong vs. weak). According to table 2, mean scores are positive for developed countries for all governance dimensions while those of developing countries present negative mean scores. This clearly shows that governance is weaker in developing countries than it is in developed countries.

III. Data and Methodology

To achieve the objectives of this study, data are drawn from a sample of 30 commercial banks, i.e., 15 banks operating in developed countries (Australia and the USA) and 15 banks operating in developing countries (Bangladesh, Malaysia, and Pakistan). A total of 300 observations (150 for developed countries; 150 for developing countries) from 2006-2015 are collected from the financial statements of banks included in the sample. Several theorists, in exploring the costs and benefits of board structures, argue that board structures are endogenous (Demsetz and Lehn, 1985, Harris and Raviv, 2006). Further, empirical evidence supports the endogeneity of board structures (Adams, 2010, Pathan and Skully, 2010). For example, one empirical study explains that large, more diversified banks employ more independent and larger boards (Pathan and Skully, 2010). Another study shows that independent directors are added to the boards of poorly performing firms to remedy negative patterns (Hermalin and Weisbach, 1988). However, most of these previous empirical studies report endogeneity issues due to the presence of individual fixed effects (De Haan and Vlahu, 2016). Further, econometricians are of the view that the problems of endogeneity due to individual fixed effects can be controlled by applying fixed effects regressions, as they allow for the endogeneity of all regressors with individual effects (Baltagi, 2008). Furthermore, the results of Hausman specification tests support the use of fixed effects regressions (Baltagi, 2008). Accordingly, the study applies a bank fixed effects regression at first to investigate the direct impact of *CG* and cash flows on bank performance. The bank fixed effects regression model is

as follows:

$$PR_{it} = \alpha_0 + \beta_1 CG_{it} + \beta_2 CF_{it} + \beta_3 C\_BANK_{it}$$

$$+ \beta_4 C\_CNT_t + BANK_i + \varepsilon_{it} \ldots \tag{1}$$

where PR_{it} is one of the two measures of bank performance (ROA_{it}, ROE_{it}) for the ith bank at time t, where CG_{it} represents five corporate governance dimensions (BS_{it} is board size, BI_{it} is board independence, BM_{it} is board meetings, ACS_{it} is audit committee size, ACI_{it} is audit committee independence) of the ith bank at time t, where CF_{it} is one the three measures of cash flows (OCF_{it}, ICF_{it}, FCF_{it}) for the ith bank at time t, where C_BANK_{it} represents bank level control variables ($SIZE_{it}$ is bank size; AGE_{it} is age; and CAR_{it} is the capital adequacy ratio), where C_CNT_t represents country level control variables (INF_t is inflation rate, GDP_t is GDP per capita growth), where $BANK_i$ is bank fixed effects controlling for unobserved bank heterogeneity, and where ε_{it} is the error component for the ith bank at time t.

Further, the study introduces year and country dummies with a separate model to avoid a dummy trap (Baltagi, 2008). The year and country fixed effects regression model is as follows:

$$PR_{it} = \alpha_0 + \beta_1 CG_{it} + \beta_2 CF_{it} + \beta_3 C\_BANK_{it}$$

$$+ \beta_4 C\_CNT_t + YR_i + CNT_i + \varepsilon_{it} \ldots \tag{2}$$

Model 2 excludes bank fixed effects and introduces year (YR_t) and country (CNT_i) dummies to control for time and country fixed effects.

Further, to realize the main objective of this study, i.e., determining whether cash flows mediate the relationship between CG and bank performance, the study applies structural equation modeling.

$$CG_{it} \rightarrow CF_{it} \rightarrow PR_{it} \ldots \tag{3}$$

where CG_{it} represents one of the five dimensions of corporate governance (BS_{it} is board size, BI_{it} is board independence, BM_{it} is board meetings, ACS_{it} is audit committee size, and ACI_{it} is audit committee independence) for the ith bank at time t, where CF_{it} is one the three

measures of cash flows (OCF_{it}, ICF_{it}, and FCF_{it}) for the ith bank at time t, and where PR_{it} is one the two measures of bank performance (ROA_{it} and ROE_{it}) for the ith bank at time t.

A. Descriptive Statistics

Table 3 presents descriptive statistics for all the proxies used to measure dependent, mediating, and independent variables for developed and developing economies. Mean values of 0.0151 for returns on assets and of 0.2247 for returns on equity for developed countries and of 0.0255 for returns on assets and of 0.3018 for returns on equity for developing countries show a higher return rate for banks operating in developing countries than for those operating in developed countries. Further, mean values of 12.0733 for board size and of 0.8782 for board independence for developed countries and of 10.4767 for board size and of 0.6938 for board independence for developing countries show that boards are larger and more independent in developed countries than in developing countries. However, the ratio of board meetings attended by members (mean board meeting = 0.4478 for developed countries; mean board meeting = 0.6365 for developing countries) is higher for developing countries. Furthermore, mean values of 5.2067 for audit committee size and of 0.9778 for audit committee independence for developed countries and of 3.9800 for audit committee size and of 0.8308 for audit committee independence for developing countries show that audit committees are much larger and more independent in developed countries than in developing countries.

Moreover, for the mediating variables the ratio of operating cash flows to total assets (mean operating cash flows / total assets = 0.0138 for developed countries, mean operating cash flows / total assets = 0.0249 for developing countries) is higher for developing countries. On the other hand, the ratio of investment cash flows to total assets (mean investment cash flows / total assets = –0.0378 for developed countries, mean investment cash flows / total assets = –0.0353 for developing countries) and the ratio of financing cash flows to total assets (mean financing cash flows / total assets = 0.0378 for developed countries, mean financing cash flows / total assets = –0.0022 for developing countries) are higher for developed countries. Further, banks are larger (mean bank size = 24.3860 for developed countries, mean bank size = 26.0428 for developing countries) in developing countries but are more

TABLE 3. Descriptive Statistics

Variables	Developed Countries (150 No. of obs. of 15 banks)					Developing Countries (150 No. of obs. of 15 banks)				
	Mean	STD.	Median	Min.	Max.	Mean	STD.	Median	Min.	Max.
ROA_{it}	0.0151	0.0199	0.0101	−0.0176	0.1080	0.0255	0.0145	0.0225	−0.0164	0.0703
ROE_{it}	0.2247	0.3813	0.1421	−0.1922	2.2947	0.3018	0.1501	0.2867	−0.1229	0.6272
BS_{it}	12.0733	3.6455	12.0000	5.0000	20.0000	10.4067	2.4743	10.0000	5.0000	17.0000
BI_{it}	0.8782	0.1140	0.9199	0.5455	1.0000	0.6938	0.3304	0.8750	0.0588	1.0000
BM_{it}	0.4478	0.4659	0.0096	0.0015	1.0000	0.6365	0.3404	0.7500	0.0014	1.0000
ACS_{it}	5.2067	1.7390	5.0000	2.0000	11.0000	3.9800	1.1438	4.0000	2.0000	8.0000
ACI_{it}	0.9778	0.0629	1.0000	0.6667	1.0000	0.8308	0.3911	1.0000	0.0000	3.6667
OCF_{it}	0.0138	0.0553	0.0114	−0.3804	0.3294	0.0249	0.0523	0.0135	−0.1327	0.2528
ICF_{it}	−0.0378	0.1165	−0.0166	−1.0885	0.2655	−0.0353	0.0504	−0.0227	−0.2219	0.1257
FCF_{it}	0.0378	0.1846	0.0083	−0.4667	1.5726	−0.0022	0.0762	−0.0003	−0.8939	0.1054
$SIZE_{it}$	24.3860	1.5975	24.5802	21.0596	27.7359	26.0428	1.0302	26.0278	19.9644	28.1654
AGE_{it}	4.6724	0.6000	4.9163	2.8904	5.3753	3.3731	0.6298	3.1355	2.1972	4.3944
CAR_{it}	0.0846	0.0288	0.0812	0.0056	0.1685	0.0854	0.0265	0.0801	0.0365	0.1553
INF_t	2.1901	1.2083	2.1985	−0.3555	4.3503	6.8166	4.3583	6.8782	0.5833	20.2861
GDP_t	0.8378	1.4853	1.0163	−3.6241	3.1311	3.1985	2.0806	3.5836	−3.2771	5.7699

Note: ROA_{it} = Return on Assets, ROE_{it} = Return on Equity, BS_{it} = Board Size, BI_{it} = Board Independence, BM_{it} = Board meetings, ACS_{it} = Audit Committee Size, ACI_{it} = Audit Committee independence, OCF_{it} = Operating Cash flows, ICF_{it} = Investment Cash flows, FCF_{it} = Financing Cash flows, $SIZE_{it}$ = Bank Size (Natural logarithm of Total Assets), AGE_{it} = Bank Age (Natural logarithm of number of years since listing), CAR_{it} = Capital Adequacy Ratio, INF_t = Inflation Rate, GDP_t = GDP per capita growth.

experienced (mean bank age = 4.6724 for developed countries, mean bank age = 3.3731 for developing countries) in developed countries, according to our sample dataset. However, the mean capital adequacy ratio for the two regions is almost the same (mean *CAR* for developed countries = 0.0846, mean *CAR* for developing countries = 0.0854). Furthermore, developing countries experience higher inflation (mean inflation rate for developing countries = 6.8166, mean inflation rate for developed countries = 2.1901) and higher rates of economic growth (mean economic growth for developing countries = 3.1985, mean economic growth for developed countries = 0.8378) than developed countries.

B. Robustness

The study uses five dimensions of corporate governance, three mediating variables, three bank-level, and two country-level control variables. The results of pairwise correlation explain correlation of greater than 0.50 (table 4) between mediating variables. Therefore, multicollinearity issues may affect the regression analysis. Further, the study finds Variation Inflation Factor (VIF) for mediating variables OCF_{it}, ICF_{it}, and FCF_{it} of more than 10 for different models (Ott and longnecker, 2015). To address this issue, the study uses three different models. Model-1 includes five variables of corporate governance, three bank-level and two country-level control variables, and the ratio of operating cash flows over total assets (OCF_{it}). Model-2, includes five variables of corporate governance, three bank-level and two country-level control variables, and the ratio of investment cash flows over total assets (ICF_{it}). Model-3, includes five variables of corporate governance, three bank-level and two country-level control variables, and the ratio of financing cash flows over total assets (FCF_{it}).

Further, to ensure the validity and robustness of the results, the study carries out a Modified Wald test for groupwise heteroscedasticity and a Wooldridge test to measure autocorrelations in the panel data, and uses Driscoll and Kraay's standard errors as a remedy (Hoechle, 2007, Al-Gamrh, Ku Ismail and Al-Dhamari, 2018). Moreover, F-statistic results (tables 5 and 6) validate the joint significance of the variables included in the regression models.

TABLE 4. Pairwise Correlation

A. Developed Countries

	ROA_{it}	ROE_{it}	BS_{it}	BI_{it}	BM_{it}	ACS_{it}	ACI_{it}	OCF_{it}
ROA_{it}	1.0000							
ROE_{it}	0.9364	1.0000						
BS_{it}	0.3304	0.2886	1.0000					
BI_{it}	0.1657	0.0726	0.0088	1.0000				
BM_{it}	0.1755	0.2970	−0.2454	−0.2096	1.0000			
ACS_{it}	0.4171	0.4073	0.4009	−0.0251	−0.0766	1.0000		
ACI_{it}	−0.4114	−0.5192	−0.1641	0.2629	−0.2808	−0.1618	1.0000	
OCF_{it}	0.0970	0.0071	0.0062	0.1006	−0.0389	−0.0312	−0.0161	1.0000
ICF_{it}	−0.4496	−0.5035	−0.1328	−0.0807	−0.0671	−0.2620	0.1724	0.3697
FCF_{it}	0.3271	0.3836	0.0988	0.0367	0.0523	0.2225	−0.1259	−0.5437
$SIZE_{it}$	0.0129	−0.0142	0.6253	−0.0408	−0.4416	0.1773	0.0482	0.0008
AGE_{it}	−0.0792	−0.0114	0.3613	0.0912	−0.0704	0.1564	−0.0031	−0.0692
CAR_{it}	−0.1403	−0.3576	0.1132	0.2437	−0.6434	−0.1267	0.2990	0.1675
INF_t	−0.0821	0.0189	−0.1829	−0.1003	0.2008	−0.0033	−0.0217	−0.1827
GDP_t	0.1041	0.0721	−0.1609	−0.0291	0.1092	−0.1073	−0.0637	−0.2026

(*Continued*)

TABLE 4. (Continued)

A. Developed Countries

	ICF_{it}	FCF_{it}	$SIZE_{it}$	AGE_{it}	CAR_{it}	INF_t	GDP_t	VIF
ROA_{it}								
ROE_{it}								
BS_{it}								2.29
BI_{it}								1.36
BM_{it}								2.53
ACS_{it}								1.38
ACI_{it}								1.36
OCF_{it}								1.66
ICF_{it}	1.0000							3.21
FCF_{it}	-0.8049	1.0000						3.90
$SIZE_{it}$	0.0328	0.0119	1.0000					2.76
AGE_{it}	0.0416	-0.0849	0.4893	1.0000				2.65
CAR_{it}	0.1306	-0.0816	0.2275	-0.3639	1.0000			3.64
INF_t	-0.1101	0.1996	-0.2070	-0.0784	-0.2578	1.0000		1.52
GDP_t	-0.0713	0.1004	-0.1925	-0.0233	-0.0345	0.2364	1.0000	1.68

(*Continued*)

TABLE 4. (Continued)

B. Developing Countries

	ROA_{it}	ROE_{it}	BS_{it}	BI_{it}	BM_{it}	ACS_{it}	ACI_{it}	OCF_{it}
ROA_{it}	1.0000							
ROE_{it}	0.7551	1.0000						
BS_{it}	0.1729	0.0487	1.0000					
BI_{it}	-0.0864	-0.0720	-0.3451	1.0000				
BM_{it}	0.0836	0.1012	-0.1049	-0.0320	1.0000			
ACS_{it}	-0.0614	-0.1171	0.0076	0.1600	0.0551	1.0000		
ACI_{it}	-0.1341	-0.1417	-0.1842	0.7457	-0.0455	0.1238	1.0000	
OCF_{it}	-0.0168	0.0832	-0.0578	-0.3555	0.0978	-0.1076	-0.2057	1.0000
ICF_{it}	-0.2509	-0.2834	-0.0239	0.0300	-0.2684	-0.0241	-0.0186	-0.4260
FCF_{it}	-0.0960	-0.0130	0.0566	-0.0676	-0.0743	-0.0168	-0.0642	-0.4226
$SIZE_{it}$	0.2346	0.0909	-0.0500	0.3265	0.1854	0.1865	0.2406	-0.2643
AGE_{it}	0.2510	0.0020	0.0808	0.4598	-0.0124	0.1398	0.4863	-0.2545
CAR_{it}	0.5076	-0.1000	0.2756	-0.1044	-0.0642	-0.0228	-0.0923	-0.2601
INF_t	0.5060	0.4857	-0.0896	-0.0895	0.1324	-0.2056	-0.1295	0.1005
GDP_t	-0.1757	-0.1264	0.1387	-0.4631	-0.2564	-0.0769	-0.4031	0.1550

(*Continued*)

TABLE 4. (Continued)

B. Developing Countries

	ICF_{it}	FCF_{it}	$SIZE_{it}$	AGE_{it}	CAR_{it}	INF_t	GDP_t	VIF
ROA_{it}								
ROE_{it}								
BS_{it}								1.39
BI_{it}								3.67
BM_{it}								1.24
ACS_{it}								1.21
ACI_{it}								2.67
OCF_{it}								2.16
ICF_{it}	1.0000							1.92
FCF_{it}	0.3307	1.0000						2.30
$SIZE_{it}$	−0.1638	0.4184	1.0000					2.90
AGE_{it}	−0.0907	0.0091	0.4927	1.0000				2.09
CAR_{it}	0.0258	0.1055	0.3560	0.3688	1.0000			1.73
INF_t	−0.1647	−0.1084	0.1099	−0.0580	0.0790	1.0000		2.80
GDP_t	0.2291	0.1401	−0.3685	−0.3491	−0.0272	−0.2674	1.0000	1.85

Note: ROA_{it} = Return on Assets, ROE_{it} = Return on Equity, BS_{it} = Board Size, BI_{it} = Board Independence, BM_{it} = Board meetings, ACS_{it} = Audit Committee Size, ACI_{it} = Audit Committee independence, OCF_{it} = Operating Cash flows, ICF_{it} = Investment Cash flows, FCF_{it} = Financing Cash flows, $SIZE_{it}$ = Bank Size (Natural logarithm of Total Assets), AGE_{it} = Bank Age (Natural logarithm of number of years since listing), CAR_{it} = Capital Adequacy Ratio, INF_t = Inflation Rate, GDP_t = GDP per capita growth.

IV. Results and Discussion

A. Regression Analysis

Table 5, presents the results of regression analysis controlled for banks and year and country fixed effects for developed countries, and table 6, presents equivalent results for developing countries. The regression models explain 26 to 71 percent of the variation (table 5) in bank performance in developed countries and 24 to 70 percent of the variation (table 6) in bank performance in developing countries. The results show that board size has a positive but weakly significant impact on bank performance in developing countries (when controlling for year and country fixed effects) but its impact on bank performance in developed countries is insignificant. In models 1, 2 and 3 (ROE_{it} for developing countries) the estimated coefficients on board size equal to 0.0088**, 0.0090**, and 0.0077*, respectively. These estimated coefficients imply that an increase of one board of director increases returns on equity by 0.0088, 0.0090 and 0.0077, or a semi-elasticity of 2.98%, 2.98% and 2.65%, respectively (as the mean ROE_{it} equals to 0.3018). This positive relationship of board size in developing countries shows that larger boards in these countries are more connected to the external environment and consequently enhance bank performance (Ahmed Sheikh and Wang, 2012, Ahmed Sheikh, Wang and Khan, 2013). Further, board independence is significantly positively related to returns on assets and returns on equity in developed countries (when controlled for year and country fixed effects) and is significantly negatively related to these variables in developing countries (when controlling for bank fixed effects). In models 1, 2 and 3 (ROE_{it} for developed countries controlled for year and country fixed effects) the estimated coefficients on board independence equal to 1.0951**, 0.9464**, and 1.0066*, respectively. These estimated coefficients imply that an increase of one unit in board independence increases returns on equity by 1.0951, 0.9464 and 1.0066, or a semi-elasticity of 487%, 420% and 448%, respectively (as the mean ROE_{it} equals to 0.2247). In models 1 and 3 (ROE_{it} for developing countries controlled for bank fixed effects) the estimated coefficients on board independence equal to –0.0845* and –0.0783**, respectively. These estimated coefficients imply that a decrease of one unit in board independence increases returns on equity by 0.0845 and 0.0783, or a semi-elasticity of 33% and 31%, respectively (as the mean ROE_{it} equals to 0.3018). These opposing

results for board independence show that a high degree of board independence in developed countries renders management more effective due to increased monitoring and decreased conflicts of interest among stakeholders (Fama and Jensen, 1983, La Porta et al., 1997). On the other hand, in developing countries board independence, rather than adding value to bank performance, destroys it. Plausible reasons for this trend may include the following. First, information asymmetries are stronger in developing countries due to an absence of formal reporting systems, and with inconsistent information availability the role of independent directors become less effective. Second, as legal and judicial systems are underdeveloped in developing countries, corporate control by controlling authorities may function less effectively in developing countries. Furthermore, board meetings are significantly negatively related to bank performance in developing countries (when controlling for bank fixed effects) but are significantly positively related to bank performance in developed countries for almost all of the models. In models 1, 2 and 3 (ROE_{it} for developed countries controlled for bank fixed effects) the estimated coefficients on board meetings equal to 0.1188**, 0.1365***, and 0.1239**, respectively. These estimated coefficients imply that an increase of one unit in board meetings increase returns on equity by 0.1188, 0.1365 and 0.1239, or a semi-elasticity of 53%, 61% and 55%, respectively (as the mean ROE_{it} equals to 0.2247). In models 1, 2 and 3 (ROE_{it} for developing countries controlled for bank fixed effects) the estimated coefficients on board meetings equal to –0.0728***, –0.0738***, and –0.0735**, respectively. These estimated coefficients imply that a decrease of one unit in board meetings increase returns on equity by 0.0728, 0.0738 and 0.0735, or a semi-elasticity of almost 24%, (as the mean ROE_{it} equals to 0.3018). These findings show that increasing the frequency of board meetings is productive in developed countries but not in developing countries. Further, the study finds a positive but weekly significant relationship in developing countries between audit committee size and returns on assets (when controlling for year and country fixed effects). On the other hand, a significantly positive relationship between audit committee size and bank performance (when controlling for year and country fixed effects) and a significantly negative relationship (when controlling for bank fixed effects) with bank performance in developed countries. These relationships show that an increase in the number of audit committee members improves bank performance in general but may decrease bank performance depending upon the individual

TABLE 5.   Regression Analysis-Developed countries

	ROA_{it}					
	Bank fixed effects			Year and country fixed effects		
	(1)	(2)	(3)	(1)	(2)	(3)
BS_{it}	0.0005	0.0006	0.0005	–0.0008	–0.0007	–0.0008
	(0.0004)	(0.0004)	(0.0004)	(0.0012)	(0.0012)	(0.0011)
BI_{it}	0.0005	0.0004	0.0000	0.0592**	0.0544*	0.0567*
	(0.0064)	(0.0072)	(0.0067)	(0.0238)	(0.0248)	(0.0263)
BM_{it}	0.0036	0.0047**	0.0042**	0.0261**	0.0251**	0.0263**
	(0.0025)	(0.0015)	(0.0016)	(0.0102)	(0.0085)	(0.0089)
ACS_{it}	–0.0018**	–0.0021**	–0.0019**	0.0026***	0.0022***	0.0023**
	(0.0008)	(0.0008)	(0.0008)	(0.0007)	(0.0007)	(0.0008)
ACI_{it}	–0.0089	–0.0106	–0.0094	–0.0878***	–0.0801***	–0.0848***
	(0.0088)	(0.0086)	(0.0087)	(0.0192)	(0.0166)	(0.0177)
$SIZE_{it}$	–0.0003	–0.0002	–0.0004	–0.0009	–0.0009	–0.0013
	(0.0008)	(0.0008)	(0.0009)	(0.0009)	(0.0007)	(0.0010)
AGE_{it}	–0.0168	–0.0141	–0.0158	–0.0079	–0.0074	–0.0070
	(0.0100)	(0.0089)	(0.0101)	(0.0058)	(0.0057)	(0.0061)
CAR_{it}	0.0255	0.0400**	0.0322	–0.1232	–0.1091	–0.1083
	(0.0299)	(0.0169)	(0.0179)	(0.1307)	(0.1236)	(0.1215)
INF_t	–0.0007	–0.0007	–0.0007	0.0004	–0.0010	–0.0007
	(0.0010)	(0.0009)	(0.0010)	(0.0006)	(0.0008)	(0.0009)
GDP_t	0.0022***	0.0021***	0.0021***	0.0014	0.0014	0.0013
	(0.0006)	(0.0005)	(0.0006)	(0.0011)	(0.0009)	(0.0010)
OCF_{it}	0.0066			0.0269		
	(0.0238)			(0.0443)		
ICF_{it}		–0.0082			–0.0292*	
		(0.0076)			(0.0137)	
FCF_{it}			0.0014			0.0123*
			(0.0038)			(0.0062)
Constant	0.1076	0.0943	0.1063	0.0809**	0.0786***	0.0865***
	(0.0622)	(0.0570)	(0.0629)	(0.0254)	(0.0216)	(0.0254)
Observations	150	150	150	150	150	150
R-squared	0.2700	0.2810	0.2680	0.6530	0.6702	0.6588
F-Statistic	4950.4398	1442.7944	39.6263	184.7128	272.5923	289.5699
Year Dummies	No	No	No	Yes	Yes	Yes
Country Dummies	No	No	No	Yes	Yes	Yes
Bank Dummies	Yes	Yes	Yes	No	No	No

(*Continued*)

TABLE 5.   (Continued)

	ROE_{it}					
	Bank fixed effects			Year and country fixed effects		
	(1)	(2)	(3)	(1)	(2)	(3)
BS_{it}	0.0063	0.0104*	0.0083	–0.0108	–0.0077	–0.0099
	(0.0051)	(0.0049)	(0.0053)	(0.0183)	(0.0163)	(0.0161)
BI_{it}	–0.1405	–0.1066	–0.1257	1.0951**	0.9464**	1.0066*
	(0.1986)	(0.2169)	(0.2015)	(0.4087)	(0.4125)	(0.4536)
BM_{it}	0.1188**	0.1365***	0.1239**	0.3876**	0.3372**	0.3687**
	(0.0521)	(0.0370)	(0.0387)	(0.1573)	(0.1082)	(0.1206)
ACS_{it}	–0.0378	–0.0456**	–0.0420*	0.0415**	0.0310**	0.0341*
	(0.0227)	(0.0194)	(0.0215)	(0.0130)	(0.0118)	(0.0155)
ACI_{it}	–0.7426*	–0.8012**	–0.7614*	–2.0433***	–1.8173***	–1.9428***
	(0.3727)	(0.3103)	(0.3451)	(0.3332)	(0.2259)	(0.2422)
$SIZE_{it}$	0.0123	0.0195	0.0096	0.0042	0.0090	–0.0012
	(0.0193)	(0.0180)	(0.0183)	(0.0140)	(0.0099)	(0.0174)
AGE_{it}	–0.3131***	–0.2222**	–0.2725***	–0.1904**	–0.1800**	–0.1672*
	(0.0702)	(0.0882)	(0.0674)	(0.0795)	(0.0785)	(0.0881)
CAR_{it}	–2.5759***	–2.3174***	–2.5734***	–5.7340**	–5.5567**	–5.5228***
	(0.2491)	(0.4082)	(0.3576)	(1.8554)	(1.7105)	(1.6611)
INF_t	0.0003	0.0006	–0.0022	–0.0144	–0.0468*	–0.0399
	(0.0099)	(0.0079)	(0.0094)	(0.0251)	(0.0219)	(0.0264)
GDP_t	0.0261***	0.0248***	0.0256***	0.0278	0.0307*	0.0281
	(0.0069)	(0.0054)	(0.0064)	(0.0214)	(0.0163)	(0.0190)
OCF_{it}	–0.2854			0.0904		
	(0.3320)			(0.8024)		
ICF_{it}		–0.4001**			–0.8168**	
		(0.1273)			(0.2787)	
FCF_{it}			0.1641**			0.3695**
			(0.0571)			(0.1340)
Constant	2.5027***	1.8737***	2.3773***	1.9769**	1.8438***	2.0723**
	(0.6462)	(0.5642)	(0.5966)	(0.6711)	(0.4875)	(0.6901)
Observations	150	150	150	150	150	150
R-squared	0.334	0.403	0.36	0.6658	0.7122	0.6913
F-Statistic	1255.5492	295.4536	224.3401	256.9034	465.061	1263.1169
Year Dummies	No	No	No	Yes	Yes	Yes
Country Dummies	No	No	No	Yes	Yes	Yes
Bank Dummies	Yes	Yes	Yes	No	No	No

Note: Standard errors are in parenthesis. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

TABLE 6.　Regression Analysis-Developing countries

	ROA_{it}					
	Bank fixed effects			Year and country fixed effects		
	(1)	(2)	(3)	(1)	(2)	(3)
BS_{it}	0.0001	0.0000	0.0001	0.0005**	0.0005**	0.0005**
	(0.0003)	(0.0003)	(0.0003)	(0.0002)	(0.0002)	(0.0002)
BI_{it}	–0.0136**	–0.0127**	–0.0135**	–0.0036	–0.0037	–0.0053
	(0.0050)	(0.0042)	(0.0043)	(0.0066)	(0.0071)	(0.0077)
BM_{it}	–0.0060*	–0.0060*	–0.0060*	–0.0011	–0.0010	–0.0013
	(0.0030)	(0.0030)	(0.0033)	(0.0031)	(0.0031)	(0.0030)
ACS_{it}	0.0006	0.0005	0.0006	0.0013*	0.0012**	0.0013**
	(0.0007)	(0.0007)	(0.0008)	(0.0006)	(0.0005)	(0.0005)
ACI_{it}	–0.0037***	–0.0040***	–0.0043***	–0.0070**	–0.0070**	–0.0069***
	(0.0006)	(0.0006)	(0.0009)	(0.0023)	(0.0022)	(0.0021)
$SIZE_{it}$	–0.0042***	–0.0038**	–0.0068***	–0.0019	–0.0017	–0.0025
	(0.0010)	(0.0012)	(0.0011)	(0.0016)	(0.0018)	(0.0018)
AGE_{it}	–0.0064	–0.0082	0.0009	0.0046***	0.0046***	0.0047***
	(0.0049)	(0.0060)	(0.0049)	(0.0009)	(0.0009)	(0.0009)
CAR_{it}	0.0954	0.0934	0.1007	0.2183***	0.2191***	0.2146***
	(0.0793)	(0.0753)	(0.0776)	(0.0478)	(0.0489)	(0.0550)
INF_t	0.0003	0.0003	0.0002	–0.0001	0.0000	–0.0001
	(0.0002)	(0.0002)	(0.0002)	(0.0003)	(0.0003)	(0.0003)
GDP_t	0.0002*	0.0003*	0.0002	0.0004	0.0005	0.0004
	(0.0001)	(0.0001)	(0.0002)	(0.0004)	(0.0003)	(0.0004)
OCF_{it}	–0.0058			0.0129		
	(0.0110)			(0.0152)		
ICF_{it}		–0.0134*			–0.0246	
		(0.0061)			(0.0223)	
FCF_{it}			0.0251**			0.0048
			(0.0086)			(0.0062)
Constant	0.1583***	0.1533***	0.2026***	0.0555	0.0509	0.0745
	(0.0195)	(0.0184)	(0.0224)	(0.0404)	(0.0484)	(0.0439)
Observations	150	150	150	150	150	150
R-squared	0.2820	0.2850	0.2930	0.7020	0.7048	0.7007
F-Statistic	659.8748	8746.2188	2420.8551	233.6074	185.1850	231.7135
Year Dummies	No	No	No	Yes	Yes	Yes
Country Dummies	No	No	No	Yes	Yes	Yes
Bank Dummies	Yes	Yes	Yes	No	No	No

(*Continued*)

TABLE 6.   (Continued)

	ROE_{it}					
	Bank fixed effects			Year and country fixed effects		
	(1)	(2)	(3)	(1)	(2)	(3)
BS_{it}	0.0044	0.0042	0.0050	0.0088**	0.0090**	0.0077*
	(0.0033)	(0.0032)	(0.0036)	(0.0035)	(0.0037)	(0.0036)
BI_{it}	–0.0845*	–0.0648	–0.0783**	–0.0533	–0.0274	–0.0665
	(0.0437)	(0.0431)	(0.0337)	(0.0717)	(0.0717)	(0.0833)
BM_{it}	–0.0728***	–0.0738***	–0.0735**	–0.0209	–0.0198	–0.0376
	(0.0194)	(0.0201)	(0.0248)	(0.0230)	(0.0241)	(0.0236)
ACS_{it}	0.0018	0.0019	0.0020	0.0034	0.0034	0.0053
	(0.0076)	(0.0075)	(0.0088)	(0.0070)	(0.0068)	(0.0077)
ACI_{it}	–0.0305***	–0.0361***	–0.0465***	–0.0847**	–0.0885**	–0.0956***
	(0.0073)	(0.0038)	(0.0081)	(0.0317)	(0.0295)	(0.0270)
$SIZE_{it}$	–0.0235	–0.0173	–0.0917***	0.0055	0.0101	–0.0322
	(0.0163)	(0.0188)	(0.0195)	(0.0213)	(0.0264)	(0.0202)
AGE_{it}	–0.1146	–0.1379	0.0722	0.0456**	0.0440**	0.0477**
	(0.0742)	(0.0862)	(0.0707)	(0.0178)	(0.0186)	(0.0172)
CAR_{it}	–1.8536***	–1.7654***	–1.6885***	–1.7680***	–1.6450***	–1.5157***
	(0.5303)	(0.4924)	(0.4598)	(0.3218)	(0.3115)	(0.3250)
INF_t	0.0015	0.0017	0.0006	–0.0026	–0.0018	–0.0028
	(0.0022)	(0.0022)	(0.0024)	(0.0033)	(0.0029)	(0.0032)
GDP_t	0.0034***	0.0032*	0.0028	0.0053	0.0060	0.0045
	(0.0010)	(0.0014)	(0.0021)	(0.0047)	(0.0038)	(0.0048)
OCF_{it}	–0.1962			–0.1111		
	(0.1552)			(0.2131)		
ICF_{it}		–0.0601			–0.2567	
		(0.0940)			(0.2046)	
FCF_{it}			0.6548***			0.4075***
			(0.1646)			(0.0818)
Constant	1.5214***	1.4148***	2.6575***	0.3745	0.2029	1.3804**
	(0.2443)	(0.2631)	(0.3229)	(0.5161)	(0.6719)	(0.5539)
Observations	150	150	150	150	150	150
R-squared	0.255	0.249	0.299	0.5392	0.5425	0.5507
F-Statistic	67.7291	355.4369	162.3352	60.7801	142.4395	550.6513
Year Dummies	No	No	No	Yes	Yes	Yes
Country Dummies	No	No	No	Yes	Yes	Yes
Bank Dummies	Yes	Yes	Yes	No	No	No

Note: Standard errors are in parenthesis. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

characteristics of banks. The study also finds a significantly negative relationship between audit committee independence and bank performance for developed and developing countries. In models 1, 2 and 3 (ROA_{it} for developed countries controlled for year and country fixed effects) the estimated coefficients on audit committee independence equal to –0.0878***, –0.0801***, and –0.0848***, respectively. These estimated coefficients imply that an increase of one unit in audit committee independence decreases returns on assets by –0.0878, –0.0801 and –0.0848, or a semi-elasticity of 586%, 533% and 567%, respectively (as the mean ROA_{it} equals to 0.0151). In models 1, 2 and 3 (ROA_{it} for developing countries controlled for year and country fixed effects) the estimated coefficients on audit committee independence equal to –0.0070*** for all the models. These estimated coefficients imply that a decrease of one unit in audit committee independence increases returns on assets by 0.0070, or a semi-elasticity of 27% (as the mean ROA_{it} equals to 0.0255). This negative impact of audit committee independence on bank performance is likely related to a diminished use of earnings management due to increased monitoring by outside directors of audit committees (Klein, 2002).

Moreover, the study finds a significantly positive relationship between financing cash flows and returns on equity for both developed and developing countries. the study also finds a significantly positive relationship between financing cash flows and returns on assets for developing countries (when controlling for bank fixed effects) and marginally significant positive relationship for developed countries (when controlling for year and country fixed effects). Further, the study finds a significantly negative relationship between investment cash flows and bank performance (returns on equity) for developed countries only. These findings show that investments made by commercial banks are cash outflows while financing involves cash inflows, showing why investment cash flows and financing cash flows are respectively negatively and positively related to bank performance.

Furthermore, bank size is significantly negatively related to returns on assets for developing countries only (when controlling for bank fixed effects). Bank age is significantly positively related to returns on assets and returns on equity for developing countries (when controlling for year and country fixed effects). By contrast, bank age is significantly negatively related to returns on equity in developed countries. These findings show that an increase in bank size limits bank performance in developing countries while more experienced banks perform better in

developing countries. Further, the capital adequacy ratio has a significantly negative impact on returns on equity in developed and developing countries, showing that an increased use of equity financing decreases returns on equity. While the study does not find a significant impact of inflation on bank performance, it finds a positive impact of economic growth on bank performance in developed and developing countries (when controlling for bank fixed effects).

B. Mediation Results

Table 7, presents structural equation modeling (SEM) results for developed countries, and table 8 presents those for developing countries. For developed countries, the study observes six partial mediations (table 7, rows 8, 11, 20, 23, 26, and 29) through investment cash flows. First partial mediation is found between board independence and returns on assets. Regarding indirect paths, paths A (Coef. = –0.1443*) and B (Coef. = –0.0505***) are significant and regarding direct paths, path C is also significant (Coef. = 0.0405***). This denotes the partial mediation of investment cash flows between board independence and returns on assets. Second partial mediation is found between board independence and returns on equity. Regarding indirect paths, paths A (Coef. = –0.1443*) and B (Coef. = –1.0766***) are significant and regarding direct paths, path C is also significant (Coef. = 0.6091***). This denotes the partial mediation of investment cash flows between board independence and returns on equity. Third partial mediation is found between audit committee size and returns on assets. Regarding indirect paths, paths A (Coef. = –0.0157***) and B (Coef. = –0.0505***) are significant and regarding direct paths, path C is also significant (Coef. = 0.0026***). This denotes the partial mediation of investment cash flows between audit committee size and returns on assets. Fourth partial mediation is found between audit committee size and returns on equity. Regarding indirect paths, paths A (Coef. = –0.0157***) and B (Coef. = –1.0766***) are significant and regarding direct paths, path C is also significant (Coef. = 0.0467***). This denotes the partial mediation of investment cash flows between audit committee size and returns on equity. Fifth partial mediation is found between audit committee independence and returns on assets. Regarding indirect paths, paths A (Coef. = 0.2640*) and B (Coef. = –0.0505***) are significant and regarding direct paths, path C is also significant (Coef. = –0.0896***). This denotes the partial mediation of investment cash

TABLE 7.   Structural Equation Modeling Results (Developed Countries)

	Path	Indirect Path		Direct Path	
		Path A	Path B	Path C	Mediation
1	$BS_{it} \rightarrow OCF_{it} \rightarrow ROA_{it}$	0.0001 (0.0014)	0.0885*** (0.0246)	0.0010*** (0.0003)	No Mediation
2	$BS_{it} \rightarrow ICF_{it} \rightarrow ROA_{it}$	–0.0011 (0.0028)	–0.0505*** (0.0165)	0.0010*** (0.0003)	No Mediation
3	$BS_{it} \rightarrow FCF_{it} \rightarrow ROA_{it}$	0.0007 (0.0046)	0.0108 (0.0113)	0.0010*** (0.0003)	No Mediation
4	$BS_{it} \rightarrow OCF_{it} \rightarrow ROE_{it}$	0.0001 (0.0014)	1.1264*** (0.4322)	0.0163*** (0.0061)	No Mediation
5	$BS_{it} \rightarrow ICF_{it} \rightarrow ROE_{it}$	–0.0011 (0.0028)	–1.0766*** (0.2899)	0.0163*** (0.0061)	No Mediation
6	$BS_{it} \rightarrow FCF_{it} \rightarrow ROE_{it}$	0.0007 (0.0046)	0.1626 (0.1989)	0.0163*** (0.0061)	No Mediation
7	$BI_{it} \rightarrow OCF_{it} \rightarrow ROA_{it}$	0.0524 (0.0412)	0.0885*** (0.0246)	0.0405*** (0.0104)	No Mediation
8	$BI_{it} \rightarrow ICF_{it} \rightarrow ROA_{it}$	–0.1443* (0.0826)	–0.0505*** (0.0165)	0.0405*** (0.0104)	Partial Mediation
9	$BI_{it} \rightarrow FCF_{it} \rightarrow ROA_{it}$	0.1284 (0.1338)	0.0108 (0.0113)	0.0405*** (0.0104)	No Mediation
10	$BI_{it} \rightarrow OCF_{it} \rightarrow ROE_{it}$	0.0524 (0.0412)	1.1264*** (0.4322)	0.6091*** (0.1833)	No Mediation
11	$BI_{it} \rightarrow ICF_{it} \rightarrow ROE_{it}$	–0.1443* (0.0826)	–1.0766*** (0.2899)	0.6091*** (0.1833)	Partial Mediation
12	$BI_{it} \rightarrow FCF_{it} \rightarrow ROE_{it}$	0.1284 (0.1338)	0.1626 (0.1989)	0.6091*** (0.1833)	No Mediation
13	$BM_{it} \rightarrow OCF_{it} \rightarrow ROA_{it}$	–0.0042 (0.0106)	0.0885*** (0.0246)	0.0082*** (0.0026)	No Mediation
14	$BM_{it} \rightarrow ICF_{it} \rightarrow ROA_{it}$	–0.0208 (0.0213)	–0.0505*** (0.0165)	0.0082*** (0.0026)	No Mediation
15	$BM_{it} \rightarrow FCF_{it} \rightarrow ROA_{it}$	0.0247 (0.0346)	0.0108 (0.0113)	0.0082*** (0.0026)	No Mediation
16	$BM_{it} \rightarrow OCF_{it} \rightarrow ROE_{it}$	–0.0042 (0.0106)	1.1264*** (0.4322)	0.2193*** (0.0463)	No Mediation
17	$BM_{it} \rightarrow ICF_{it} \rightarrow ROE_{it}$	–0.0208 (0.0213)	–1.0766*** (0.2899)	0.2193*** (0.0463)	No Mediation
18	$BM_{it} \rightarrow FCF_{it} \rightarrow ROE_{it}$	0.0247 (0.0346)	0.1626 (0.1989)	0.2193*** (0.0463)	No Mediation
19	$ACS_{it} \rightarrow OCF_{it} \rightarrow ROA_{it}$	–0.0014 (0.0028)	0.0885*** (0.0246)	0.0026*** (0.0007)	No Mediation
20	$ACS_{it} \rightarrow ICF_{it} \rightarrow ROA_{it}$	–0.0157*** (0.0057)	–0.0505*** (0.0165)	0.0026*** (0.0007)	Partial Mediation

(*Continued*)

TABLE 7.   (Continued)

	Path	Indirect Path		Direct Path	
		Path A	Path B	Path C	Mediation
21	$ACS_{it} \rightarrow FCF_{it} \rightarrow ROA_{it}$	0.0221**	0.0108	0.0026***	No Mediation
		(0.0092)	(0.0113)	(0.0007)	
22	$ACS_{it} \rightarrow OCF_{it} \rightarrow ROE_{it}$	–0.0014	1.1264***	0.0467***	No Mediation
		(0.0028)	(0.4322)	(0.0126)	
23	$ACS_{it} \rightarrow ICF_{it} \rightarrow ROE_{it}$	–0.0157***	–1.0766***	0.0467***	Partial Mediation
		(0.0057)	(0.2899)	(0.0126)	
24	$ACS_{it} \rightarrow FCF_{it} \rightarrow ROE_{it}$	0.0221**	0.1626	0.0467***	No Mediation
		(0.0092)	(0.1989)	(0.0126)	
25	$ACI_{it} \rightarrow OCF_{it} \rightarrow ROA_{it}$	–0.0535	0.0885***	–0.0896***	No Mediation
		(0.0789)	(0.0246)	(0.0198)	
26	$ACI_{it} \rightarrow ICF_{it} \rightarrow ROA_{it}$	0.2640*	–0.0505***	–0.0896***	Partial Mediation
		(0.1581)	(0.0165)	(0.0198)	
27	$ACI_{it} \rightarrow FCF_{it} \rightarrow ROA_{it}$	–0.2734	0.0108	–0.0896***	No Mediation
		(0.2563)	(0.0113)	(0.0198)	
28	$ACI_{it} \rightarrow OCF_{it} \rightarrow ROE_{it}$	–0.0535	1.1264***	–2.1978***	No Mediation
		(0.0789)	(0.4322)	(0.3480)	
29	$ACI_{it} \rightarrow ICF_{it} \rightarrow ROE_{it}$	0.2640*	–1.0766***	–2.1978***	Partial Mediation
		(0.1581)	(0.2899)	(0.3480)	
30	$ACI_{it} \rightarrow FCF_{it} \rightarrow ROE_{it}$	–0.2734	0.1626	–2.1978***	No Mediation
		(0.2563)	(0.1989)	(0.3480)	

Note: Standard errors are in parenthesis. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

flows between audit committee independence and returns on assets. Sixth partial mediation is found between audit committee independence and returns on equity. Regarding indirect paths, paths A (Coef. = 0.2640*) and B (Coef. = –1.0766***) are significant and regarding direct paths, path C is also significant (Coef. = –2.1978***). This denotes the partial mediation of investment cash flows between audit committee independence and returns on equity.

For developing countries the study observes two partial mediations (table 8, rows 1, and 7) through operating cash flows. First partial mediation is found between board size and returns on assets. Regarding indirect paths, paths A (Coef. = –0.0044**) and B (Coef. = –0.0605**) are significant and regarding direct paths, path C is also significant (Coef. = 0.0008*). This reveals the partial mediation of operating cash flows between board size and returns on assets. A second form of partial mediation is found between board independence and returns on assets. Regarding indirect paths, paths A (Coef. = –0.0864***) and B (Coef. = –0.0605**) are significant and regarding direct paths, path C is also

TABLE 8.   Structural Equation Modeling Results (Developing Countries)

		Indirect Path		Direct Path	
	Path	Path A	Path B	Path C	Mediation
1	$BS_{it} \rightarrow OCF_{it} \rightarrow ROA_{it}$	−0.0044**	−0.0605**	0.0008*	Partial Mediation
		(0.0017)	(0.0282)	(0.0005)	
2	$BS_{it} \rightarrow ICF_{it} \rightarrow ROA_{it}$	−0.0009	−0.0875***	0.0008*	No Mediation
		(0.0017)	(0.0256)	(0.0005)	
3	$BS_{it} \rightarrow FCF_{it} \rightarrow ROA_{it}$	0.0010	−0.0197	0.0008*	No Mediation
		(0.0027)	(0.0166)	(0.0005)	
4	$BS_{it} \rightarrow OCF_{it} \rightarrow ROE_{it}$	−0.0044**	−0.1112	0.0026	No Mediation
		(0.0017)	(0.2954)	(0.0052)	
5	$BS_{it} \rightarrow ICF_{it} \rightarrow ROE_{it}$	−0.0009	−0.9692***	0.0026	No Mediation
		(0.0017)	(0.2676)	(0.0052)	
6	$BS_{it} \rightarrow FCF_{it} \rightarrow ROE_{it}$	0.0010	0.1387	0.0026	No Mediation
		(0.0027)	(0.1738)	(0.0052)	
7	$BI_{it} \rightarrow OCF_{it} \rightarrow ROA_{it}$	−0.0864***	−0.0605**	0.0015*	Partial Mediation
		(0.0186)	(0.0282)	(0.0058)	
8	$BI_{it} \rightarrow ICF_{it} \rightarrow ROA_{it}$	0.0124	−0.0875***	0.0015	No Mediation
		(0.0191)	(0.0256)	(0.0058)	
9	$BI_{it} \rightarrow FCF_{it} \rightarrow ROA_{it}$	−0.0066	−0.0197	0.0015	No Mediation
		(0.0299)	(0.0166)	(0.0058)	
10	$BI_{it} \rightarrow OCF_{it} \rightarrow ROE_{it}$	−0.0864***	−0.1112	0.0600	No Mediation
		(0.0186)	(0.2954)	(0.0606)	
11	$BI_{it} \rightarrow ICF_{it} \rightarrow ROE_{it}$	0.0124	−0.9692***	0.0600	No Mediation
		(0.0191)	(0.2676)	(0.0606)	
12	$BI_{it} \rightarrow FCF_{it} \rightarrow ROE_{it}$	−0.0066	0.1387	0.0600	No Mediation
		(0.0299)	(0.1738)	(0.0606)	
13	$BM_{it} \rightarrow OCF_{it} \rightarrow ROA_{it}$	0.0106	−0.0605**	0.0012	No Mediation
		(0.0115)	(0.0282)	(0.0034)	
14	$BM_{it} \rightarrow ICF_{it} \rightarrow ROA_{it}$	−0.0406***	−0.0875***	0.0012	Full Mediation
		(0.0117)	(0.0256)	(0.0034)	
15	$BM_{it} \rightarrow FCF_{it} \rightarrow ROA_{it}$	−0.0165	−0.0197	0.0012	No Mediation
		(0.0184)	(0.0166)	(0.0034)	
16	$BM_{it} \rightarrow OCF_{it} \rightarrow ROE_{it}$	0.0106	−0.1112	0.0124	No Mediation
		(0.0115)	(0.2954)	(0.0353)	
17	$BM_{it} \rightarrow ICF_{it} \rightarrow ROE_{it}$	−0.0406***	−0.9692***	0.0124	Full Mediation
		(0.0117)	(0.2676)	(0.0353)	
18	$BM_{it} \rightarrow FCF_{it} \rightarrow ROE_{it}$	−0.0165	0.1387	0.0124	No Mediation
		(0.0184)	(0.1738)	(0.0353)	
19	$ACS_{it} \rightarrow OCF_{it} \rightarrow ROA_{it}$	−0.0020	−0.0605**	−0.0010	No Mediation
		(0.0034)	(0.0282)	(0.0010)	
20	$ACS_{it} \rightarrow ICF_{it} \rightarrow ROA_{it}$	−0.0004	−0.0875***	−0.0010	No Mediation
		(0.0035)	(0.0256)	(0.0010)	

(*Continued*)

TABLE 8. **(Continued)**

	Path	Indirect Path		Direct Path	
		Path A	Path B	Path C	Mediation
21	$ACS_{it} \rightarrow FCF_{it} \rightarrow ROA_{it}$	–0.0002	–0.0197	–0.0010	No Mediation
		(0.0055)	(0.0166)	(0.0010)	
22	$ACS_{it} \rightarrow OCF_{it} \rightarrow ROE_{it}$	–0.0020	–0.1112	–0.0162	No Mediation
		(0.0034)	(0.2954)	(0.0102)	
23	$ACS_{it} \rightarrow ICF_{it} \rightarrow ROE_{it}$	–0.0004	–0.9692***	–0.0162	No Mediation
		(0.0035)	(0.2676)	(0.0102)	
24	$ACS_{it} \rightarrow FCF_{it} \rightarrow ROE_{it}$	–0.0002	0.1387	–0.0162	No Mediation
		(0.0055)	(0.1738)	(0.0102)	
25	$ACI_{it} \rightarrow OCF_{it} \rightarrow ROA_{it}$	0.0230	–0.0605**	–0.0067	No Mediation
		(0.0149)	(0.0282)	(0.0043)	
26	$ACI_{it} \rightarrow ICF_{it} \rightarrow ROA_{it}$	–0.0127	–0.0875***	–0.0067	No Mediation
		(0.0153)	(0.0256)	(0.0043)	
27	$ACI_{it} \rightarrow FCF_{it} \rightarrow ROA_{it}$	–0.0078	–0.0197	–0.0067	No Mediation
		(0.0239)	(0.0166)	(0.0043)	
28	$ACI_{it} \rightarrow OCF_{it} \rightarrow ROE_{it}$	0.0230	–0.1112	–0.0865*	No Mediation
		(0.0149)	(0.2954)	(0.0446)	
29	$ACI_{it} \rightarrow ICF_{it} \rightarrow ROE_{it}$	–0.0127	–0.9692***	–0.0865*	No Mediation
		(0.0153)	(0.2676)	(0.0446)	
30	$ACI_{it} \rightarrow FCF_{it} \rightarrow ROE_{it}$	–0.0078	0.1387	–0.0865*	No Mediation
		(0.0239)	(0.1738)	(0.0446)	

Note: Standard errors are in parenthesis. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

significant (Coef. = 0.0015*). It denotes the partial mediation of operating cash flows between board independence and returns on assets. Further, we find two full mediations (table 8, rows 14, and 17) through investment cash flows. First full mediation is observed between board meetings and returns on assets. Regarding indirect paths, paths A (Coef. = –0.0406***) and B (Coef. = –0.0875***) are significant and regarding direct paths, path C is not significant (Coef. = 0.0012). This denotes full mediation of investment cash flows between board meetings and returns on assets. Second full mediation is observed between board meetings and returns on equity. Regarding indirect paths, paths A (Coef. = –0.0406***) and B (Coef. = –0.9692***) are significant and regarding direct paths, path C is not significant (Coef. = 0.0124). This denotes full mediation of investment cash flows between board meetings and returns on equity.

The above findings show that investment cash flows partially mediate the relationship between *CG* mechanisms and bank performance in developed countries. This is likely the case because

developed countries have fewer investment opportunities, and thus board members are more concerned with investments during their board meetings. On the other hand, investment cash flows fully mediate the relationship between *CG* mechanisms and bank performance and operating cash flows partially mediate the relationship between *CG* mechanisms and bank performance in developing countries. This is likely the case because boards are less independent in developing countries than they are in developed countries. Therefore, executive board members are more concerned with operating cash flows. Further, financing cash flows do not have any mediating impact in developed or developing countries. This may be the case because the major part of bank financing depends upon depositors, their saving behavior, and interest rates in the economy. Therefore, corporate governance does not have any impact on these cash flows.

V. Conclusion and Discussion

This study explores the impact of corporate governance on bank performance in developed and developing countries. It also investigates the mediating role of cash flows between corporate governance and bank performance. A sample size of 30 commercial banks is analyzed and data for the study is collected from two developed (Australia and the USA) and three developing countries (Bangladesh, Malaysia, and Pakistan) for 2006 to 2015. Bank as well as year and country fixed effects regressions along with structural equation modeling is applied for the purposes of the study. The results explain a stronger impact of corporate governance on bank performance in developed countries than in developing countries and explains that internal governance mechanisms are stronger in developed countries than they are in developing countries. The results also show that board independence improves bank returns in developed countries while destroys bank returns in developing countries. This is likely the case because strong information asymmetries and poor reporting quality levels in developing countries render the role of external directors less effective. Further, the results show that investment cash flows act a mediator of corporate governance and bank performance in developed as well as developing countries, while operating cash flows mediate the relationship between bank performance and corporate governance in developing countries only.

In summary, internal and external governance mechanisms are weaker in developing countries than they are in developed countries. Accordingly, there is a need to improve institutions in developing countries to render corporate governance more effective and fruitful. This study offers empirical evidence on the impact of corporate governance on bank performance and lays groundwork by revealing the significant mediating role of cash flows in corporate governance and bank performance. Future studies may consider more countries, larger samples and more dimensions of corporate governance mechanisms to glean more insight into the mediating role of cash flows in corporate governance and bank performance.

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