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Influence of governance bundles and directors' social capital on cash holding in foreign cross-listed firms

Suman Lodh[1] | **Monomita Nandy[2]** [ORCID] | **Jaskaran Kaur[3]**

[1]Middlesex University Business School, Middlesex University, London, UK

[2]Brunel Business School, Brunel University, Middlesex, UK

[3]University of Bradford, Bradford, UK

Correspondence
Monomita Nandy, Brunel Business School, Brunel University, Kingston Lane, Uxbridge, Middlesex UB8 3PH, UK.
Email: monomita.nandy@brunel.ac.uk

Abstract

This paper provides new evidence on how both governance bundles and directors' social capital together can help to determine cash holdings for foreign cross-listed firms. Using a large cross-country sample of 1677 publicly listed firms from 32 countries during the period of 2004–2015, we find a positive relationship between governance bundles and cash holdings for foreign cross-listed firms with higher directors' social capital. We address potential issue of endogeneity. Therefore, our findings are robust to alternative model specifications and instrumentations and alternative measure of social capital. The findings of our study contribute to the inconclusive decision in the academic literature related to cash holdings, governance bundles, and directors' social capital, especially related to the foreign cross-listed firms. In addition, the findings can assist the stakeholders of foreign cross-listed firms to understand the intention of the firms' cash holdings and allow policy makers to identify the need of modification for governance structure by controlling the opportunistic behaviour of the firm manager.

KEYWORDS
cash holding, directors' network, excess centrality, foreign cross listing, governance bundles, social capital

1 | INTRODUCTION

This paper examines the influence of governance bundles[i] and directors' social capital[ii] on cash holdings for foreign cross-listed[iii] firms (hereafter FCLFs). More specifically, we investigate if the interaction between governance bundles and directors' social capital can affect the cash-holding decisions of FCLFs and how it is manifested in corporate strategies. Prior literature suggests that firm's decision-making process depends on multiple combinations or 'bundle" of governance mechanisms (Aguilera et al., 2015; Ernstberger & Grüning, 2013; Rediker & Seth, 1995).

The governance bundles are "the structures or combinations of rights and responsibilities that operate or interact for the governance of organizations" (Millar, 2014, p. 195). The foreign cross listing is possible when firms strictly follow higher[iv] corporate governance requirements (e.g., Doidge et al., 2004; Li et al., 2015; Reese Jr & Weisbach, 2002) and the characteristics (such as legal environment) specific for the parent country of firms (Fresard & Salva, 2010; Smith et al., 2021). The above-mentioned studies indicate that a higher level of corporate governance can influence the insiders of FCLFs, not to use the cash holding for private benefits. Thus, there is a

possibility of less cash holding by FCLFs in a country with a stronger governance framework. However, as the cash savings are more sensitive to stock price for foreign cross-listed firms, we observe a higher cash-holding tendency among these FCLFs (Kusnadi, 2015). From the above discussion it is evident that firm governance or country governance separately or together cannot draw a conclusion about the cash holdings by FCLFs. Another stream of literature focuses on directors' social capital in determining their cash holding. For instance, Miranda-Lopez et al. (2019) argue that firms with higher social capital prefer to hold less cash. Therefore, it is important to test whether the directors' social capital in the presence of governance bundles can provide a better understanding about the cash holdings strategy by FCLFs.

Following Kim and Cannella Jr (2008) and Fogel et al. (2018), we define social capital as the interpersonal linkages of directors, which is important to the corporate board. The directors' social capital, proxied by their internal and external social networks, identifies their relative position within their network and the power and influence on their board. For instance, an important position within their network, measured as centrality and as personal and professional connections (for definition, see Nandy et al., 2021), helps directors in gathering and transmitting private information related to corporate strategies, industry trends, as well as foreign markets (El-Khatib et al., 2015; Fracassi & Tate, 2012; Kim & Cannella Jr, 2008; Larcker et al., 2013). According to Li et al. (2015), directors of FCLFs gain high-quality information about corporate disclosures when processing specific information than do the directors of domestic listed firms. This becomes easier when the directors' social capital is formed through various channels, such as employment activities, educational institutes, or participation in social clubs and charitable organizations (Chahine et al., 2019; Fracassi & Tate, 2012; Renneboog & Zhao, 2014). So, FCLFs' higher level of corporate governance and directors' social capital facilitate their ties to the external stakeholders, which can provide more, newer, and potentially more valuable information from outside the firm; in turn, this reduces wasteful spending and allows their firm to save cash (Benson et al., 2018). To the best of our knowledge, this is the first paper to discuss in detail about how social capital and governance bundle together can determine the cash holdings of FCLFs.

Foreign cross listing is a strategic decision of a firm, which is associated with the real economic consequences affecting firm performance (Oh et al., 2021). According to the resource-based theory, when the firms are cross-listed in a foreign country, they enjoy a significant advantage of 'cost of capital' by adjusting to the corporate governance framework of the foreign country (Hail & Leuz, 2009). The valuation of the FCLFs is mostly higher than the non-cross-listed domestic firms (Doidge et al., 2004). FCLFs need to maintain legitimacy. They mostly confront institutional pressures as they either come to a foreign land from a developed or emerging market (Kostova & Zaheer, 1999). So, to take the advantage of cost of capital, the FCLFs require overcoming formal and informal constraints (Peng et al., 2009). Thus, the dynamic relationship between the resource-based view and the institutional view affect directors' social capital to influence the strategic decision of cash holding of the FCLFs (Ahuja & Yayavaram, 2011; Van Essen et al., 2013). It is also important to note that, the directors' cash holding decision is influenced by their cognitive ability and by the structural constraints associated with the trust and information flow, which are the two most important components of the social capital theory (Javakhadze et al., 2016). In this paper, we combine social capital theory, institutional theory, and resource-based view to explain how the interaction between corporate governance bundles and directors' social capital can generate economic significance by determining the cash holdings of FCLFs.

To investigate the above question, we collect a sample of all FCLFs from DataStream database. Our final sample consists of 6123 firm-year observations for the period 2004–2015 from 32 countries. We collect country-level governance data from World Bank and firm-level corporate governance data from Thomson Reuters's ASSET4 database. Following Nandy et al. (2020), we calculate the directors' social capital proxied by network centrality[v] for these firms. Prior studies focus only on the effect directors' networks on financial reporting quality and external financing, thus ignoring the importance of cross listing, which can bring invaluable benefits to firm performance. Our study examines the combined impact of governance bundles and directors' social capital on the decision of cash holdings by FCLFs, which extends and contributes to the existing literature (e.g., Javakhadze et al., 2016; Omer et al., 2020). Our findings are corroborated by several robustness tests. First, to mitigate the concern about endogeneity due to reverse causality and omitted variable bias, instrumental variable regression - two-stage ordinary least squares (2SLS). Second, we use directors' excess social capital to confirm our results are not driven from directors' personal attributes, such as their experiences. We also check that our results are not driven by the financial crisis.

Our study makes several contributions to the literature. First, prior studies have separately examined the impact of certain firm- and country-level governance factors on cash holding (Seifert & Gonenc, 2018) or on cross listing (Bris et al., 2012). We contribute to these streams of literature by examining how governance bundles affect

firms' cash holdings in FCLFs. Secondly, another stream of literature on social capital discusses the impact of directors' social capital on cash holding decisions, focusing mainly on developed markets (Miranda-Lopez et al., 2019). We extend this literature by examining a cross-country sample of both developed and developing markets of FCLFs. Thirdly, we combine resource-based view and institutional theory with the social capital theory to explain the research hypothesis related to cash holding in a cross-country set-up. The findings of this study can guide policy makers and regulators, to implement additional mandatory requirements to improve corporate governance for FCLFs, especially during economic uncertainty. This study can also improve the awareness of the managers, investors, and stakeholders of FCLFs about the importance of governance factors along with the social capital while taking operational decisions in these firms.

The remainder of this paper is structured as follows: In Section 2, we review the relevant literature and develop testable hypotheses explaining the relation between governance bundles and directors' social capital and its impact on cash holdings for FCLFs. Section 3 discusses the research methodology employed in the study. In Section 4, we discuss the main findings and analyse the process we followed to confirm the robustness of the findings. Finally, we conclude in Section 5 indicating the limitation of the study and the scope for further research.

2 | LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

The focus of the paper is to examine the cash holdings of FCLFs, as cash is the most liquid asset for firms. Previous literature explains the principal motives for a firm's cash holdings decision. The trade-off theory argues that the optimal cash holding level is a trade-off between the costs and the benefits of holding cash (Belkhir et al., 2018). In particular, firms keep cash as a protection against financial distress and the high costs of retaining external funds and liquidating assets. However, holding cash implies that the firm bears an opportunity cost of capital invested in liquid assets (Ferreira & Vilela, 2004). The transaction motive argues that firms demand cash when they incur the cost of transactions associated with converting non-cash assets to cash and utilizing cash for payments (Baumol, 1952; Belkhir et al., 2018; Miller & Orr, 1966). Under this motive, larger firms should hold less cash than smaller firms because larger firms enjoy economies of scale. In addition, as the magnitudes of cash flows are unpredictable, the precautionary motive suggests that firms often hold more cash as a buffer against adverse

shocks and financial distress (Hill et al., 2014). Similarly, Han and Qiu (2007) find that the cash holdings of constrained firms increase with cash flow volatility.

Since cash is a liquid asset, directors may turn these resources into private benefits (Arouri & Pijourlet, 2017; Myers & Rajan, 1998). Harford et al. (2008) argue that when governance mechanisms are weak, cash leads to inefficient investment and reduces the value of a firm. Agency theory suggests that directors hold ample amounts of cash to increase their private benefits or increase their power via a greater control of resources, which results in increasing conflicts between shareholders and directors (Graham & Leary, 2018). However, prior literature argues that the agency problems can be mitigated by showing high quality accounting disclosure, which can limit the flexibility of directors to potentially abuse corporate assets, in turn increasing the firm valuation (Hope et al., 2012). With the resource-based view, we explain that how the cash can be used for the value creation for the FCLFs rather than for the benefits of the directors.

Firms that are cross-listed on a foreign market are governed together by firm-level and country-level governance. The corporate governance bundles can determine the transparency of these firms. Amira and Muzere (2011) argue that higher transparency reduces monitoring costs. So, FCLFs are motivated to hold significantly more cash than domestic listed firms do (Huang et al., 2013). Thus, only national governance factors alone are not enough to explain the country- and firm-level variances (e.g., Aslan & Kumar, 2014; Nandy et al., 2021; Panayi et al., 2021). In addition, Seifert and Gonenc (2018) document that various combinations of firm and country governance factors are related to cash holdings for firms, which is consistent with the institutional theory.

The combination of the institutional and resource-based view with the social capital theory indicates that FCLFs operating under higher governance bundles (firm and country governance) reduce any misallocation of funds and the monitoring costs (Chaney et al., 2011). Firms, following appropriate governance bundles, generate trust among the stakeholders of the FCLF about lower agency issues, which allow directors to spend their liquid assets wisely, resulting in higher levels of cash holdings.

To investigate how having a well-defined corporate governance affects firms' decision to hold cash, prior studies use the G-index and employment protection as a proxy for governance (Cui et al., 2018). A number of studies also focus on the relationship between firm characteristics, such as multiple directorships (Chou & Feng, 2019), CFO (Florackis & Sainani, 2018), firms' CSR performance (Oh et al., 2018), labour unemployment

insurance (Devos & Rahman, 2018), firm structure (Subramaniam et al., 2011), political connections (Hill et al., 2014), financial policy (Nnadi et al., 2021) and cash holdings. Another stream of literature investigates the determinants of governance and cash holdings at a country level. For example, Dudley and Zhang (2016) find that firms in countries with a higher level of trust hold more cash. Dittmar and Mahrt-Smith (2007) show that the value of cash is much lower in poorly governed firms, as cash degenerates in ways that significantly reduce future operating performance. Similarly, Kalcheva and Lins (2007) reveal that when country-level governance is weak, outside investors discount the value of cash held by firms with managerial agency problems. In other words, the value of cash is lower when controlling directors hold more cash.

Directors' social capital can influence access to external capital through their own networks, which are considered as channels through which information and knowledge are shared, existing relationships are enhanced, and new relationships are developed (Larcker et al., 2013). Directors with high social capital can utilize their connections to gain the knowledge and private information about cross-listing markets, which can resolve the problem of information asymmetry (Schoorman et al., 1981). However, directors with higher social capital may abuse their social influence and power over other board members, leading to entrenchment. Thus, directors' higher social capital may weaken the corporate governance and internal control, leading to more agency conflicts (e.g., Core et al., 1999; Fich & Shivdasani, 2006; Omer et al., 2020).

Although most of these studies find that governance factors and directors' social capital exert an impact on a firm's cash holding decision, they offer mixed results as they are studied separately. Based on the above discussion, we construct the following hypothesis 1 in this research:

> **H1.** Increase in both governance bundle and directors' social capital together leads to more cash holdings by foreign cross-listed firms.

3 | METHODOLOGY AND ECONOMETRIC APPROACH

3.1 | Sample selection

To construct the sample for this study, we collect information for foreign cross-listed firms (FCLFs) from DataStream. We include all firms cross-listed in all the foreign stock exchanges available in the DataStream database. The second major component of our analysis is

information regarding governance bundles. The country-level governance data is drawn from the World Bank, and firm-level governance data is drawn from the Thomson Reuters ASSET4 database. The third major component in our analysis is directors' social capital data, which includes their social ties with other directors. Following Cheng et al. (2019) and Miranda-Lopez et al. (2019), we use four variables (degree centrality, closeness centrality, betweenness centrality and eigenvector centrality) and a composite score to measure directors' connections in this study. To measure these centrality variables, we obtain information about each director's employment history, social activities, education etc. from the BoardEx database. Our final sample consists of 6123 firm-year observations between the period of 2004–2015[vi] from 32 countries.

3.2 | Measuring governance bundles

Following Lim et al. (2016), our country-level governance bundle is measured by six dimensions: (1) voice and accountability, (ii) political stability and absence of violence, (iii) government effectiveness, (iv) regulatory quality, (v) rule of law, and (vi) control of corruption. We define the score of a country for a specific year as the average score of these six dimensions. This measure of country governance contains many attributes that should foster an environment conducive to country governance. The country governance bundle, the average (firm-year) of the above-mentioned six indicators, is denoted by *Country CG*. Following Seifert and Gonenc (2018), we construct a firm-level governance bundle for each firm for a particular year based on the following five categories: (i) functions of the board of directors, (ii) compensation policy of the board of directors, (iii) structure of the board of directors, (iv) company vision and strategy, and (v) shareholders' rights. The firm governance bundle, average (firm-year) of the above-mentioned five indicators, is denoted by *Firm CG*. To calculate the corporate governance bundle (*CG bundle*), we then calculate the average score of six country- and five firm-level governance indicators.

3.3 | Measuring social capital

Consistent with prior studies in accounting and finance (e.g. Fogel et al., 2018; Omer et al., 2020), we measure the social capital for each director in our sample; each of these variables captures a unique connectedness dimension of an individual director in a social network hierarchy (Wasserman, 1994). Empirical measures of the social capital used in our study are based on the structural theories of social capital (Ferris et al., 2019). According to Ferris et al.

(2019), social capital is also referred to as social network capital to emphasize that individuals derive benefits from knowing others with whom they form networks. In this view, the social capital is an embedded with network members.

We provide definitions of the variables used in our analysis along with their sources in Table A1. We employ four social capital centrality measures (*Degree centrality, Closeness centrality, Betweenness centrality,* and *Eigenvector centrality*) for the proxy of directors' quality of social network centrality in our sample (see, Miranda-Lopez et al., 2019). The *Degree centrality* measures the number of direct ties a director has with other directors in the networks, while higher degree centrality shows the director knows more people. Closeness centrality shows the direct and indirect ties a director may have and measures how quickly the director can reach other directors. Unlike other centrality measures, Betweenness centrality measures how one director is an intermediary between two other directors in the networks and, therefore, captures the ability of a director to be an information source. Eigenvector centrality is similar to degree centrality; it captures the number of ties as well as the quality of the ties between directors. The degree and eigenvector centralities are known as the direct measure of centrality and closeness and betweenness centralities are referred to as indirect measure of centrality (Nandy et al., 2020). Thus, being linked to other well-connected directors also enhances the centrality of each director. In social capital, a director being well connected according to

eigenvector centrality suggests that the director can gather information faster through their network because the director's ties are also well connected. In accordance with the recent literature (Cheng et al., 2019), to ensure these social capital measures are comparable, we standardized these measures every year by dividing each measure by its standard error across all firms for any given year. We then define social capital measures as the quartile ranking of the sum of the four standardized social capital measures. This composite measure determines the overall interlock centrality of a firm. In addition, following Faleye et al. (2014) and Ferris et al. (2019), we also measure directors' social capital by their professional and personal network[vii] in which directors share a common education, employment, or social activities. To estimate a director's professional and personal network size, we count the number of directors with whom the director shares a common board and common educational link in the BoardEx database.

3.4 | Dependent and control variables

The dependent variable, *Cash holding*, measures the level of corporate cash holdings. The cash-holding variable is measured as a ratio of cash and marketable securities to total assets minus cash and marketable securities. This measure has been widely used in the accounting and finance literature (e.g., Bhuiyan & Hooks, 2019;

TABLE 1 Firms distribution by country.

	Country	Frequency	Percent		Country	Frequency	Percent
1	Australia	158	7.81	17	Mexico	13	0.64
2	Austria	6	0.3	18	Netherlands	22	1.09
3	Belgium	17	0.84	19	New Zealand	15	0.74
4	Brazil	10	0.49	20	Norway	8	0.4
5	Denmark	19	0.94	21	Poland	13	0.64
6	Finland	16	0.79	22	Portugal	5	0.25
7	France	65	3.21	23	Russia	5	0.25
8	Greece	7	0.35	24	Singapore	23	1.14
9	Hong Kong	82	4.05	25	South Africa	60	2.96
10	India	2	0.1	26	Spain	25	1.24
11	Israel	10	0.49	27	Sweden	23	1.14
12	Italy	16	0.79	28	Switzerland	36	1.78
13	Japan	174	8.6	29	Thailand	9	0.44
14	South Korea	6	0.3	30	Turkey	12	0.59
15	Luxembourg	4	0.2	31	UK	658	32.51
16	Malaysia	20	0.99	32	USA	485	23.96

Notes: The table shows the country-wise distribution of firms in our sample. The sample consists of 6123 firm-year observations from 32 countries during the period of 2004–2015.

Cui et al., 2018; Devos & Rahman, 2018). Following Bris et al. (2012), we compute a "*Foreign listing*" count variable to measure the number of foreign stock exchanges on which the firm cross-lists its shares in each year. With this variable,[viii] we investigate the varying extent of cross-listing destinations of firms.

As used in previous research, we control for financial variables related to the study (Arouri & Pijourlet, 2017; Opler et al., 1999). We control for firm size, leverage, firm performance measured at ROA, cash flow from operating activities, capital expenditures, net working capital, and retained earnings (Ferreira & Vilela, 2004). We also control for country-level variables as GDP, Inflation, and World Governance Index.

4 | BASELINE MODEL

We utilize the following equation to estimate the impact of directors' social capital on the corporate cash holdings.

$$
\begin{aligned}
\text{Cash holding}_{ijt} = {} & \alpha + \beta_1 \text{Social capital}_{ijt} + \beta_2 \text{CG bundle}_{ijt} \\
& + \beta_3 \text{CG bundle}_{ijt} \times \text{Social capital}_{ijt} \\
& + \sum \text{Firm level controls}_{ijt} \\
& + \sum \text{Country level controls}_{jt} \\
& + \text{Industry FE} + \text{Year FE} + \varepsilon_{ijt} \ldots
\end{aligned}
$$

$$(1)$$

where the dependent variable is the *Cash Holdings* of firm i in country j and in year t; α is the intercept; β_n is the vector of coefficients; *CG Bundle* includes firm- and country-level governance; and *Social Capital* includes direct and indirect connections of directors with others. Firm level and country level control variables are included as described in previous section. We control for industry and year heterogeneity by including the dummies for these variables. ε_{it} is the error terms. To control for outliers, we winsorised financial control variables at the 1% and 99% levels in our regression analysis.

4.1 | Descriptive statistics

Table 1 shows the distribution of firms in each country of our sample. The UK has the largest number of firms (658), followed by the US (485) and then Japan (174). There are few countries with fewer firms such as India (2), Luxembourg (4), Austria and South Korea (6). In the robustness checks, we excluded UK and US firms in our regression,[ix] but our results remain unchanged. Table 2 shows the year-wise distribution of firms. It shows that higher number of firms is distributed in 2009–2011.

TABLE 2 Firms distribution by year.

Year	Frequency	Percent
2004	394	6.43
2005	510	8.33
2006	482	7.87
2007	542	8.85
2008	569	9.29
2009	629	10.27
2010	674	11.01
2011	659	10.76
2012	599	9.78
2013	539	8.8
2014	406	6.63
2015	120	1.96

Note: the distribution of firms-year observations in each country.

Table 3 reports the descriptive statistics of the variables used in our regression models. The mean and median values of cash holding are 0.21 and 0.096 respectively. We use the logarithm of cash holding in all our regressions. The directors' social capital is measured by degree centrality, betweenness centrality, closeness centrality, eigenvector centrality, as well as personal and professional networks. The mean values for Degree centrality (0.520), Closeness centrality (0.441), Betweenness (0.529), Eigenvector (0.466), and Composite Score (0.490) are consistent with the literature (Chuluun et al., 2017). The mean values of professional and personal networks are 0.520 and 0.511 respectively. In addition, we the summary statistics of firm and country level corporate governance variables. The mean and median values of ROA are 0.054 and 0.051 respectively, which is in line with Miranda-Lopez et al. (2019). This indicates that our sample firms demonstrate normal operating performance.

Table 4 shows the correlation matrix of the variables. The directors' social capital is negatively related to the cash holding. For instance, the correlation coefficient of degree, closeness, betweenness and eigenvector centralities are −0.020, −0.07, −0.010 and −0.054 respectively. We also observe that the corporate governance variables (firm level and country level) are negatively related to cash holding.

4.2 | Empirical results

4.2.1 | Corporate governance bundles and directors' social capital

Table 5 reports the baseline regression results. We use a pooled OLS regression with industry and year fixed effects. The assumptions of OLS can be violated in case of

TABLE 3 Summary statistics.

	Obs	Mean	St.dev	Median	p1	p99
Cash holding	6123	0.216	0.720	0.098	0.002	1.797
Directors' social capital						
Degree centrality	6123	0.510	0.292	0.511	0.014	0.994
Closeness centrality	6123	0.431	0.345	0.304	0.002	0.998
Betweenness centrality	6123	0.519	0.304	0.544	0.007	0.995
Eigenvector centrality	6123	0.451	0.301	0.463	0.002	0.992
Composite centrality score	6123	0.479	0.295	0.476	0.006	0.988
Professional network	6123	0.518	0.291	0.526	0.000	0.995
Personal network	6123	0.521	0.271	0.531	0.031	0.993
Firm level corporate governance						
Board structure	6123	54.662	28.391	60.470	2.860	91.700
Board functions	6123	52.778	29.268	57.640	4.660	92.380
Vision and strategy	6123	56.038	31.369	58.840	9.970	97.480
Compensation policy	6123	57.221	27.879	65.070	2.750	90.500
Shareholder rights	6123	57.378	25.628	68.10	0.510	81.230
Country-level corporate governance						
Control of corruption	6123	1.504	0.565	1.546	−0.324	2.405
Government effects	6123	1.532	0.415	1.583	0.187	2.251
Regular qualities	6123	1.437	0.394	1.532	0.202	1.984
political stabilities	6123	0.630	0.486	0.597	−1.101	1.460
Rule of low	6123	1.488	0.452	1.605	−0.204	1.980
Voice accountability	6123	1.128	0.412	1.162	−0.475	1.692
Control variables						
Capital expenditure	6123	0.058	0.057	0.043	0.002	0.302
Leverage	6118	0.237	0.177	0.224	0.000	0.714
Net working capital	6123	−0.003	0.137	−0.006	−0.354	0.377
Firm size	6123	9.307	2.493	8.880	4.362	15.874
Cash flow from operation	6119	0.106	0.088	0.096	−0.101	0.382
ROA	6123	0.054	0.159	0.051	−0.253	0.307
Retained earnings	6112	0.196	0.542	0.211	−1.133	0.976
GDP	6123	4.362	1.395	4.431	0.643	8.661
Inflation	6123	2.115	1.662	2.112	1.353	6.636
World governance index	6123	1.286	0.387	1.285	−0.176	1.865
Foreign listing	6123	2.525	1.540	2.000	1.000	8.000

Notes: The table presents the summary statistics of the variables used in regression models. The sample consists of 6123 firm-year observations of 1677 publicly listed firms from 32 countries during the period of 2004–2015. Apart from mean, standard deviation, and median, 1 and 99 percentiles are also reported.

heteroscedasticity and endogeneity. In our subsequent estimations, we address the endogeneity. In all the models, we report the heteroscedastic standard errors (reported in parentheses in regression tables) to mitigate the problem of heteroscedasticity due to diversity of firms and countries. We include the country-level macroeconomic variables such as GDP, Inflation and World Governance Index. We calculate (unreported) the variance inflation factor (VIF) of all the variables, and it shows that the VIF values are less than 10, suggesting that our study is not sensitive to multicollinearity.

In Model 1, we include firm-level corporate governance (CG) measures to test the impact of each of firm-level governance on cash holding along with other control variables. The coefficients for board structure, vision and strategy, compensation policy are negative and

TABLE 4 Pairwise correlation.

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Log (cash holdings)	1.000														
2. Degree centrality	−0.020*	1.000													
3. Closeness centrality	−0.077***	0.510***	1.000												
4. Betweenness centrality	−0.010	0.859***	0.332***	1.000											
5. Eigenvector centrality	−0.054***	0.798***	0.593***	0.602***	1.000										
6. Composite centrality score	−0.010	0.984***	0.501***	0.841***	0.792***	1.000									
7. Professional network	−0.011	0.300***	−0.018	0.341***	0.186***	0.297***	1.000								
8. Personal network	0.002	0.163***	0.278***	0.072***	0.164***	0.169***	0.078***	1.000							
9. Board structure	−0.107***	0.341***	0.593***	0.248***	0.457***	0.360***	0.065***	0.165***	1.000						
10. Board functions	−0.078***	0.371***	0.646***	0.246***	0.460***	0.385***	0.094***	0.227***	0.664***	1.000					
11. Vision and strategy	−0.094***	0.070***	−0.150***	0.127***	−0.077***	0.087***	0.099***	−0.080***	−0.065***	−0.054***	1.000				
12. Compensation policy	−0.105***	0.391***	0.512***	0.309***	0.511***	0.407***	0.113***	0.134***	0.615***	0.594***	−0.032***	1.000			
13. Shareholder rights	−0.042***	0.214***	0.350***	0.139***	0.298***	0.227***	0.107***	0.140***	0.452***	0.436***	−0.070***	0.411***	1.000		
14. Control of corruption	−0.003	0.122***	−0.007	0.154***	0.164***	0.105***	0.035***	−0.033***	0.184***	0.031**	−0.081***	0.185***	0.032***	1.000	
15. Government effects	0.014	0.146***	0.096***	0.158***	0.208***	0.120***	0.030**	0.033***	0.204***	0.088***	−0.111***	0.179***	0.039***	0.927***	1.000
16. Regular qualities	−0.028**	0.236***	0.179***	0.203***	0.372***	0.224***	0.044***	0.007	0.344***	0.186***	−0.156***	0.362***	0.193***	0.862***	0.826***
Political stabilities	0.046***	−0.168***	−0.362***	−0.090***	−0.181***	−0.164***	−0.164***	−0.068***	−0.172***	−0.271***	0.025**	−0.167***	−0.161***	0.593***	0.568***

TABLE 4 (Continued)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
17. Rule of low	−0.029**	0.191***	0.239***	0.178***	0.260***	0.188***	0.01	0.044***	0.341***	0.202***	−0.104***	0.307***	0.124***	0.903***	0.897***
18. Voice accountability	−0.109***	0.130***	0.208***	0.169***	0.035***	0.108***	−0.025**	−0.040***	0.252***	0.122***	0.021*	0.240***	0.068***	0.570***	0.459***
19. Capital expenditure	−0.128***	−0.077***	−0.075***	−0.083***	−0.039***	−0.079***	−0.004	−0.016	0.007	0.024*	−0.032***	−0.004	0.071***	−0.024**	−0.041***
20. Leverage	−0.313***	−0.004	0.027**	0.013	−0.001	−0.005	0.01	−0.007	−0.037***	0.016	0.057***	−0.000	−0.013	−0.050***	−0.048***
21. Net working capital	−0.106***	−0.035***	0.050***	−0.046***	−0.022*	−0.040***	−0.041***	0.01	0.077***	0.015	−0.008	0.025**	−0.011	0.044***	0.050***
22. Firm size	−0.052***	−0.169***	−0.301***	−0.116***	−0.325***	−0.177***	−0.005	−0.039***	−0.445***	−0.324***	0.353***	−0.492***	−0.399***	−0.227***	−0.166***
23. Cash flow from operation	0.059***	0.064***	0.102***	0.050***	0.082***	0.055***	−0.041***	−0.023*	0.100***	0.071***	−0.015	0.072***	0.066***	−0.061***	−0.044***
24. ROA	0.021*	0.042***	0.038***	0.035***	0.045***	0.030**	−0.023*	−0.017	0.023*	0.026**	0.01	0.015	0.020*	−0.041***	−0.027**
25. Retained earnings	−0.087***	−0.004	0.017	−0.002	0.008	−0.007	−0.031**	−0.020	−0.007	−0.022*	0.099***	−0.019	−0.037***	−0.050***	−0.025**
26. GDP	−0.001	0.084***	0.211***	0.086***	0.082***	0.104***	−0.031**	0.082***	0.256***	0.188***	−0.104***	0.219***	0.124***	0.650***	0.622***
27. Inflation	−0.043***	0.122***	0.122***	0.064***	0.210***	0.119***	0.055***	0.041***	0.180***	0.190***	−0.105***	0.229***	0.323***	−0.294***	−0.310***
28. World governance index	−0.019	0.122***	0.054***	0.146***	0.160***	0.107***	0.018	−0.014	0.216***	0.060***	−0.078***	0.207***	0.051***	0.961***	0.924***
29. Foreign listing	0.107***	0.217***	−0.014	0.240***	0.091***	0.209***	0.096***	0	−0.038***	0.046***	0.262***	0.043***	0.035***	0.128***	0.116***

Variables	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
15. Regular qualities	1.000														
16. Political stabilities	0.424***	1.000													
17. Rule of low	0.883***	0.534***	1.000												
18. Voice accountability	0.480***	0.271***	0.641***	1.000											
19. Capital expenditure	−0.007	0.007	−0.039***	−0.039***	1.000										
20. Leverage	−0.050***	−0.046***	−0.037***	−0.030**	−0.025**	1.000									
21. Net working capital	0.020*	0.032**	0.061***	0.104***	0.032**	−0.137***	−0.217***	1.000							

(Continues)

TABLE 4 (Continued)

Variables	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
22. Firm size	−0.414***	0.154***	−0.302***	−0.298***	−0.046***	0.104***	−0.053***	1.000							
23. Cash flow from operation	−0.036***	−0.119***	−0.052***	−0.044***	0.223***	−0.064***	−0.093***	−0.109***	1.000						
24. ROA	−0.037***	−0.059***	−0.056***	−0.056***	−0.008	−0.062***	0.034***	−0.008	0.398***	1.000					
25. Retained earnings	−0.064***	−0.014	−0.063***	−0.081***	0.004	−0.182***	0.172***	0.143***	0.258***	0.406***	1.000				
26. GDP	0.576***	0.485***	0.726***	0.580***	0.007	−0.037***	0.098***	−0.200***	−0.078***	−0.086***	−0.070***	1.000			
27. Inflation	−0.102***	−0.384***	−0.312***	−0.283***	0.120***	−0.021*	−0.037***	−0.256***	0.080***	0.058***	0.002	−0.292***	1.000		
28. World governance index	0.878***	0.683***	0.955***	0.665***	−0.026**	−0.051***	0.060***	−0.236***	−0.072***	−0.055***	−0.057***	0.717***	−0.337***	1.000	
29. Foreign listing	0.104***	0.083***	0.094***	0.078***	−0.025*	−0.045*	−0.120***	0.198***	0.047***	0.043***	0.027*	0.021*	−0.024**	0.120***	1.000

Notes: Pairwise correlation of variables are shown. The sample consists of 6123 firm-year observations of 1677 publicly listed firms from 32 countries during the period of 2004–2015.

statistically significant ($\beta = -0.0052$, $p < 0.01$; $\beta = -0.0020$, $p < 0.01$; $\beta = -0.0038$, $p < 0.01$ respectively). In Model 2, we include the country-level CG variables. Similar to firm level CG variables, we see negative and statistically significant coefficients for country CG variables such as regulatory quality, rule of law and voice and accountability variables ($\beta = -0.4341$, $p < 0.01$; $\beta = -0.3276$, $p < 0.01$; $\beta = -0.6311$, $p < 0.01$ respectively). We also find that country level CG variables such as control of corruption and political stability are positively related to the cash holdings. Since our sample consists of firms from developing market where more cash holding is possible because of lack of control of corruption and directors use cash holding for personal benefit.

In Model 3, we use the CG bundles measured as the average score of firm level and country level governance as an independent variable to test the impact of it on cash holding. We include all the control variables as the two previous modules. We find that the coefficient for CG bundles is negative and significant ($\beta = -0.0054$, $p < 0.05$ in Model 3). Overall, these results suggest that firms with higher firm- and country-level governance bundles hold less cash. From these findings, we can observe that under an appropriate institutional set-up, the agents (directors in this case) efficiently trade off the cost and benefit associated with the most liquid asset, namely, cash, in foreign cross-listed firms. In Table 5, we observe that cash holding is negatively related to firm size, leverage, capital expenditure, working capital (net), and retained earnings. The above relationships between cash holdings and the control variables are in line with Miranda-Lopez et al. (2019) and support the resource-based view used in the study.

4.2.2 | Firm-level corporate governance and directors' social capital

In Table 6, we estimate the relationship between the directors' social capital on cash holding moderated by average firm-level corporate governance (Firm CG). We include the interaction terms of degree, closeness, betweenness, and eigenvector centralities with Firm CG. However, the assumption of exogeneity may not be valid for our Equation (1) due to the reverse causality. In other words, the channel for endogeneity can be how directors can strengthen their connections through stronger firm performance due to higher cash holding. Another possible channel can be to measure social capital with the variables given by the database, but there can be other ways that directors can develop their network. This omitted variable can drive both cash holding and social capital. So, there is a possible correlation between

TABLE 5 Impact of governance bundles on cash holding for foreign cross-listed firms.

	Dependent variable: log of cash holding		
	(1)	**(2)**	**(3)**
Corporate governance bundle			−0.0054**
			(0.0024)
Firm-level corporate governance			
Board structure	−0.0052***		
	(0.0007)		
Board functions	0.0005		
	(0.0007)		
Vision and strategy	−0.0020***		
	(0.0005)		
Compensation policy	−0.0038***		
	(0.0007)		
Shareholders rights	0.0003		
	(0.0006)		
Country-level corporate governance			
Control of corruption		0.1954**	
		(0.0855)	
Government effectiveness		0.2025*	
		(0.1188)	
Regulatory quality		−0.4341***	
		(0.1061)	
Political stability		0.1838***	
		(0.0414)	
Rule of law		−0.3276***	
		(0.1269)	
Voice and accountability		−0.6311***	
		(0.0540)	
Control variables			
Capital expenditure	−1.8216***	−1.7264***	−1.7830***
	(0.3980)	(0.4044)	(0.3989)
Leverage	−2.2074***	−2.1766***	−2.2100***
	(0.1560)	(0.1559)	(0.1566)
Net working capital	−1.7447***	−1.6862***	−1.7735***
	(0.1329)	(0.1314)	(0.1328)
Firm size	−0.0581***	−0.0770***	−0.0568***
	(0.0086)	(0.0080)	(0.0075)
Cash flow from operation	0.8595***	0.7075***	0.7947***
	(0.2716)	(0.2688)	(0.2725)
ROA	0.2316	0.2361	0.2486
	(0.1777)	(0.1621)	(0.1784)
Retained earnings	−0.2640***	−0.2950***	−0.2673***
	(0.0343)	(0.0395)	(0.0349)
GDP	0.0415**	0.0800***	0.0493***
	(0.0169)	(0.0169)	(0.0164)

(Continues)

TABLE 5 (Continued)

	Dependent variable: log of cash holding		
	(1)	**(2)**	**(3)**
Inflation	−0.0267***	−0.0569***	−0.0253***
	(0.0099)	(0.0101)	(0.0097)
World governance index	−0.2522***	n.a.	−0.3108***
	(0.0651)		(0.0631)
Foreign listing	0.0783***	0.0780***	0.0843***
	(0.0096)	(0.0090)	(0.0094)
Constant	−62.0978***	−16.9406	−58.0550***
	(10.7520)	(11.7734)	(10.6011)
Observations	6096	6096	6096
R-squared	0.3251	0.3319	0.3210
Industry FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes

Notes: This table reports the results pooled OLS regression for firm and country level governance on firm's cash holdings. The dependent variable is logarithm of cash holding measured as ratio of cash and marketable securities to total assets minus cash and marketable securities. Our primary independent variable is corporate governance bundles (CG Bundles). All variable definitions can be found in Table A1. In all regressions we include industry, and year fixed effects. Robust standard errors are calculated to control for heteroscedasticity and reported in parentheses. Statistical significance of the coefficients is designated as ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

the directors' social capital variables and the error terms in Equation (1), which violates the assumptions of OLS regression. To deal with this, we follow recent studies (Miranda-Lopez et al., 2019) to perform a 2SLS regression.

In Table 6, we report both first and second stages results of the 2SLS regression. In the first stage we use total number of directors on board as an instrument for the endogenous variables such as degree, closeness, betweenness and eigenvector centralities. For the choice of instrument, we follow Nandy et al. (2020) for the directors' social capital. This instrumental variable is related to the directors' social capital of a given firm but is not related to the firm's cash holding. In the first stage, we also include all the control variables and industry and year dummy variables from the model mentioned in Equation 1. We employ Cragg-Donald Wald F-statistic test for the weak identification of instrument. We also report the under-identification test results (overidentification test is not needed as model in first stage is exactly identified). All the validity tests for instrument support our choice of instrument for the 2SLS regression.

In Models 2, 4, 6 and 8 of Table 6, show that the interaction terms (centrality measures and firm-level corporate governance) are positive and statistically significant. For example, a higher degree means directors at the firm

level are active and connected to many executives and non-executives of their own or other firms. This implies that firms with a stronger directors' social capital along with the governance bundle hold more cash. The findings are supported by the proposed theories in the study. For instance, according to the institutional theory, the FCLFs are highly transparent because of their obligation towards firm and foreign country level governance structure. Higher compliance of institutional factors allows the FCLFs to generate significant value compared to their peers who are not cross-listed, which is explained by the resource-based view. Moreover, according to social capital theory, the extensive network of the director of the FCLFs gives them extra advantages to collect valuable information about the foreign market through their channel of network. Such extended network allows the directors to understand the formal and informal governance constraints better than their fellow firms in domestic market and help them to generate valuable resources through cash holdings.

4.2.3 | Country-level corporate governance and directors' social capital

We include the country level corporate governance in Table 7. The interaction terms of measures of directors'

TABLE 6 Effect of directors' social capital and firm level corporate governance on cash holding.

	Dependent variable: log of cash holding							
	Degree centrality		Closeness centrality		Betweenness centrality		Eigenvector centrality	
	First Stage (1)	Second Stage (2)	First Stage (3)	Second Stage (4)	First Stage (5)	Second Stage (6)	First Stage (7)	Second Stage (8)
Degree centrality		−4.5435**						
		(2.1414)						
Degree centrality × Firm CG	0.0160***	0.0732**						
	(0.0001)	(0.0344)						
Closeness centrality				−4.7022**				
				(2.2486)				
Closeness centrality × Firm CG			0.0144***	0.0670**				
			(0.0000)	(0.0325)				
Between centrality						−4.5592**		
						(2.2283)		
Between centrality × Firm CG					0.0164***	0.0744**		
					(0.0001)	(0.0366)		
Eigenvector centrality								−7.3223*
								(3.7454)
Eigenvector centrality × Firm CG							0.0159***	0.1164*
							(0.0001)	(0.0596)
Firm CG		−0.0424***		−0.0265***		−0.0450***		−0.0520**
		(0.0152)		(0.0083)		(0.0173)		(0.0215)
No of directors on board (instrument)	0.0025***		0.0023***		0.0024***		0.0015***	
	(0.0004)		(0.0003)		(0.0005)		(0.0004)	
Control variables								
Capital expenditure	−0.0263	−1.9779***	−0.0608***	−2.1607***	−0.0266	−1.9943***	−0.0567***	−2.2808***
	(0.0237)	(0.3156)	(0.0167)	(0.3317)	(0.0268)	(0.3209)	(0.0216)	(0.4003)
Leverage	0.0262***	−2.0816***	0.0393***	−2.0136***	0.0236***	−2.0927***	0.0291***	−1.9882***
	(0.0070)	(0.1104)	(0.0050)	(0.1286)	(0.0080)	(0.1096)	(0.0064)	(0.1513)
Net working capital	0.0260***	−1.7031***	0.0163**	−1.7402***	0.0458***	−1.6142***	−0.0017	−1.8345***
	(0.0095)	(0.1338)	(0.0067)	(0.1236)	(0.0108)	(0.1589)	(0.0087)	(0.1337)
Firm size	−0.0121***	−0.1091***	−0.0153***	−0.1260***	−0.0104***	−0.1012***	−0.0166***	−0.1753***
	(0.0006)	(0.0251)	(0.0004)	(0.0333)	(0.0007)	(0.0225)	(0.0006)	(0.0604)
Cash flow from operation	−0.0080	0.6595***	0.0202*	0.8040***	−0.0049	0.6767***	−0.0394***	0.4094
	(0.0154)	(0.2011)	(0.0109)	(0.1971)	(0.0174)	(0.2036)	(0.0140)	(0.2646)

(Continues)

TABLE 6 (Continued)

| | Dependent variable: log of cash holding | | | | | | | |
| | Degree centrality | | Closeness centrality | | Betweenness centrality | | Eigenvector centrality | |
	First Stage (1)	Second Stage (2)	First Stage (3)	Second Stage (4)	First Stage (5)	Second Stage (6)	First Stage (7)	Second Stage (8)
ROA	0.0062	0.2549**	0.0014	0.2338**	0.0072	0.2602**	0.0065	0.2749**
	(0.0083)	(0.1090)	(0.0059)	(0.1045)	(0.0094)	(0.1110)	(0.0076)	(0.1190)
Retained earnings	0.0033	−0.2455***	0.0032*	−0.2452***	0.0031	−0.2467***	0.0048**	−0.2254***
	(0.0025)	(0.0330)	(0.0017)	(0.0320)	(0.0028)	(0.0335)	(0.0022)	(0.0392)
GDP	−0.0038***	0.0556***	0.0043***	0.0954***	−0.0020	0.0634***	−0.0097***	0.0015
	(0.0012)	(0.0183)	(0.0009)	(0.0178)	(0.0014)	(0.0171)	(0.0011)	(0.0412)
Inflation	0.0028***	−0.0157	0.0040***	−0.0101	0.0013	−0.0224**	0.0067***	0.0205
	(0.0008)	(0.0121)	(0.0006)	(0.0135)	(0.0009)	(0.0111)	(0.0007)	(0.0273)
World governance index	0.0228***	−0.3307***	−0.0019	−0.4493***	0.0154***	−0.3602***	0.0434***	−0.1150
	(0.0046)	(0.0725)	(0.0033)	(0.0593)	(0.0052)	(0.0663)	(0.0042)	(0.1673)
Foreign listing	0.0016*	0.0945***	0.0002	0.0881***	0.0011	0.0939***	0.0062***	0.1336***
	(0.0009)	(0.0126)	(0.0006)	(0.0109)	(0.0010)	(0.0124)	(0.0008)	(0.0291)
Constant	0.4370***	0.9238	0.2530***	0.0670	0.4548***	0.9741	0.3071***	0.9652
	(0.0886)	(1.5068)	(0.0626)	(1.2670)	(0.1001)	(1.5713)	(0.0806)	(1.7363)
Observations	6096	6096	6096	6096	6096	6096	6096	6096
R-squared first stage	0.9105		0.9679		0.8943		0.9302	
Cragg-Donald Wald F-statistics	33.91		16.38		20.48		5.52	
Under identification test	0.0000		0.0000		0.0000		0.0182	
Industry and Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: This table reports the results from two-stage least square (2SLS) regression for effect directors' social capital and firm level corporate governance (Firm CG) on firm's cash holding. The dependent variable is logarithm of cash holding measured as ratio of cash and marketable securities to total assets minus cash and marketable securities. The independent variable is directors' social capital measured as degree, betweenness, closeness and eigenvector centralities and their interaction terms with firm level corporate governance. The number of directors on board is used as instruments in the first stage of regression. All variable definitions can be found in Table A1. In all regressions we include industry, and year fixed effects. Robust standard errors are calculated to control for heteroscedasticity and reported in parentheses. Statistical significance of the coefficients is designated as ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

social capital and country-level corporate governance (average country level corporate governance) show positive and statistically significant coefficients. This implies that stronger country level corporate governance can enhance the trust of the stakeholders of the FCLFs because of higher transparency of their financial reports. The firm's compliance to country specific governance generates reputational value for the firm and the directors in their network give a positive signal about less interest of using the excess for personal benefit.

4.2.4 | Corporate governance bundles and directors' social capital

Table 8 documents the coefficients derived from using a 2SLS regression, where we include the interaction of directors' social capital and corporate governance bundle (average value of firm and country level corporate governance) in the Models 2, 4, 6 and 8. Similar to Tables 6 and 7, we observe positive and statistically significant coefficients at 5% significance level in Models 2, 4 and 6 and at 1% significance level in Model 8 (degree centrality × CG bundles:

TABLE 7 Effect of directors' social capital and country level corporate governance on cash holding.

	Dependent variable: Log of cash holding							
	Degree centrality		Closeness centrality		Betweenness centrality		Eigenvector centrality	
	First Stage (1)	Second Stage (2)	First Stage (3)	Second Stage (4)	First Stage (5)	Second Stage (6)	First Stage (7)	Second Stage (8)
Degree centrality		−6.8572**						
		(2.8325)						
Degree centrality × Country CG	0.7192***	4.7808**						
	(0.0026)	(2.0412)						
Closeness centrality				−34.9811				
				(34.8426)				
Closeness centrality × Country CG			0.7653***	26.5029				
			(0.0019)	(26.6766)				
Betweenness centrality						−7.6727**		
						(3.2634)		
Betweenness centrality × Country CG					0.7126***	5.3355**		
					(0.0029)	(2.3289)		
Eigenvector centrality								−18.2027*
								(10.0669)
Eigenvector centrality × Country CG							0.7175***	12.9013*
							(0.0026)	(7.2261)
Country CG		−2.2587***		−6.7658		−2.5103***		−3.8886*
		(0.8364)		(6.4080)		(0.9677)		(2.0232)
No of directors on board (instrument)	0.0020***		0.0003		0.0018***		0.0008**	
	(0.0003)		(0.0003)		(0.0004)		(0.0003)	
Control variables								
Capital expenditure	−0.0231	−1.8758***	0.0193	−1.1137	0.0009	−1.6989***	−0.0279	−2.2083***
	(0.0197)	(0.3336)	(0.0145)	(0.8765)	(0.0232)	(0.3420)	(0.0192)	(0.5439)
Leverage	0.0040	−2.2416***	0.0014	−2.1714***	−0.0027	−2.2850***	0.0035	−2.2014***
	(0.0058)	(0.0974)	(0.0043)	(0.1830)	(0.0069)	(0.1011)	(0.0057)	(0.1410)
Net working capital	0.0005	−1.8162***	−0.0054	−1.9638***	−0.0036	−1.8495***	0.0046	−1.7440***
	(0.0079)	(0.1300)	(0.0058)	(0.3089)	(0.0093)	(0.1381)	(0.0077)	(0.1858)
Firm size	−0.0034***	−0.0543***	−0.0017***	−0.0998*	−0.0036***	−0.0572***	−0.0038***	−0.1022***
	(0.0005)	(0.0113)	(0.0004)	(0.0575)	(0.0006)	(0.0130)	(0.0005)	(0.0375)
Cash flow from operation	−0.0138	0.5662***	−0.0364***	−0.5214	−0.0198	0.4999**	0.0023	0.6979**
	(0.0127)	(0.2149)	(0.0094)	(1.3374)	(0.0150)	(0.2326)	(0.0124)	(0.2941)

(Continues)

TABLE 7 (Continued)

| | Dependent variable: Log of cash holding | | | | | | | |
| | Degree centrality | | Closeness centrality | | Betweenness centrality | | Eigenvector centrality | |
	First Stage (1)	Second Stage (2)	First Stage (3)	Second Stage (4)	First Stage (5)	Second Stage (6)	First Stage (7)	Second Stage (8)
ROA	−0.0068	0.2186*	−0.0021	0.1758	−0.0095	0.1932	−0.0036	0.1959
	(0.0069)	(0.1154)	(0.0051)	(0.2179)	(0.0081)	(0.1239)	(0.0067)	(0.1633)
Retained earnings	0.0019	−0.2760***	0.0007	−0.2547***	0.0024	−0.2700***	0.0030	−0.2310***
	(0.0020)	(0.0342)	(0.0015)	(0.0657)	(0.0024)	(0.0366)	(0.0020)	(0.0565)
GDP	0.0010	0.0308*	0.0083***	0.3453	−0.0035***	−0.0050	−0.0016	−0.0096
	(0.0011)	(0.0180)	(0.0008)	(0.2884)	(0.0013)	(0.0223)	(0.0011)	(0.0303)
Inflation	−0.0031***	−0.0703***	0.0007	−0.0201	−0.0029***	−0.0739***	−0.0019**	−0.0796***
	(0.0008)	(0.0163)	(0.0006)	(0.0338)	(0.0010)	(0.0172)	(0.0008)	(0.0277)
World governance index	−0.2903***	−2.2587***	−0.1834***	−6.7658	−0.2921***	−2.5103***	−0.1992***	−3.8886*
	(0.0042)	(0.8364)	(0.0030)	(6.4080)	(0.0050)	(0.9677)	(0.0041)	(2.0232)
Foreign listing	0.0034***	0.0990***	0.0029***	0.1726	0.0029***	0.0974***	0.0016**	0.1021***
	(0.0007)	(0.0172)	(0.0005)	(0.1103)	(0.0008)	(0.0175)	(0.0007)	(0.0261)
Constant	0.4485***	1.3712	0.1520***	3.4956	0.4865***	2.0298	0.3128***	3.9945
	(0.0734)	(1.7886)	(0.0539)	(5.8426)	(0.0864)	(2.0754)	(0.0718)	(3.6246)
Observations	6096	6096	6096	6096	6096	6096	6096	6096
R-squared first stage	0.9390		0.9763		0.9218		0.9452	
Cragg-Donald Wald F-statistics	24.09		34.81		22.36		13.42	
Under identification test	0.0000		0.0000		0.0000		0.0000	
Industry and Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: This table reports the results from two-stage least square (2SLS) regression for effect directors' social capital and country level corporate governance (Country CG) on firm's cash holding. The dependent variable is logarithm of cash holding measured as ratio of cash and marketable securities to total assets minus cash and marketable securities. The independent variable is directors' social capital measured as degree, betweenness, closeness and eigenvector centralities and their interaction terms with country level corporate governance. The number of directors on board is used as instruments in the first stage of regression. All variable definitions can be found in Table A1. In all regressions we include industry, and year fixed effects. Robust standard errors are calculated to control for heteroscedasticity and reported in parentheses. Statistical significance of the coefficients is designated as ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

$\beta = -0.1601$, $p < 0.05$; closeness centrality × CG bundles: $\beta = -0.1484$, $p < 0.05$; betweenness centrality × CG bundles: $\beta = -0.1633$, $p < 0.05$: eigenvector centrality × CG bundles: $\beta = -0.2564$, $p < 0.01$). These results indicate that firms with higher directors' social capital hold more cash when these firms operate in an environment of higher governance bundles. As governance bundle and directors' networks both play an important role in determining the cost and benefits of strategic decision-making process, so our results provide important evidence related to how FCLFs determine the cash holding.

4.3 | Robustness tests

In this section, we employ a battery of estimations to establish the robustness of our results. In Table 9, we use subsamples related to firms cross-listed in high and low numbers of stock exchanges. We create two subsamples based on industry-year median of number of foreign cross listing. If a sample firm is listed higher than this median, it is categorized as *high number of FCLFs*, and vice versa. We use a pooled OLS regression with year and industry fixed effects. Models 1–4 report the coefficients

TABLE 8 Effect of directors' social capital and corporate governance bundle on cash holding.

	Dependent variable: Log of cash holding							
	Degree centrality		Closeness centrality		Betweenness centrality		Eigenvector centrality	
	First Stage (1)	Second Stage (2)	First Stage (3)	Second Stage (4)	First Stage (5)	Second Stage (6)	First Stage (7)	Second Stage (8)
Degree centrality		−4.6220**						
		(2.1795)						
Degree centrality × CG bundle	0.0345***	0.1601**						
	(0.0002)	(0.0753)						
Closeness centrality				−4.8336**				
				(2.3166)				
Closeness centrality × CG bundle			0.0310***	0.1484**				
			(0.0001)	(0.0721)				
Betweenness centrality						−4.6507**		
						(2.2741)		
Betweenness centrality × CG bundle					0.0353***	0.1633**		
					(0.0002)	(0.0805)		
Eigenvector centrality								−7.4959*
								(3.8352)
Eigenvector centrality × CG bundle							0.0342***	0.2564*
							(0.0001)	(0.1313)
CG bundle	−0.0153***	−0.0930***	−0.0079***	−0.0587***	−0.0167***	−0.0990***	−0.0124***	−0.1146**
	(0.0002)	(0.0333)	(0.0001)	(0.0185)	(0.0002)	(0.0380)	(0.0002)	(0.0474)
No of directors on board (instrument)	0.0025***		0.0022***		0.0024***		0.0015***	
	(0.0004)		(0.0003)		(0.0005)		(0.0004)	
Control variables								
Capital expenditure	−0.0245	−1.9723***	−0.0586***	−2.1583***	−0.0241	−1.9853***	−0.0548***	−2.2768***
	(0.0232)	(0.3149)	(0.0164)	(0.3313)	(0.0262)	(0.3199)	(0.0211)	(0.3992)
Leverage	0.0256***	−2.0827***	0.0383***	−2.0132***	0.0226***	−2.0950***	0.0282***	−1.9895***
	(0.0069)	(0.1101)	(0.0049)	(0.1289)	(0.0078)	(0.1090)	(0.0063)	(0.1508)
Net working capital	0.0254***	−1.7040***	0.0155**	−1.7414***	0.0448***	−1.6151***	−0.0015	−1.8331***
	(0.0093)	(0.1336)	(0.0066)	(0.1235)	(0.0105)	(0.1587)	(0.0085)	(0.1337)
Firm size	−0.0119***	−0.1089***	−0.0150***	−0.1266***	−0.0102***	−0.1013***	−0.0162***	−0.1752***
	(0.0006)	(0.0250)	(0.0004)	(0.0336)	(0.0007)	(0.0225)	(0.0005)	(0.0604)

(Continues)

TABLE 8 (Continued)

	Dependent variable: Log of cash holding							
	Degree centrality		Closeness centrality		Betweenness centrality		Eigenvector centrality	
	First Stage (1)	Second Stage (2)	First Stage (3)	Second Stage (4)	First Stage (5)	Second Stage (6)	First Stage (7)	Second Stage (8)
Cash flow from operation	−0.0087	0.6558***	0.0185*	0.7988***	−0.0057	0.6727***	−0.0390***	0.4060
	(0.0150)	(0.2013)	(0.0106)	(0.1967)	(0.0170)	(0.2037)	(0.0136)	(0.2657)
ROA	0.0059	0.2536**	0.0013	0.2337**	0.0066	0.2585**	0.0063	0.2747**
	(0.0081)	(0.1089)	(0.0057)	(0.1046)	(0.0092)	(0.1108)	(0.0074)	(0.1189)
Retained earnings	0.0033	−0.2454***	0.0032*	−0.2452***	0.0031	−0.2465***	0.0047**	−0.2254***
	(0.0024)	(0.0330)	(0.0017)	(0.0320)	(0.0027)	(0.0335)	(0.0022)	(0.0393)
GDP	−0.0037***	0.0557***	0.0042***	0.0956***	−0.0020	0.0630***	−0.0095***	0.0014
	(0.0012)	(0.0183)	(0.0009)	(0.0179)	(0.0014)	(0.0171)	(0.0011)	(0.0412)
Inflation	0.0026***	−0.0164	0.0039***	−0.0101	0.0012	−0.0230**	0.0063***	0.0192
	(0.0008)	(0.0119)	(0.0006)	(0.0135)	(0.0009)	(0.0110)	(0.0007)	(0.0267)
World governance index	0.0227***	−0.3172***	−0.0013	−0.4352***	0.0157***	−0.3455***	0.0433***	−0.0960
	(0.0045)	(0.0728)	(0.0032)	(0.0592)	(0.0051)	(0.0668)	(0.0041)	(0.1705)
Foreign listing	0.0015*	0.0942***	0.0002	0.0885***	0.0010	0.0933***	0.0060***	0.1332***
	(0.0008)	(0.0125)	(0.0006)	(0.0110)	(0.0010)	(0.0123)	(0.0008)	(0.0289)
Constant	0.4402***	0.9713	0.2548***	0.1071	0.3537***	0.3613	0.4071***	1.9702
	(0.0866)	(1.5217)	(0.0612)	(1.2777)	(0.0980)	(1.4549)	(0.0787)	(2.0220)
Observations	6096	6096	6096	6096	6096	6096	6096	6096
R-squared first stage	0.9145		0.9693		0.8990		0.9334	
Cragg-Donald Wald F-statistics	36.69		57.89		24.90		22.25	
Under identification test	0.0000		0.0000		0.0000		0.0000	
Industry and year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: This table reports the results from two-stage least square (2SLS) regression for effect directors' social capital and corporate governance bundle (CG bundle) on firm's cash holding. The dependent variable is logarithm of cash holding measured as ratio of cash and marketable securities to total assets minus cash and marketable securities. The independent variable is directors' social capital measured as degree, betweenness, closeness and eigenvector centralities and their interaction terms with governance bundles. The number of directors on board is used as instruments in the first stage of regression. All variable definitions can be found in Table A1. In all regressions we include industry, and year fixed effects. Robust standard errors are calculated to control for heteroscedasticity and reported in parentheses. Statistical significance of the coefficients is designated as ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

of the interaction terms of directors' social capital and CG bundle. Similarly, we also show the coefficients of same interaction variables in Models 5–8. Overall, most of the coefficients for interaction terms are statistically significant and positively related to cash holding, thus supporting our primary findings that firms with stricter governance and directors with high social capital hold more cash.

4.3.1 | Alternative measure of centrality: Excess centrality and omitted variables

To analyse the effects of omitted variables (e.g. individual impact of social ties, such as common educational institutions etc.), we utilize the concept of excess centrality as proposed by El-Khatib et al. (2015). In all our analyses, we document that foreign cross-listed firms

TABLE 9 Subsample test: Effect of directors' social capital and corporate governance bundle on cash holding.

	Dependent variable: log of cash holding							
	High number of foreign cross-listing				Low number of foreign cross listing			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Degree centrality	−0.7152**				−0.2621			
	(0.3046)				(0.1778)			
Degree centrality × CG bundle	0.0285**				0.0112*			
	(0.0112)				(0.0068)			
Closeness centrality		−2.0129***				−0.7713**		
		(0.4636)				(0.2994)		
Closeness centrality × CG bundle		0.0615***				0.0233**		
		(0.0134)				(0.0096)		
Between centrality			−0.7992***				−0.2104	
			(0.2773)				(0.1479)	
Between centrality × CG bundle			0.0299***				0.0075	
			(0.0103)				(0.0060)	
Eigenvector centrality				0.1671				−0.2223
				(0.3077)				(0.2276)
Eigenvector centrality × CG bundle				0.0036				0.0051
				(0.0111)				(0.0081)
CG bundles	−0.0359***	−0.0367***	−0.0366***	−0.0239***	−0.0286***	−0.0285***	−0.0266***	−0.0238***
	(0.0076)	(0.0055)	(0.0073)	(0.0067)	(0.0039)	(0.0039)	(0.0037)	(0.0038)
Control variables								
Capital expenditure	0.3780	0.2169	0.3331	0.5038	−2.5501***	−2.6096***	−2.5674***	−2.5866***
	(0.7349)	(0.7313)	(0.7449)	(0.7264)	(0.4916)	(0.4912)	(0.4909)	(0.4911)
Leverage	−2.4697***	−2.5405***	−2.4723***	−2.4796***	−2.1340***	−2.0956***	−2.1344***	−2.1296***
	(0.2276)	(0.2288)	(0.2286)	(0.2290)	(0.1896)	(0.1904)	(0.1899)	(0.1896)
Net working capital	−1.5087***	−1.4931***	−1.4867***	−1.5446***	−1.8013***	−1.7974***	−1.8037***	−1.8175***
	(0.2348)	(0.2330)	(0.2357)	(0.2330)	(0.1580)	(0.1587)	(0.1578)	(0.1583)
Firm size	−0.0590***	−0.0736***	−0.0573***	−0.0555***	−0.0622***	−0.0699***	−0.0613***	−0.0633***
	(0.0160)	(0.0169)	(0.0159)	(0.0164)	(0.0094)	(0.0102)	(0.0093)	(0.0097)
Cash flow from operation	0.8933	0.9802*	0.9158	0.9361	0.6307**	0.6470**	0.6274**	0.6237**
	(0.6057)	(0.5773)	(0.6070)	(0.6194)	(0.3038)	(0.3019)	(0.3037)	(0.3035)
ROA	1.1169**	1.0252**	1.1563**	1.0695**	0.1723	0.1693	0.1723	0.1714
	(0.5156)	(0.5083)	(0.5172)	(0.5166)	(0.1589)	(0.1552)	(0.1581)	(0.1577)
Retained earnings	−0.4735***	−0.5051***	−0.4797***	−0.4646***	−0.2500***	−0.2468***	−0.2505***	−0.2501***
	(0.1066)	(0.1060)	(0.1065)	(0.1069)	(0.0351)	(0.0349)	(0.0351)	(0.0349)
GDP	0.0161	0.0397	0.0206	0.0182	0.0838***	0.0892***	0.0839***	0.0818***
	(0.0298)	(0.0318)	(0.0298)	(0.0299)	(0.0199)	(0.0204)	(0.0199)	(0.0199)

(Continues)

TABLE 9 (Continued)

| | Dependent variable: log of cash holding | | | | | | | |
| | High number of foreign cross-listing | | | | Low number of foreign cross listing | | | |
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Inflation	0.0587***	0.0591***	0.0592***	0.0449*	−0.0458***	−0.0411***	−0.0462***	−0.0448***
	(0.0223)	(0.0223)	(0.0223)	(0.0235)	(0.0144)	(0.0146)	(0.0144)	(0.0145)
World governance index	−0.2165*	−0.2694**	−0.2292**	−0.2561**	−0.4346***	−0.4410***	−0.4349***	−0.4238***
	(0.1115)	(0.1166)	(0.1107)	(0.1130)	(0.0793)	(0.0794)	(0.0795)	(0.0797)
Constant	−1.3575***	−1.0085***	−1.3398***	−1.6670***	−1.0197***	−0.9865***	−1.0673***	−1.1137***
	(0.3417)	(0.3379)	(0.3273)	(0.3346)	(0.2435)	(0.2411)	(0.2426)	(0.2432)
Observations	1985	1985	1985	1985	4111	4111	4111	4111
R-squared	0.3582	0.3631	0.3587	0.3586	0.3440	0.3448	0.3439	0.3439
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: This table reports the results from pooled OLS regression for effect of directors' social capital and corporate governance bundle (CG bundle) on firm's cash holdings. The dependent variable is logarithm of cash holding measured as ratio of cash and marketable securities to total assets minus cash and marketable securities. The independent variable is directors' social capital measured as degree, betweenness, closeness and eigenvector centralities and their interaction terms with governance bundles. All variable definitions can be found in Table A1. In all regressions we include industry, and year fixed effects. Robust standard errors are calculated to control for heteroscedasticity and reported in parentheses. Statistical significance of the coefficients is designated as ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

tend to hold less cash when their directors have higher social capital. At the same time, though, directors who are more skilled than other directors and possess greater human capital may have an easier time networking, as more individuals are likely to be connected with these directors. Similarly, higher profitable firms are more likely to attract directors with greater skills, as better skilled directors have an advantage with regard to cross listing their firm in foreign markets and hold less cash, which is due to directors' greater human capital and not solely due to directors' social capital. To account for the possibility that the link between cash holding and directors' social capital may be due to the directors' superior human capital, in this section, we filter the human capital out of our directors' social capital measures and used the excess human capital in our robustness tests as an alternative measure of directors' social capital. To estimate human capital, we estimate the residuals from the regressions of directors' social capital on directors' human capital index. We re-run all our main regression models with the centrality variables replaced by excess centrality, which is defined as the difference between the actual directors' centrality values based on the directors' personal skill attributes. A director with high social capital should be considered both influential and powerful, but the

excess centrality measures are now unrelated to the variables used for centrality predictions. To measure the human capital, we follow Fedaseyeu et al. (2018); an indicator variable takes the value of 1 if the director received an academic degree from an "elite" institute, 0 otherwise. An indicator variable is equal to 1 if the director has a Ph.D., 0 otherwise; an indicator variable is equal to 1 if the director has legal experience, 0 otherwise; an indicator variable is equal to 1 if the director has financial experience, 0 otherwise; an indicator variable is equal to 1 if the director has political experience, 0 otherwise; and an indicator variable is equal to 1 if the director received a recognition award, but otherwise is 0.

Models 1–5 in Table 10 examine the link between directors' social capital and the following directors' personal characteristics on a firm's cash holdings. Compared to the main findings of Equation (1), excess centrality has an identical sign and is statistically significant in all regression models for a firm's cash holdings. These findings suggest our main equation, that directors with high centrality hold more cash, is indeed due to the effect of corporate governance bundles, for instance, improved information flows, and not just due to human capital-related personal attributes and other possible omitted variables related to centrality.

TABLE 10 Alternative measure of directors' social capital.

	Dependent variable: log of cash holding				
	(1)	(2)	(3)	(4)	(5)
Excess degree centrality	−0.2003***				
	(0.0667)				
Excess degree centrality × CG bundle	0.0080***				
	(0.0025)				
Excess closeness centrality		−0.6119***			
		(0.1222)			
Excess closeness centrality × CG bundle		0.0193***			
		(0.0038)			
Excess betweenness centrality			−0.1659***		
			(0.0573)		
Excess betweenness centrality × CG bundle			0.0059***		
			(0.0023)		
Excess eigenvector centrality				−0.0635	
				(0.0866)	
Excess eigenvector centrality × CG bundle				0.0029	
				(0.0031)	
Excess composite centrality score					−0.1713**
					(0.0692)
Excess composite centrality score × CG bundle					0.0068***
					(0.0026)
CG bundles	−0.0136***	0.0081	−0.0160***	−0.0203***	−0.0150***
	(0.0038)	(0.0067)	(0.0034)	(0.0049)	(0.0040)
Control variables					
Capital expenditure	−1.7319***	−1.8201***	−1.7543***	−1.7404***	−1.7349***
	(0.3998)	(0.3992)	(0.3999)	(0.4001)	(0.4001)
Leverage	−2.1891***	−2.1537***	−2.1929***	−2.1980***	−2.1913***
	(0.1565)	(0.1566)	(0.1567)	(0.1568)	(0.1565)
Net working capital	−1.7463***	−1.7474***	−1.7443***	−1.7568***	−1.7480***
	(0.1322)	(0.1328)	(0.1323)	(0.1324)	(0.1322)
Firm size	−0.0604***	−0.0717***	−0.0586***	−0.0572***	−0.0594***
	(0.0079)	(0.0085)	(0.0078)	(0.0082)	(0.0079)
Cash flow from operation	0.7740***	0.7888***	0.7776***	0.7757***	0.7739***
	(0.2720)	(0.2686)	(0.2720)	(0.2729)	(0.2720)
ROA	0.2415	0.2389	0.2421	0.2414	0.2408
	(0.1806)	(0.1744)	(0.1803)	(0.1799)	(0.1802)
Retained earnings	−0.2656***	−0.2631***	−0.2664***	−0.2675***	−0.2662***
	(0.0356)	(0.0359)	(0.0356)	(0.0356)	(0.0356)
GDP	0.0526***	0.0618***	0.0540***	0.0531***	0.0531***
	(0.0168)	(0.0173)	(0.0168)	(0.0169)	(0.0168)
Inflation	−0.0152	−0.0092	−0.0160	−0.0163	−0.0148
	(0.0116)	(0.0116)	(0.0116)	(0.0118)	(0.0116)

(Continues)

TABLE 10   (Continued)

	Dependent variable: log of cash holding				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
World governance index	−0.2851***	−0.3017***	−0.2901***	−0.2894***	−0.2857***
	(0.0638)	(0.0651)	(0.0637)	(0.0648)	(0.0638)
Foreign listing	0.0841***	0.0865***	0.0856***	0.0856***	0.0842***
	(0.0096)	(0.0094)	(0.0097)	(0.0095)	(0.0096)
Constant	−1.4901***	−2.2776***	−1.4932***	−1.3323***	−1.4786***
	(0.2291)	(0.2941)	(0.2222)	(0.2421)	(0.2302)
Observations	6096	6096	6096	6096	6096
R-squared	0.3250	0.3270	0.3247	0.3241	0.3247
Industry dummy	Yes	Yes	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes	Yes	Yes

Notes: This table reports the results from pooled OLS regression for effect of directors' social capital and corporate governance bundle on firm's cash holdings. The dependent variable is logarithm of cash holding measured as ratio of cash and marketable securities to total assets minus cash and marketable securities. The independent variable is directors' social capital measured as excess degree, excess betweenness, excess closeness and excess eigenvector centralities and their interaction terms with governance bundles. All variable definitions can be found in Table A1. In all regressions we include industry, and year fixed effects. Robust standard errors are calculated to control for heteroscedasticity and reported in parentheses. Statistical significance of the coefficients is designated as ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

TABLE 11   Removed financial crisis period (2008−2009).

	Dependent variable: log of cash holding					
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Degree centrality	−0.4926***					
	(0.1672)					
Degree centrality × CG bundle	0.0209***					
	(0.0063)					
Closeness centrality		−1.0565***				
		(0.2705)				
Closeness centrality × CG bundle		0.0342***				
		(0.0084)				
Betweenness centrality			−0.4768***			
			(0.1460)			
Betweenness centrality × CG bundle			0.0180***			
			(0.0057)			
Eigenvector centrality				−0.1835		
				(0.1894)		
Eigenvector centrality × CG bundle				0.0083		
				(0.0068)		
Personal network					−0.0009	
					(0.0006)	
Personal network × CG bundle					0.0000	
					(0.0000)	

TABLE 11 (Continued)

	Dependent variable: log of cash holding					
	(1)	(2)	(3)	(4)	(5)	(6)
Professional network						−0.0001*
						(0.0000)
Professional network × CG bundle						0.0016**
						(0.0008)
CG bundle	−0.0348***	−0.0338***	−0.0330***	−0.0279***	−0.0265***	−0.0222***
	(0.0039)	(0.0034)	(0.0038)	(0.0036)	(0.0026)	(0.0024)
Control variables included	Yes	Yes	Yes	Yes	Yes	Yes
Constant	−1.1177***	−1.0902***	−1.1594***	−1.3023***	−1.3309***	−1.4724***
	(0.2122)	(0.2090)	(0.2085)	(0.2089)	(0.1980)	(0.1963)
Observations	4900	4900	4900	4900	4900	4900
R-squared	0.3197	0.3206	0.3195	0.3185	0.3187	0.3186
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: This table reports the results pooled OLS regression for effect of directors' social capital and corporate governance bundle on firm's cash holdings. The dependent variable is logarithm of cash holding measured as ratio of cash and marketable securities to total assets minus cash and marketable securities. The independent variable is directors' social capital measured as degree, betweenness, closeness and eigenvector centralities, personal and professional networks and their interaction terms with corporate governance bundles. All variable definitions can be found in Table A1. In all regressions we include industry, and year fixed effects. Robust standard errors are calculated to control for heteroscedasticity and reported in parentheses. Statistical significance of the coefficients is designated as ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

4.3.2 | Removing financial crisis period

Table 11 represents the regression results where we exclude the period when the financial crisis occurred, as great variation in a firm's cash savings is possible during these periods. In Table 11, we exclude year 2008 and 2009 (following Van Essen et al., 2013) and re-estimate our models. In addition, we also include the interaction terms for personal and professional network and CG bundle. In general, the main findings are not influenced by the specific event of financial crisis.

Lastly, our dataset consists of larger number of firms for US and UK. So, in an unreported regression we exclude these two countries to see the effect of CG bundle and directors' social capital on a firm's cash holdings. The results indicate that our results are not driven by countries having higher number of firms in the sample.

5 | CONCLUSION

In this study, we examine how the governance bundles and directors' social capital can assist the firm's cash holding decision for foreign cross-listed firms around the world. The sample consists of 6123 firm-year observations from 32 countries. By developing a comprehensive

empirical model, we document a significant positive relationship between directors' social capital and the level of cash holding for foreign cross-listed firms in the presence of higher governance bundles. The results of this study suggest that foreign cross-listed firms with high director social capital hold less cash and is consistent with Miranda-Lopez et al. (2019). However, the above-mentioned paper does not consider the foreign cross-listed firms and governance bundle together in determining the cash holding decision. Directors of FCLFs take risks when they operate in another market to generate higher values, and increase their firm's visibility, as this creates goodwill for the firms. The cross listing also guarantees the capacity of the firms in addressing the institutional barriers and convince the stakeholder about the flow of information through their extended network. Thus, empirically we find that firms with higher governance bundles and directors' social capital hold more cash when they are foreign cross listed.

This study fills the gap in the academic literature related to social capital, governance bundles, and cash holding. We contribute to the literature of social capital by showing how directors facilitate information diffusion when their firms are cross-listed in a foreign market. Although empirical findings are still mixed about cash holding of FCLFs, our results are in line with the

information advantage view, which suggests that directors with high social capital can gain valuable information in foreign markets. Thus, there is a less intention of the directors to misuse the cash for their personal benefits. Secondly, we document evidence supporting the notion that having high social capital directors is beneficial for firms. Following El-Khatib et al. (2015) and Faleye et al. (2014), we use measures of centrality and directors' personal and professional networks to better capture the concept of social capital and explain a reason for their higher cash holding. In addition, we enhance the understanding of the role of directors of international firms and their decisions for FCLFs. Our study is also consistent with previous studies such as Charitou and Louca (2017), which shows directors' social capital can improve firm performance. We extend this stream of literature by showing that governance bundles and directors' social capital may be related for gathering private and important information regarding foreign markets, resulting in more cash holding for a firm, which is always good for a firm, especially during the period of uncertainty.

The pandemic has a severe and adverse impact on the global economy. Our findings will be a valuable input for firm directors making cash holding decisions. The firm's directors can use their network to reduce information asymmetry and decide to foreign cross list, especially when the market of the parent country is adversely affected by the Covid-19 outbreak. Finally, the findings provide a comprehensive picture to the policy makers of countries following various governance frameworks, which makes it difficult to control the operation of foreign cross-listed firms.

Despite several relevant contributions, our study has some limitations. We find that there is a lack of extensive details about the governance data from developing countries, which might affect directors' cash holding decisions. Finally, further research can consider more dimensions of governance factors, and changes in certain specific rules and regulations for developing countries, as well as the industry trend related to the cash holding strategy.

CONFLICT OF INTEREST
The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT
The data that support the findings of this study are available from the corresponding author upon reasonable request.

ORCID
Monomita Nandy https://orcid.org/0000-0001-8191-2412

ENDNOTES

[i] See Table A1 for definition. We follow Ernstberger & Grüning, 2013 and consider firms' corporate governance bundles rather than using a single corporate governance mechanism. In addition, apart from the developed markets, our sample consists of firms from emerging countries where the legislative framework can be less relevant compared to the developed countries. Thus, country level governance will influence the firms' strategic decision-making (Dudley & Zhang, 2016). Our study focuses on foreign cross-listed firms, where mostly the firms apply both home and host country's governance structure in their business model. The firm or country governance bundle alone cannot explain the research question. So, we follow Seifert and Gonenc (2018) to apply the combination of firm level and country governance bundle to create a corporate governance bundle to explain the cash holding of foreign cross-listed firms.

[ii] Following Fogel et al. (2018) we use directors' network centrality, personal and professional network as proxy for "social capital". The social capital originates from the "information and reputational trust" through social network. The foreign cross listing is a risk-taking strategic decision, which needs information transfer among the decision makers and contractual enforcement of governance framework of the home and foreign country. Thus, to explain the cash holding of the foreign cross-listed firms, we need to capture the above-mentioned factors, which is possible when we consider social capital among members of a network instead of a bilateral connection among directors.

[iii] Following Sarkissian and Schill (2016), we define foreign cross listing when firms, listed on a domestic stock exchange, occasionally opt for a foreign exchange as either a substitute or a supplement.

[iv] Following La Porta et al. (1998) and Van Essen et al. (2013), we use "good" or "better" governance in this study

[v] See Nandy et al. (2020) for a detailed description of the centrality calculation. Director network centrality is used as the proxy for director social capital in this paper.

[vi] After critically analysing the literature (Begenau & Palazzo, 2021; Graham & Leary, 2018), we find that after 2003, the average cash holding levelled off.

[vii] These variables are used in robustness test in Table 11

[viii] See Table 9 of subsample test

[ix] We also exclude countries with fewer firms such India (2), Luxembourg (4), Austria and South Korea (6). In an unreported analysis, the regression results do not vary from our main findings

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APPENDIX A

TABLE A1 Variable definition and data source.

Variables	Definition	Database
Degree centrality	$\Sigma_j\, x_{ij}$, where x_{ij} is the number of links a firm has. This is standardized by dividing the measure by the standard deviation of the Degree Centrality for each year	BoardEx
Closeness centrality	$(\Sigma_{j \neq i}\, C(i,j))$, where $C(i,j)$ is the shortest path between firm i and firm j. This is standardized by dividing the measure by the standard deviation of the Closeness Centrality for each year	Board
Betweenness centrality	$(\Sigma j \neq i, \mathbb{C}\,(k,j))\, \mathrm{Pi}(kj)/P(kj)$, where $\mathrm{Pi}\,(kj)$ is the number of shortest paths between firm k and firm j that firm i lies on, $P(kj)$ is the total shortest paths between firm k and firm j. This is standardized by dividing the measure by the standard deviation of the Betweenness Centrality for each year	BoardEx
Eigenvector centrality	$[(1/\lambda)\,(\Sigma_j\, A_{i,j} \times \mathrm{ev}_j)]$, where λ is the parameter needed for a non-trivial solution, A is the adjacency matrix and ev_j is the eigenvector centrality of firm j. This is standardized by dividing the measure by the standard deviation of the Eigenvector Centrality for each year	BoardEx
Social Capital (used in models)		
Degree	The quartile ranking of degree centrality	BoardEx
Closeness	The quartile ranking of closeness centrality	BoardEx
Betweenness	The Quartile ranking of Betweenness Centrality	BoardEx
Eigenvector	Percentile ranks of directors' eigenvector centrality	BoardEx
Composite centrality	The quartile ranking of the principal component factor of the four component centrality measures each year	BoardEx
Professional network	Number of director shares common board with others in the given year	BoardEx
Personal network	Number of directors attended same institute, graduated within 2 years of each other, attained same degree	BoardEx
Firm and country level control variables		
Cash holding	Cash is the ratio of cash and marketable securities to total assets minus cash and marketable securities	DataStream
Cash flow from operation	Cash flow from operating activities, scaled by the book value of total assets	DataStream
Leverage	Leverage is the long-term debt, scaled by total assets	DataStream
Net working capital	Net working capital is the working capital minus cash, scaled by total assets	DataStream
Firm size	Firm size is measured as the logarithm of the firm's book value of assets	DataStream
Capital expenditure	Capital expenditure scaled by total assets	DataStream
Return on assets (ROA)	Income before extraordinary items scaled by total assets	DataStream
Retained earnings	Retained earnings scaled by total assets	DataStream
GDP	Annual GDP per capita	World Bank
Inflation	Annual inflation (consumer price index)	World Bank
Foreign listing	Total number of foreign stock exchanges, where firm listed their stocks in a particular year	DataStream
Corporate governance		
Firm CG	Firm-level corporate governance scores from ASSET4 with following components:	Asset4
	(1) Board Functions	Asset4

(Continues)

TABLE A1 (Continued)

Variables	Definition	Database
	(2) Board Structure	Asset4
	(3) Compensation Policy	Asset4
	(4) Vision and Strategy	Asset4
	(5) Shareholder Rights	Asset4
Country CG	Average of six world bank governance indicators (WGI):	World Bank
	(1) Voice and accountability	World Bank
	(2) Political stability and absence of violence/terrorism	World Bank
	(3) Government effectiveness, regulatory quality	World Bank
	(4) Rule of law	World Bank
	(5) Control of corruption	World Bank
CG bundle	Average of firm CG and country CG	

Notes: This table presents the variable definitions and data source. The first 4 variables in this table such as degree centrality, closeness centrality, betweenness centrality and eigenvector centrality are measured following the algorithms mentioned above. In our regression models we used the quartile ranking of these centrality measures as explained above.