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Nexus between Firm Risk and Gender Diversity in Foreign Operations

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Abstract

The prime objective of the study is to investigate the impact of firm risk on gender diversity in foreign operations. We argued that a strong risk spread occurs from headquarters to foreign subsidiaries due to multinationals' high visibility, headquarters control, and liability of foreignness in a foreign market. Thus, we argue that foreign subsidiaries increase gender diversity in foreign operations to buffer the risk spread. The sample consists of Chinese 123 foreign subsidiaries from 19 countries from 2010 to 2019. Using System GMM estimation technique to investigate the impact of firm risk on gender diversity in foreign operations. The study results suggest that the firm risk spread has a positive and significant impact on gender diversity in foreign operations. Thus, against higher firm risk spread, the gender diversity strategy is used in foreign operations to seek legitimacy through transmitting positive signals. Based upon our study results the international business policymakers are suggested to use corporate governance mechanisms as legitimacy-seeking strategies such as gender diversity etc., against firm risk spread to get legitimacy in the market and mitigate the negative spillovers through building a strong relationship with key stakeholders in the foreign market through positive signals. Furthermore, the management of risky MNCs' headquarter, should design and formulate such mechanisms to avoid risk spread impact on foreign operations while evaluating the strategies of foreign subsidiaries.

Introduction

Globalization and technology make it possible to transfer information from one country to another country rapidly. However, the mainstream literature on holding firms and wholly own subsidiaries of large multinational corporations (MNCs) represents that

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holding firms' risk spread can influence their foreign subsidiaries positively and negatively accordingly. Thus, the spreading impact of parent firms on foreign subsidiaries has both positive and negative consequences because of the high visibility of MNCs (Caves & Caves, 1996), the linkage between holding firms and foreign subsidiaries (Doz & Prahalad, 1981), foreign subsidiary resource dependency (Zhou & Wang, 2020), and foreign subsidiary's liability of foreignness in the host country (Wang & Li, 2019). Due to such dependence of foreign subsidiaries on the holding firm, foreign subsidiaries take advantage such as the brand name, goodwill, financial resources, and expertise of the parent firm (Zhou & Wang, 2020; Nell & Ambos, 2013). But apart from this, subsidiaries may also face negative spillovers like environmental spillover, crises spillover (Jonsson, Greve, & Fujiwara-Greve, 2009), reputational spillover (Yu & Lester, 2008), corporate social irresponsibility (Wang & Li, 2019), and accounting misconduct spillover (Utke & Xu, 2020). These studies are conducted mostly in the inter-firm context focusing on how one firm's damage influences the other firm.

Thus, the prime objective of our study is to investigate the impact of firm risk spread on gender diversity in foreign operations. As home country risk is a negative spread for host country which affect their operations negatively. Because such a negative spread affects the social legitimacy of innocent firms. Thus, drawing upon signaling theory we argue that when negative spread occurs from headquarters the foreign subsidiaries increase their gender diversity to mitigate the negative spread effect.

Because due to risk spread from holding firm, foreign subsidiaries lose their social legitimacy and face various kinds of unfavorable consequences and outcomes, such as firm devaluation (Jia & Zhang, 2016), loss of stakeholders' trust (Zhou & Wang, 2020), contract termination (Jonsson et al., 2009), and loss of reputation (Zhou & Wang, 2020). Thus, we argue that foreign innocent subsidiaries face a loss of social legitimacy when a holding firm engages in accounting misconduct due to negative spread. However, recently it is a very interesting and debatable area in corporate finance that needs extensive research to provide strategies that how negative spread may be mitigated by foreign subsidiaries such as accounting corporate social irresponsibility spread from holding firms (Utke & Xu, 2020), which tends to loss of social legitimacy by foreign subsidiaries (Zhou & Wang, 2020).

Thus, foreign subsidiaries need to mitigate the holding firm risk spread to avoid social legitimacy, firm reputation, and contract terminations. However, in existing literature, Yu, Sengul, & Lester (2008) suggest detachment tactics to mitigate the negative spread effect. Detachment tactics may work properly for loose categories, such as director interlock, different units, or industry membership (Zhou & Wang, 2020; Kang, 2008). But due to the high visibility of MNCs and strong linkage between holding firms and subsidiaries for critical resources such as capital, brand name, and other specific success factors make detachment tactics are ineffective to mitigate the impact of negative

spread (Zhou & Wang, 2020). Legal bindings also make ineffective such tactics of detachment from the holding firm. However, detachment tactics may be followed by the holding firm if the subsidiary involves in any kind of misconduct and have a spreading impact on the holding firm. Thus, to mitigate the impact of holding firm risk spread, foreign subsidiaries may use the TMTGD strategy to gain social legitimacy, avoid reputational loss, and contract termination in the market by transmitting positive signals.

Furthermore, the severity of fraud is mitigated by increasing gender diversity on board (Cumming, Leuing, and Rui, 2015). Different types of corporate problems may be mitigated through the increase of TMTGD. An increase in gender diversity reduces agency problems (Fama & Jensen, 1983), increase strict monitoring (Nguyen, 2020), increases true information disclosure (Srinidhi, Gul, & Tsui, 2011), and reduces the severity and frequency of fraud (Cumming, Leung, & Rui, 2015), reduce poor governance through increases transparency (Gul, Srinidhi, & Ng, 2011), contribute to verification and validity of standards (Gul et al., 2011), and decreases information asymmetry and managerial opportunistic behaviors (Usman, Farooq, Zhang, Makki, & Khan, 2019). Thus, we may argue that investigating the impact of risk spread on foreign subsidiaries TMTGD is a novel and value-enhancing area in the current body of knowledge.

However, based on a critical review of existing literature the relationship between holding firm risk and foreign subsidiaries' TMTGD strategy, is still not conclusive and has contradictory results. Because researchers mostly focused on the positive spread from holding firms to foreign subsidiaries. Secondly, in the case of negative risk spread few studies focus on corporate social irresponsibility and crisis spread. But these studies use detachment tactics to mitigate the negative spread which is not suitable in large MNCs with high visibility. Thus, in this study, we use a novel mechanism through which foreign subsidiaries of large MNCs mitigate the negative risk spread of the parent firm. We believe that it is important to empirically investigate what is the impact of holding firms' risk spread on foreign subsidiaries' TMTGD strategy.

However, signaling theory state that, increasing TMTGD leads to transmitting positive signals to the market participant to eliminate the asymmetric information between holding firm and foreign subsidiary stakeholders. Furthermore, agency theory argues that increasing gender on corporate boards increases effectiveness through the increase in cognitive conflict and board independence. Further, it also increases the board of directors' knowledge and efforts, which leads to the quality of financial reports and transparent financial information. Because Wahid (2019) argues that providing transparent and accurate financial information to stakeholders required greater expertise, knowledge, a high level of cognitive board independence, and continuous and extensive monitoring to make sure availability of the best results. Thus, these all attributes come in corporate boards through adding more female directors in corporate boards.

This study contributes to the current body of knowledge on gender diversity, by investigating the buffering role of the TMTGD strategy used by MNCs in their host country against holding firm risk spread. Existing studies mainly provide detachment tactics as buffering mechanisms against holding firm negative spread. However, growing literature investigates the role of gender diversity in corporate decisions. Broadly, focuses on the effect of female board directors or female CEOs on corporate financial decisions, monitoring level, and quality of financial information (e.g., Faccio, Marchica, & Mura, 2016; Ho, Li, Tam, & Zhang, 2015; Gul et al., 2011; Adams & Ferreira, 2009). However, Luo, Peng, and Zhang (2020) argue that the chances of risk caused by misconduct can be reduced by increasing gender diversity on board. But as per m best knowledge, no one investigate the buffering role of TMTGD in foreign subsidiaries against holding firm risk spread. Thus, large MNCs use this study to gain social legitimacy, avoid reputational loss, and trade contract termination in the foreign market through increasing TMTGD in their foreign subsidiaries.

Literature Review

Theoretical Framework and Hypothesis Development

The linkage between the holding firm and foreign subsidiary is evident in the existing international business literature. Foreign subsidiaries are highly dependent on their holding firm for resource dependency, branding, name, image, reputation, expertise, and knowledge (Zhou & Wang, 2020; Meyer, Li, & Schotter, 2020). Based on this strong linkage between holding firm and foreign subsidiary both positive and negative spread from parent firm transferred to their foreign subsidiaries (Hoenen & Kostova, 2015). This transfer is due to the high visibility of large MNCs opening the paths to most of the stated consequences that occur when the firm itself involve in accounting misconduct. In our study, we are extending the current body of knowledge by investigating the impact of accounting misconduct spillover from parent firms to foreign subsidiaries. Although, how foreign subsidiaries are benefited from parent firm-specific advantages such as technology (Buckley & Casson, 1976), brand name (Dunning, 1993), and resources (Nell & Ambos, 2013), are mainly discussed in the mainstream literature on multinational enterprises (MNEs) by linking parent firms with foreign subsidiaries. However, few studies in the existing literature investigate how parent firm negatively influences their foreign subsidiaries and the underlying mechanisms of such influences. Few studies focus on the negative spillover in inter-firm contexts, like how one department's product line damage the other product line or how one department or organization damages the other department and organization respectively such as crisis spillover within the firm (Jonsson et al., 2009; Kang, 2008), reputational spillover from one firm to another firm (Yu & Lester, 2008).

Numerous studies investigate how parent firms influence foreign subsidiaries' cost of equity, financial flexibility, and financial constraints (e.g., Tam, 2014; Vijh,

2006). However, it is argued in the existing literature that foreign subsidiary is influenced both positively and negatively by parent firms' spillover. Because spillover can be positive and negative and effect accordingly. To study the spillover impact from parent firm on foreign subsidiaries both positive and negative consequences have a significant impact and are worthwhile due to the high visibility of MNEs (Caves & Wang, 1996), the linkage between parent firm and foreign subsidiary (Doz & Prahalad, 1981), foreign subsidiary resource dependency (Zhou & Wang, 2020), and foreign subsidiary's liability of foreignness in the host country. Due to such dependence of foreign subsidiaries on the parent firm, foreign subsidiaries take advantages like brand name, goodwill, financial resources, and expertise from the parent firm but apart from this, subsidiaries may also face negative spillovers like environmental spillover, crises spillover (Jonsson et al., 2009), reputational spillover (Yu & Lester, 2008), reputational risk spillover (Zhou & Wang, 2020), corporate social irresponsibility (Wang & Li, 2019), and accounting misconduct spillover (Utke & Xu, 2020).

This study investigates the negative spread impact of holding firm risk on foreign subsidiaries and the response of foreign subsidiaries to mitigate the negative spread. However, the holding firm uses various mechanisms to control and influence its foreign subsidiaries. Such as holding firms can control their subsidiaries' accounting and financial strategic choices (e.g., Qayyum et al., 2020; Bonacchi, Cipollini, and Zarowin 2018; Dyreng, Hanlon, and Maydew 2012), because of headquarter-subsidiary connections and resource dependence. The firm risk depends upon corporate misconduct. Thus, various kinds of misconduct by holding firms may increase their risk. It is argued that holding firms control their foreign subsidiaries' operations. Thus, in case holding firms have a higher level of risk have an impact on foreign subsidiaries. However, investors have limited attention to an important empirical question related to how investors perceive headquarter-subsidiary connections around various corporate misconduct such as restatement, abnormal return, insider trading, financial fraud, and bankruptcy which increase the holding firm risk (e.g., DellaVigna & Pollet 2009; Hirshleifer, Lim, & Teoh 2009; Hirshleifer & Teoh 2003). Thus, based on the above literature we argue that the headquarters control their foreign subsidiaries due to strong linkage and resources dependency which generates a debate that headquarters' higher risk negatively influences their foreign subsidiaries.

However, extensive literature theoretically and empirically investigates the cause and consequence of parent firm corporate misconduct which increases the risks. Such as numerous studies represent the relationship between accounting fraud and board composition, board structure, interlocking boards, audit quality (Kang, 2008; Beasley, Carcello, Hermanson, & Lapides, 2000), and insider trading fraud (Dunn, 2004). However, Cumming et al. (2015) investigate how the severity of risk is mitigated by increasing gender diversity on board. In their study, they argue that increasing females on

board reduces the severity and frequency of risk. To support this argument in existing literature numerous studies argue that increased TMTGD onboard curtails risk. Such as increased gender diversity on board mitigating agency problems (Fama and Jensen, 1983), increasing strict monitoring (Nguyen, 2020), increasing true information disclosure (Srinidhi et al., 2011), reduces the frequency and severity of fraud (Cumming et al., 2015), reduces poor governance through increases transparency (Gul et al., 2011), contributes to verification and validity of standards (Gul et al., 2011), and decreases information asymmetry and managerial opportunistic behaviors (Usman et al., 2019).

Furthermore, the existing body of knowledge suggests that females on board increase the board's ethical behavior Sundén & Surette, 1998; Bruns & Merchant, 1990), decreases the probability of share price crashes (Qayyum et al., 2020), and have a risk aversion attitude (Barber & Odean, 2001; Byrnes, Miller, & Schafer, 1999). It does not mean that only females are vital to mitigating the governance issues, but men are also very vital to strengthening the corporate governance. That's why it is argued that gender diversity is very vital to the minimization of corporate risks (i.e., engaging in opportunistic behavior and making suboptimal decisions) diverse through knowledge, expertise, and quality of boards (Eagly & Carli, 2007; Van-Knippenberg, De-Dreu, & Homan, 2004).

Gender diversity advocates argue that females are risk-averse and ethical which leads to preventing corporate fraud due to risk aversion attitude and making ethical decisions due to ethical nature (Luo et al., 2020). Further, it is argued that females are less overconfident, less assertive, less aggressive, more ethical, more anxious, more risk-averse, and more active. Thus, these qualities of females tend to lower the chances to engage in risk enhancement activities (Ho et l., 2015). Thus, when a foreign subsidiary increases TMTGD on their board to transmit signals toward market participants about the strong corporate governance to increase their trust level (Luo et al., 2020) and firm legitimacy (Qayyum et al., 2020) that reduces the negative spread of holding firm risk.

As discussed above board gender diversity minimizes the chances of corporate misconduct which increases the corporate risks (Luo et al., 2020). Furthermore, it is argued that a gender-diverse board is more independent as compared to a non-diverse board due to the independent nature of females on diverse boards. This argument opens the discussion that females on the board strengthen the governance which transmits a signal towards regulators and stakeholders that parent firm risk has no impact on host country firm because the host country board is independent to take their own financial decisions, provide transparent financial reporting and have strong corporate governance mechanisms. Furthermore, the higher TMTGD decreases the information symmetry between holding firms and foreign subsidiaries (Jiang et al., 2020). Thus, we argue that when a parent firm involves in higher-risk prevailing activities and its spillover on foreign subsidiaries then foreign subsidiary increases TMTGD to buffer the spillover

effect. Encouraging TMTGD on board will play an ex-ante function as an insurance mechanism to mitigate the negative effect of parent firm risks.

However, stakeholders' awareness and knowledge about the firm's activities and operations due to exposure to foreign subsidiaries' TMTGD strategy, mitigate the biased views of stakeholders about negative spillovers from the parent firm (Zhou & Wang, 2020). Thus, foreign subsidiaries achieved the firm's legitimacy through engaging in the TMTGD strategy. Because it helps to transmit a positive signal of strong governance quality to market participants such as capital providers, suppliers, customers, and social groups (Byron and Post, 2016). Thus, drawing upon the signaling theory information asymmetric information prevail between holding firm and foreign subsidiaries. Thus foreign subsidiaries increase TMTGD to transmit positive signals to the market stakeholders to avoid loss of social legitimacy, reputational loss, and trade contract termination. Thus, based on the above literature, our study hypothesis is:

*Hypothesis 1***:** *Holding firm risk has a positive effect on foreign subsidiaries' TMTGD strategy.*

Methodology

Sample

This study focuses on Chinese large MNCs' foreign subsidiaries around the globe from 2010 to 2019. Holding firm risk data is collected from the RepRisk database and firm-level financial data from Osiris and Bloomberg. However, the RepRisk database provides data of around 150,000 firms around the globe. The main focus of the RepRisk database is risks related to environmental, social, and governance (ESG) related issues. RepRisk database provides risk data from 2010 and onwards. Thus, in this paper, our dataset comprises from 2010 to 2019.

In this study, we considered all the publically listed Chinese MNCs with have foreign subsidiaries. Thus, holding firms are only Chinese publically listed firms while foreign subsidiaries are from around the globe. However, we selected only those firms which are covered by the RepRisk database. We also ensure the availability of risk data of both holding firms and foreign subsidiaries on the RepRisk database. We excluded financial firms (SIC 5999-6999) due to their different financial reporting. Initially, we have a total of 348 foreign subsidiaries as a population which is covered in the RepRisk database. First, we excluded all the subsidiaries of host countries where TMTGD is compulsory by regulatory bodies. Thus, after excluding such firms our sample consists of 216 subsidiaries. As we collected firm-level financial data from Osiris and Bloomberg. Thus, when we exclude all the subsidiaries whose data are not available on Osiris and Bloomberg, we have a total of 123 foreign subsidiaries (consists of 1230 firms' observations) from 19 countries in our sample. However, as mentioned above holding firms are only Chinese publically listed firms while foreign subsidiaries are from around the globe.

Variable Measurement

Dependent Variable

In this study, our dependent variable is foreign subsidiaries TMTGD (Sub_*TMT_GD*). Where TMTGD is the representation of female executives in top management teams. We measured TMTGD as the total number of female executives on the top management team divided by the total number of executives each year (Popli et al., 2021). Data on TMTGD is collected from annual reports of firms manually available on the Osiris database. Further, we search all the sample firms' websites to confirm the top management teams executive directors, and female representations. Furthermore, we check the title (i.e., Mr, Mrs, and Miss) of each executive on the top management team against their name (Saeed et al., 2022). In case of ambiguity and confusion to recognize the gender correctly we follow google and dictionaries.

Independent variable

In this study, our independent variable is holding a firm's risk (*Holding_Risk*). We collected holding firm risk data from the RepRisk database, a research and business intelligence provider that specializes in environmental, social, and governance (ESG) and business risk. Holding firm risk is measured by the annual average value of the holding firm's risk index. The risk index is a measure that dynamically captures and quantifies risk exposure related to Environmental, Social, and Governance (ESG) issues. The risk index calculation is based on two main factors: news value and news intensity. News value captures the impact and influence of occurring negative events, which, depends on their novelty, reach, and severity. News intensity is the timing and frequency of negative events. The risk index is the multiplier of both factors. In terms of calculation, news value is the time-weighted average of reach, severity, and the novelty of risk incidents over the last two years, whereas news intensity depends on the number of risk incidents over the last two months. *Holding_Risk* ranges from 0 to 100. A large value of *Holding_Risk* indicates a high-risk firm exposure (Zhou & Wang, 2020).

Control Variables

TMTGD is influenced by several firm-level and country-level factors that need to be controlled to avoid results deviation or omission. Thus, we control such factors in our study. First, we control for firm-level factors. The size of the firm (*SIZE*) is characteristic of a firm that affects TMTGD. Firms with larger sizes have greater visibility and due to greater visibility, the firm board represents a higher proportion of women on board (Hillman, Shropshire, & Cannella, 2007). Based on this argument we will also control firm size in our study and will measure as a natural log of the firm's total assets.

Subsidiary board independence (*Sub_BIND*) is a firm characteristic that affects the firm strategy. It is argued by Nekhili and Gatfaoui (2013) that firms with greater board independence represent board diversity and are free from internal and external influence. It is argued that women on board increase the independence to make decisions. Thus, board independence has a positive association with a higher TMTGD strategy. Board independence is measured as the percentage of independent directors on board to the total number of directors. We control the subsidiary return on assets (*Sub_ROA),*

which influences the foreign subsidiaries' TMTGD strategy. Because firms with higher firm performance will increase gender diversity on board to mitigate the cost of a transaction, cost of agency, and cost of capital which improves the firm economic value and economic benefits (Saeed et al., 2016). A positive relationship is documented between the firm performance and the firm's gender diversity strategy. However, we measured return on assets as profit before taxes divided by total assets.

Foreign subsidiaries' age (*Sub_AGE*) also influence the firm TMTGD strategy. As it is argued that mature firms have a higher number of females on board (Jiang et al., 2020; Skaggs, Stainback, & Duncan, 2012). Because mature firms are experienced and have legitimized legacy which needs to be maintained through such corporate governance mechanisms. We will control foreign subsidiaries' age and will measure like many years since the firm was founded. We further control for foreign subsidiaries' leverage *(Sub_LEV)* because the debt provider also sets gender criteria for assessing the financial propensity of the firm (Adams and Ferreira, 2009). Thus, the level of leverage may influence the gender diversity and independent directors' strategies of the firm. We measured firm leverage as total debt to total equity. For subsidiary industrial competition (*Sub_Ind_Comp*), we use Herfendhal Index by using total sales within the firm's industry (Zhou & Wang, 2020; Ali, Ng, &, 2014). We differentiate wholly own foreign subsidiaries (*Wholly_Own*) from a joint venture. Thus, for this purpose, we use dummy variables and code 1 for wholly own subsidiary and 0 for not. It is argued that wholly-owned subsidiaries are under greater pressure in host countries to follow local norms, values, and standards to gain legitimacy (Chen, Chen, & Ku, 2012). We control foreign subsidiary risk (*Sub_Risk*) because foreign subsidiaries' TMTGD is influenced by its level of risk (Zhou & Wang, 2020). We collected subsidiary risk data from the RepRisk database, a research and business intelligence provider that specializes in environmental, social, and governance (ESG) and business risk. Sub_*Risk* ranges from 0 to 100. A large value of *Sub_Risk* indicates a high-risk firm exposure (Zhou & Wang, 2020). Lastly, year, industry, and country dummies are used to control time, industrial, and country-level fixed effects in the estimations.

Estimation Technique and Model

Prior studies in the existing literature suggest that the generalized method of moment (GMM) is the most suitable estimation technique for the dynamic panel model. Because GMM gives more accurate and consistent results compared to ordinary least squares (OLS). Further, GMM is suitable when variables are not strictly exogenous, a large number of firms, a small-time period, and a linear functional relationship exist (Arellano & Bond, 1991). However, there are numerous issues in the dynamic panel model such as potential endogeneity, autoregressive process problems, and heteroscedasticity (Arellano & Bond, 1991; Roodman, 2009). Thus, to investigate the direct impact of holding firm risk on foreign subsidiaries TMTGD we use two-step

system GMM estimation techniques. Because in our model variable TMTGD is dynamic in nature and two-steps system GMM is a more robust estimator to control the problem of endogeneity by using lagged dependent on variables as instruments in the model. Further, we used xtivreg2 command to find the endogeneity. Endogeneity test results represent the insignificant probability of Chi-Square which depicts there is no endogeneity in the model. Further, we used The Arellano-Bond test, AR (2) test to check the serial correlation in the model, and Hansen's (1982) J-statistics test is used to check the over-identifying issue and instrument validity. Thus, we estimate the following model:

$$\begin{aligned}\mathrm{Sub\_TMT\_GD}_{i,t} &= \beta_0 + \beta_1 \mathrm{Sub\_TMT\_GD}_{i,t-1} + \beta_2 \mathrm{Holding\_Risk}_{i,t} \\ &+ \beta_3\, \mathrm{Sub\_Lev}_{i,t} + \beta_4\, \mathrm{Sub\_Size}_{i,t} + \beta_5\, \mathrm{Holding\_Size}_{i,t} \\ &+ \beta_6\, \mathrm{Sub\_ROA}_{i,t} + \beta_7 \mathrm{Sub\_BIND}_{i,t} + \beta_8 \mathrm{Sub\_Age}_{i,t} \\ &+ \beta_9 \mathrm{Sub\_Competition}_{i,t} + \beta_{10} \mathrm{Wholly\_Own}_{i,t} + \beta_{11}\, \mathrm{Sub\_Risk}_{i,t} \\ &+ \mathrm{Y}_t + \mathrm{I}_t + \mathrm{C}_t + \epsilon_{i,t} \qquad (1)\end{aligned}$$

where in eq (1), $Sub\_TMT\_GD_{\mathrm{i,t}}$ is the foreign subsidiary of TMT gender diversity. $Holding\_Risk_{i,t}$, is the measure of parent firm reputational risk in year "t" for firm "i". The Y_t, I_t and C_t are included to control for differences in time, across industries and countries respectively, and is the error term.

Results

Descriptive Statistics and Correlation Analysis

Table 1 represents the behavior of the sample firms' data consisting of the number of observations, mean, standard deviation, and minimum and maximum values. The mean value of subsidiary *Sub_TMT_GD* is 19.61 which depicts that on average the foreign subsidiaries have 19.61 percent, female executive directors, on top management teams. The standard deviation of subsidiary *Sub_TMT_GD* is 15.91 which represents that the deviation from the mean is 15.91 percent. Similarly, the mean value of *Holding_Risk* is 26.94 which depicts that on average the selected sample firms have 26.94 percent risk. As the score of risk is between 0 to 100. Where the standard deviation of *Holding_Risk* represents the deviation from the mean is 10.10 percent.

Table 1: Descriptive Statistics

`	Obs.	Mean	Std. Dev.	Min	Max
Sub_TMT_GD	1230	19.61	15.91	0	66.66
Holding_Risk	1230	26.94	10.10	10	59
Sub_Lev	1230	57.46	19.05	7.50	117.92
Sub_Size	1230	2.91	2.44	1.05	9.47
Holding_Size	1230	8.89	1.87	1.00	13.40
Sub_ROA	1230	13.58	12.34	-153.25	79.28
Sub_BIND	1230	28.53	12.19	0	133
Sub_Age	1230	13.31	5.12	10	42
Sub_Competition	1230	17.32	8.37	0	35.7
Wholly_Own	1230	.008	.089	0	1.00
Sub_Risk	1230	4.78	3.88	1.00	20

Table 2 represents the results of correlation which is used to check the multicollinearity between the study variables. The results depict that *holding firm risk* has a positive and significant association with *Sub_TMT_GD.* Thus, holding firm risk and foreign subsidiary TMTGD are moving in the same direction. Similarly, other study variables are significantly associated with *Sub_TMT_GD*. However, Table 2 shows that the correlation value is less than 0.60 which represents no multicollinearity exists in the study variables.

Table 2: Correlation

Variable	1	2	3	4	5	6	7	8	9	10	11
Sub_TMT_GD	1										
Holding_Risk	.20***	1									
Sub_Lev	-.04**	-.07**	1								
Sub_Size	.09**	-.03**	.14**	1							
Holding_Size	.25***	-.02**	.22***	.22***	1						
Sub_ROA	.01***	.08**	-.19***	-.09**	.08**	1					
Sub_BIND	.05**	.01**	.01**	-.11**	-.12**	-.01**	1				
Sub_Age	.16***	.23***	-.02***	-.13*	.10***	.00***	-.01**	1			
Sub_Competition	.04***	-.03**	.01***	.07**	-.04*	-.10**	-.04**	-.03***	1		
Wholly_Own	.05***	.01***	.06**	.15***	.12***	.01**	-.07**	-.02***	.09**	1	
Sub_Risk	.01***	-.38**	-.01***	.12***	-.04***	.00***	.02***	-.04**	-.02**	-.01*	1

Note: **** shows significance at the .01 level, ** at .05 level and * at 0.1 level.*

Regression Analysis

We followed the two-step system GMM estimation technique to investigate the impact of holding firm risk spread on foreign subsidiary TMTGD. The Arellano-Bond test, AR (2) test is used to check the serial correlation issue and the J-statistics of Hensen (1982), test is used to check the over-identification issue and validity of instruments. The insignificant probabilities indicate that there is no serial correlation and over-

identification problems exist which depicts valid instruments to control the potential endogeneity.

Table 3 shows the results of our main dependent variable and control variables. The results present the direct effect of holding firm risk on foreign *Sub_TMT_GD*. The results depict a positive coefficient and statistically significant at level 1% of *Holding_Risk* (β_2= 0.30; p = 0.000; t= 9.95). The results indicate that holding firm risk has a positive and significant impact on foreign *subsidiary TMTGD*. Table 3 results support our study hypothesis (H1). In other words, holding firms with higher risk have to gender diverse TMT to buffer the risk spread effect to attain firm legitimacy in the eyes of market participants and other stakeholders through propagating positive signals to the market. To understand economic significance we can interpret it as, all else equal when holding firm risk increases by one percent standard deviation the foreign subsidiary TMTGD increases by 30%.

Further, the *Sub_Lev* result depicts the negative impact on subsidiary TMTGD. Because when a foreign subsidiary has a higher level of leverage then debt providers intervene in the firm's operational and financial decisions. Thus, this restricts the firm to get the advantage of increasing TMTGD on board. *Sub_Size* and *Holding_Size* have a positive impact on subsidiary TMTGD which depicts that larger the size of a subsidiary and holding firm results higher number of females on board. Because large firms have a higher number of board of directors and provide a higher number of females on board to be hired. *Sub_ROA* has a positive and significant impact on subsidiary TMTGD which shows that firms' higher levels of profitability tents to higher more female directors on board as compared to those firms with a lower level of profitability. *Sub_IND* has a positive impact on subsidiary TMTGD which depicts that firms with a higher level of board independence have a higher percentage of females on board. Because gender diversity increases the board's independence. Thus, the higher percentage of females in top management teams increases the board's independence to make decisions for the best interest of stakeholders and mitigate the asymmetric information. Further, *Sub_Age* has a positive impact on subsidiary TMTGD which shows that mature firms tend to higher percentage of females as compared to young firms. *Sub_Competition* has a positive impact on subsidiary TMTGD which entails that higher competition in the host market tends to hire female directors on top management teams to transmit positive signals to the market participants for seeking legitimacy. Thus, all the results are consistent with the existing literature empirical evidence.

Table 3: Dependent Variable: Foreign Subsidiary TMT Gender Diversity

`	Coefficient	T-Value	Sig.
$Sub\_TMT\_GD_{i,t-1}$	.214	8.47	.000
Holding_Risk	.306	9.95	.000
Sub_Lev	-.027	-3.93	.000
Sub_Size	.293	4.30	.000
Holding_Size	2.18	11.77	.000
Sub_ROA	.016	7.35	.000
Sub_BIND	.065	3.88	.000
Sub_Age	.406	13.37	.000
Sub_Competition	.367	28.74	.000
Wholly_Own	1.92	0.32	.748
Sub_Risk	.272	7.74	.000
Constant	31.84	16.51	.000
Observations	1230		
Number of ID	123		
Ab Test AR(2)	0.526		
Hansen Test	0.999		
Country Fixed Effect	Yes		
Industry Fixed Effect	Yes		

Sensitivity Analysis

We conduct several tests to check our study results' robustness. *Blau's Index* is used as an alternative proxy of *TMT gender diversity*. There are many studies in existing literature in which Blau's index has been used as an alternative measure of TMTGD (e.g., Joecks et al., 2013; Saeed et al., 2021). Thus, we replace TMTGD with Blau's index by following these studies. Blau's index is measured as $H = 1 - \sum_i^k = Cp_i^2$, the number of categories (i.e., Male and Female) is denoted by *C*. Where the proportion of male and female executives in TMT is denoted by p^i. In the case of an equal proportion of male and female the index take the value of 0.5. Similarly, in another case, if there is one gender in TMT then the index takes 0 value. Table 4 represents the results with *Blau's index* an alternative measure of *TMTGD*. The results with *Blau's index* are consistent with earlier findings shown in Table 3 with *TMTGD* and support our study hypothesis (H1).

Table 4: Dependent Variable: Foreign Subsidiary Blaus' Index

`	Coefficient	T-Value	Sig.
Blaus'_Index$_{i,t-1}$	.095	8.10	.000
Holding_Risk	.151	2.69	.004
Sub_Lev	-.009	-2.95	.000
Sub_Size	.171	6.00	.000
Holding_Size	1.10	11.77	.000
Sub_ROA	.011	8.30	.000
Sub_BIND	.047	4.52	.000
Sub_Age	.232	10.71	.000
Sub_Competition	.189	32.34	.000
Wholly_Own	6.98	2.72	.007
Sub_Risk	.159	7.15	.000
Constant	15.21	17.61	.000
Observations	1230		
Number of ID	123		
Ab Test AR(2)	0.840		
Hansen Test	0.999		
Country Fixed Effect	Yes		
Industry Fixed Effect	Yes		

We further used holding firm peak risk *(Holding_Risk_Peak*) as an alternative measure of holding firm risk to check the result's robustness. Where holding firm risk peak is measured as the highest value of overall business risk ESG risk exposure over the previous 12 months (Hasan, Habib, & Zhao, 2021). However, the results with the firm's risk peak are shown in Table 5. These findings are consistent with earlier results and support our study hypothesis (H1).

Table 5: Holding Firm Risk Peak an Alternative Method of Holding Firm Risk

`	Coefficient	T-Value	Sig.
Sub_TMT_GD$_{i,t-1}$	.08	7.45	.000
Holding_Risk_Peak	.145	12.65	.000
Sub_Lev	-.008	-3.06	.000
Sub_Size	.182	5.86	.000
Holding_Size	1.17	14.03	.000
Sub_ROA	.011	9.95	.000
Sub_BIND	.039	4.06	.000
Sub_Age	.244	16.70	.000
Sub_Competition	.187	37.50	.000
Wholly_Own	12.93	5.11	.000
Sub_Risk	.134	5.59	.000
Constant	17.03	15.60	.000
Observations	1230		
Number of ID	123		
Ab Test AR(2)	0.874		
Hansen Test	0.905		
Country Fixed Effect	Yes		
Industry Fixed Effect	Yes		

Finally, we exclude the firms from our sample operating in controversial industries (e.g., gambling, weapon, alcohol, and tobacco) (Jo & Na, 2012). Because these controversial industries tend to have higher risk as compared to non-controversial firms (Oh, Bae, & Kim, 2017). Our study results may be influenced by these firms. Thus, we excluded 16 firms that belong to controversial industries to create a subsample. We re-estimate the results with a subsample to alleviate the concern of controversial industries report in Table 6. The findings depict in Table 6 are consistent with earlier results and support our study hypothesis (H1). Based on these findings we argue that the industry effect does not influence our results.

Table 6: Results after excluding firms in controversial industries

`	**Coefficient**	**T-Value**	**Sig.**
$Sub\_TMT\_GD_{i,t-1}$	.144	14.79	.000
Holding_Risk	.320	11.14	.000
Sub_Lev	-.089	-8.65	.000
Sub_Size	.280	3.14	.000
Holding_Size	2.07	12.14	.000
Sub_ROA	.016	7.24	.000
Sub_BIND	.193	6.50	.000
Sub_Age	.436	12.66	.000
Sub_Competition	.446	17.31	.000
Wholly_Own	9.66	1.23	.223
Sub_Risk	.234	5.37	.000
Constant	33.0	14.64	.000
Observations	1070		
Number of ID	107		
Ab Test AR(2)	0.420		
Hansen Test	0.990		
Country Fixed Effect	Yes		
Industry Fixed Effect	Yes		

Discussion and Conclusion

Large MNCs go globally and perform operations in foreign markets. Due to the high level of visibility, the liability of foreignness in the host market, and resource dependency on headquarter spreads from headquarter to foreign subsidiaries are evident in the existing literature. Thus, in this study, we investigate the impact of holding firm risk spread on foreign subsidiary TMTGD. Specifically higher foreign subsidiary TMTGD strategy helps MNCs to gain legitimacy in the market and serve both ex-ante and ex-post as insurance and remedy mechanisms respectively. The ex-ante is an insurance mechanism that minimizes the holding firm risk spread while the ex-post is a remedy mechanism that mitigates the negative spread from the holding firm. However, our study findings support our prediction that holding firm risk is positively associated with foreign subsidiary TMTGD level because of the legitimacy-seeking nature of gender diversity based on signaling theory.

Our study contributes to the existing literature in various ways. First, our study contributes to the existing international business literature on the holding and subsidiary firm relationship. In this study, we clarify the mechanisms through which holding firm risk spread to foreign subsidiaries. Similarly, we clarify the mechanisms through which foreign subsidiaries buffer the negative spillover from holding firms. However, the existing studies mainly focused on holding firms' managerial attraction for resources rather than mechanisms through which foreign subsidiaries can mitigate the negative spread from holding firms. We clarify that a strong linkage between headquarter-subsidiary is a double edge sword. Because strong linkage provides benefits and costs. In benefits, it transit branding, resources, and managerial expertise while in costs in transmit negative spread such as risk and crises. Thus, our study enhances the existing body of knowledge to reveal the negative spread of risk from holding firms to foreign subsidiaries.

Second, we change the conversation from crisis spillover to risk spread from holding firms to foreign subsidiaries and different response strategies. Previous studies mainly focused on the crisis spillover in other contexts. They overlook the unique context of negative risk spread from holding firms to foreign subsidiaries. However, in previous studies detachment tactics are discussed as a strategy to respond to crises spillover. Thus, we contribute to the existing body of knowledge to investigate the buffering mechanism of foreign subsidiary TMTGD against holding firm risk spread. Third, our study contributes to the existing international business literature on the foreign subsidiary TMTGD. In the existing literature, various antecedents of TMTGD are explored but overlooked the possibility that foreign subsidiaries can use TMTGD against holding firm risk spreads. Therefore, this study enhances our knowledge of the antecedents of foreign subsidiary TMTGD. Our study objective is archived through filling the literature gap that how foreign subsidiaries can mitigate the negative risk spread by parent firms by increasing TMTGD as a legitimacy-seeking strategy to transmit positive signals to the market participants.

Despite the contributions of our study, various important practical implications are also offered in this study. Management of foreign subsidiaries with highly risky parent firms may use the TMTGD strategy to mitigate the negative impact of such risks. Furthermore, the management of risky MNCs' headquarter, should design and formulate such mechanisms to avoid risk spread impact on foreign operations while evaluating the strategies of foreign subsidiaries, including the extent of autonomy it needs to provide its foreign subsidiaries with, and the TMTGD strategy to build a positive image through transmit positive signals in the market and develop strong linkage with localized stakeholder.

Including the contributions and practical implications of our study, various limitations need to discuss here. First, the sample size is small because of scarce

resources to collect the data of foreign subsidiaries. We suggest that for future research to use a large sample size with a larger period to confirm the robustness and support our argument. Second, in this study, we mainly focused on one country's holding firms namely, China. Although our main argument is not specific to the country. No doubt China is a large global market share and has a strong government influence on companies' operations. Media reports are biased due to the difference between the ideology of China and the West. Thus, public interest in MNCs spillover and crises due to these differences and biases. However, these biases increase the MNCs' liability for foreignness which increases the negative spread of risk from Chinese holding firms to Chinese foreign subsidiaries. Thus, future studies need to generalize the findings and arguments of our study in different contexts. We mainly focused on large MNCs which might not be a true representative of the overall population. Thus, future studies need to focus on all publically listed MNCs to get a broad dataset from multiple homes and host countries.

Thus, we conclude that TMTGD plays a strong mechanism in foreign subsidiaries' perspective to buffer the negative risk spread from holding firms for two reasons. First, it avoids the detachment tactic of foreign subsidiaries from holding firms. Second, increasing TMTGD in the host not only buffers the risk spread from the holding firm but also helps to reduce the degree of labiality of foreignness that tends to increase the long-term subsidiaries' performance. We investigate only one strategy to mitigate the negative risk spread in this study. However, many other alternative strategies could be used to mitigate the risk spread in future studies. First, such as MNCs could adopt ownership and information control to mitigate the social irresponsibility disclosure of holding firms in the host country (Wang & Li, 2019). Second, a researcher could compare all these mechanisms and their interaction in a way to check their effectiveness. Thus, based on our study results international business policymakers are suggested to use corporate governance strategies against holding firms' risk spread to get legitimacy in the market.

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