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Research Article

Capitalizing on Diversity: The Impact of Board Gender Diversity on the Value of Excess Cash

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Abstract

This paper provides novel and comprehensive evidence regarding the impact of board gender diversity on the valuation of excess cash in companies. By analyzing a robust dataset of publicly listed firms in France from 2005 to 2017, the study finds that companies with a higher representation of women on their boards tend to significantly increase the value attributed to their excess cash reserves. The results suggest that investors perceive these companies as more capable of managing their cash efficiently, leading to a higher valuation. This perception likely stems from the belief that diverse boards contribute to better decision-making processes, which in turn enhances the effectiveness of cash utilization. Furthermore, the study uncovers that the positive relationship between board gender diversity and the valuation of excess cash is even more pronounced in firms that demonstrate high earnings quality. This finding underscores the importance of a transparent and reliable informational environment in strengthening the link between gender diversity and the efficient use of corporate resources. The research contributes to the broader corporate governance literature by emphasizing the critical role of board gender diversity in not only promoting effective cash management but also in increasing overall firm value through improved investor confidence and resource allocation strategies.

1. Introduction

In recent years, there has been a discernible global trend of companies increasing their cash holdings. According to the Financial Times, non-financial corporations have $6.9 trillion in liquid securities and cash, constituting about 12% of their assets. The rise in cash held by U.S. companies has been dramatic, increasing from $1.6 trillion in 2000 to about $5.8 trillion[1]. The trend of companies holding more cash has been the subject of extensive research, examining the determinants of holding excess cash and its effects on firm value [10, 4] Holding excess cash could be detrimental to firm value. Indeed, it can be perceived as a signal to investors that the company's cash is mismanaged by its executives. According to [14], excess cash is defined as the amount of cash that is not required for firm operations or investments. This surplus cash is susceptible to inefficient use by opportunistic managers. Furthermore, Bräuning et al. has documented that uncommitted accumulated cash can be easily converted into private benefits by managers [5].

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1 https://insight.kellogg.northwestern.edu/article/companies-hoarding-cash

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Jensen, M. C. argues that the cash surplus held by companies can lead executives to dissipate it in projects with negative net present value. Investors may then view excessive liquidity as a means that amplifies discretionary behavior of executives [21], either dissipating the cash or using it for personal gain [28, 27]. provided evidence of a negative effect of excess liquidity on the firm's value. [23] suggest that excess liquidity indirectly affects the firm's value through its impact on liquid stocks. The authors observe that excessive liquidity holdings increase the trading activity of these stocks, consequently reducing the liquidity premium attributed by investors.

This study tends to examine the impact of one unexplored corporate governance feature i.e. board gender diversity on the value of excess cash holding. In the presence of agency problems, cash provides executives with the opportunity to extract private rents, leading them to engage in projects with negative net present value [14, 9]. Consequently, when investors detect opportunistic managerial behavior, they assign a negative value to the liquid assets of companies (undervaluation) [2, 31]. The composition of the board of directors is a key element of managerial oversight. The inclusion of female directors contributes to the improvement of the control process by bringing new experiences and perspectives to the board, thereby enhancing its governance function [11, 37, 17]. Additionally, a more gender-diverse board can serve as a better mechanism for monitoring managers, as the presence of women on the board contributes to its independence [1].

An increasing interest in the corporate governance literature has addressed the impact of gender diversity on the board of directors on firm's financial performance [29, 35]. Researchers have also investigated the effect of board gender diversity on corporate decisions making. For instance. Ben saad et al. found that a gender-diverse board affects the company's capital structure [11]. Research has shown that female directors are more likely to use short-term debt as a tool to monitor opportunistic executives. Additionally, Lim et al found that female directors contribute to increased corporate and green innovation [29]. Lakhal et al. examined the impact of board gender diversity on environmental performance [26], while Huang et al. investigated the influence of women on boards in relation to waste management [19].

Based on the agency theory the presence of women on the board of directors is viewed as a vital governance mechanism capable of curbing opportunistic behavior among executives [1, 33] particularly, reducing the amount of cash held and the misappropriation of excess cash [25].

From this perspective, investors perceive the presence of women on the board as a positive signal [27, 34]; because they believe that gender diversity will improve decision-making efficiency within the company and result in more effective resource allocation [16, 7]. Consequently, liquid assets will be effectively managed within the company in such circumstances. We then assume that board gender diversity to be positively associated to the value of excess cash.

The purpose of this paper is also to investigate the moderating role of the firm's informational environment on the relationship between board gender diversity and the value of excess cash. The quality of financial reporting serves as a basis for external investors to assess the value of held cash [20, 18, 24]. Higher earnings quality mitigates information asymmetry, reducing economic frictions such as moral hazard and adverse selection [30, 6]. However, lower earnings quality exacerbates information asymmetry, causing investors to increase the discount rate applied to a company's cash holdings, devaluing its market value [8, 26]. Hence, in an effort to minimize agency costs, address information asymmetry, and safeguard their reputation, companies increase their financial reporting quality [32, 21]. As a result, improved earnings quality should amplify the positive impact of gender diversity on the valuation of excess cash.

This paper makes several contributions to the literature. First, this is to the best of our knowledge the first study that focuses on the impact of board gender diversity on the value investors assign to excess cash held by firms. Previous studies examined the role of women directors in enhancing firm's financial performance (see, for example [35] and decision-making (see, for example, [29] without focusing on how investors perceive the cash held by managers. Secondly, our paper provides new evidence of the role of the quality of financial reporting on the relationship between gender diversity and the value of excess cash.

The remainder of this article is structured as follows: The remainder of the paper is structured as follows: Section 2 presents the sample, whilst defining the variables; Section 3 illustrates and reports the empirical analysis; the penultimate section contains our robustness checks. Finally, Section 4 concludes the paper.

2. Sample and Data

Our sample consisted of French companies listed on the SBF 120. Board of directors and gender diversity data were hand-collected from the annual reports of listed companies. Accounting and financial data were extracted from the Worldscope database. We removed from our sample financial companies and companies with missing data. The final sample includes 95 French-listed companies covering the period 2005–2017 (i.e. 1,235 firm-year observations).

2.1. Model and Variables

Based on the study by [12] excess cash is defined as cash reserves in excess of those required for operations and investments. Opler presented an empirical model estimating the normal level of liquidity a company needs for its operational activities and investment opportunities [31].

Subsequently, Ferrary et al. proposed a regression model similar to that used by [36] to estimate the value of excess liquidity. This model includes control variables representing

factors likely to affect investors' expectations regarding the use of excess liquidity held. [14].

$$V_{i,t} = \beta_0 + \beta_1 EXCASH_{i,t} + \beta_2 BGD_{i,t}*Excess\ CASH_{i,t} + \beta_3 BGD_{i,t} + \beta_4 EBIT_{i,t} + \beta_5 \Delta EBIT_{i,t} + \beta_6 \Delta EBIT_{i,t+1} + \beta_7 I_{i,t} + \beta_8 \Delta I_{i,t} + \beta_9 \Delta I_{i,t+1} + \beta_{10} DIVD_{i,t} + \beta_{11} \Delta DIVD_{i,t} + \beta_{12} \Delta DIVD_{i,t+1} + \beta_{13} \Delta\ V_{it+1} + \varepsilon_{i,t} \quad (1)$$

Following prior research (e.g, [3, 15]. we measure V_i as the market value of equity plus the book value of total debt.

Excess CASH: measures the value of excess cash using the residuals of the following model [3, 14].

$$Ln\ (Cash_{i,t}) = \gamma_0 + \gamma_1\ SalesGrowth_{i,t} + \gamma_2\ Size_{i,t} + \gamma_3\ FCF_{i,t} + \gamma_4 NWC_{i,t} + \gamma_5\ Industry\ Sigma_{i,t} + \gamma_6\ RD_{i,t} + \gamma_7 Dividend_{i,t} + \gamma_8 Leverage_{i,t} + \gamma_9\ Capex_{i,t} + \varepsilon_{i,t} \quad (2)$$

Where, Ln (Cash) is the natural logarithm of cash and cash equivalents scaled by total assets. SalesGrowth is the sales growth over the past 3 years. Size is the logarithm of total assets. FCF is operating income minus interest and taxes on total assets. NWC is current assets minus current liabilities and cash scaled by total assets. Industry_Sigma is the industry average of the standard deviation over the previous 10 years of cash flow to total assets. Leverage is the ratio of total debt to total assets. Capex is the ratio of capital expenditures to total assets.

We selected two measures of gender diversity on boards (*BGD*): The Shannon and Blau indices.

Shannon index: this is a measure of diversity commonly used to characterize the diversity of species in a community. The Shannon index accounts for both the abundance and evenness of the species present in a community. The proportion of species i to the total number of species (Pi). This index is measured as follows: -∑Pi Ln * Pi.

Blau index: This index is measured as follows: 1- $\sum Pi^2$, where Pi corresponds to the proportion of group members in the category.

2.2. Control Variables

We included variables in our model to control for various factors that may affect the value of excessive cash holdings. Following [3]. we retained Earnings Before Interest and Taxes (EBIT), Interest expenses (I), Dividend payout (DIVID), Net Assets (NA), ΔXt, $\Delta Xt+1$ is the Past 1-year change of variable Future 1-year change of variable Xi.

3. Empirical Results

3.1. Summary Statistics

Table 1 provides the summary statistics of variables included in the regression analysis, including the means, medians, standard deviations, minimum, and maximum values for all variables. The average firm's value (Vit) is 1.7897, with a standard deviation of 0.2858 and a range of 0.0018-0.9968. The average proportion of women on boards is 0.2226, with a standard deviation of 0.1577 and a range of 0-0.7181. The mean values of the diversity indices, namely Shannon and Blau, are 0.4447 and 0.2964, respectively. The Shannon index for board gender diversity ranges from 0 to 0.6931, while the Blau index ranges from 0 to 1.

Table 1. Descriptive Statistics.

	N	Min	Median	Max	Mean	SD
Dependent variable						
V_{it}	1235	0.0018	1.5632	0.9968	1.7897	0.2858
Independent variables						
	1235	0	0.2143	0.7181	0.2226	0.1577
CASH	1235	0	0.0387	0.4567	0.13188	0.0636
Excess cash	1235	-0.1731	0.0095	0.3032	0.049	0.0548
SHANNON	1235	0	0,5195	0,6931	0,4447	0.7607
BLAU	1235	0	0,3367	1	0,2964	0,4390
WOMEN	1235	0	0.2143	0,7881	0,2226	0,1577
Control variables						
EBIT	1235	-0.1142	0.0539	40.404	0.3625	2.7126
I	1235	0.0001	0.0010	0.0400	0.0125	0.0157
DIVD	1235	0	0.0131	0.3568	0.0175	0.0259

	N	Min	Median	Max	Mean	SD
Δ EBIT$_t$	1235	-0.1669	-0.0002	16.335	0.0001	1.4931
Δ EBIT$_{t+1}$	1235	-0.1638	0.0002	40.297	-0.0001	0.1234
Δ I$_t$	1235	-0.0000	0.0002	0.0010	0.0001	0.0001
Δ I$_{t+1}$	1235	-0.0001	-0.0002	0.0004	-0.0001	0.0005
ΔDIVD$_t$	1235	-0.1840	-0.0002	0.1945	-0.0006	0.0172
ΔDIVDt$_{+1}$	1235	-0.1840	-0.0002	0.1945	-0.0006	0.0172
ΔAnt	1235	0.2657	0.049	0.3232	0.0515	0.1587
ΔAN$_{t+1}$	1235	0.1969	0.0395	0.56	0.0657	0.1578
ΔV$_{it+1}$	1235	-0.9854	0.0875	0.1258	1.4298	0.4879

This table reports the descriptive statistics for all variables used in the empirical analysis. See Table A1 for variables' definitions.

3.2. Multivariate Analyses

3.2.1. Effect of Gender Diversity on Boards of Directors on the Value of Excess Cash Holdings

Table 2 presents OLS regression results. The results show that board gender diversity (*Excesscash*SHANNON; Excesscash*BLAU*) is positively associated with value of excess cash holding. Supporting our expectation that companies with gender-diverse boards tend to experience an increase in the value their excess cash holding.

These findings suggest that female directors play a crucial role in monitoring and controlling the excessive cash holdings of managers, preventing its dissipation and resulting in an overvaluation of such cash.

Additionally, the control variables show significant effects on firm value. Variables related to current earnings, dividend payouts, and future changes in firm value have positive coefficients, indicating that greater distributions to shareholders contribute to enhancing firm value. The variable measuring future changes in firm value, ΔVt + 1 captures unexpected effects of omitted variables and consistently demonstrates a negative coefficient estimate, consistent with the findings of Fama et Frensh.

Table 2. *Effect of gender diversity in the board of directors on the value of excess cash.*

VARIABLES	(1)	(2)
Excess cash	-0.110**	0.163
	(0.0533)	(0.228)
SHANNON	-0.0226	
	(0.0282)	
Excess cash*SH	0.0903**	
	(0.0426)	
BLAU		-0.0302*
		(0.0175)
Excess cash*BL		0.248***
		(0.229)
EBIT	0.00692	0.00428**
	(0.00471)	(0.00170)
Δ EBIT$_t$	0.00152	-0.000998

VARIABLES	(1)	(2)
	(0.00404)	(0.00462)
$\Delta EBIT_{t+1}$	0.00230	-0.00328**
	(0.00485)	(0.00180)
I	-0.0682	0.196***
	(0.0498)	(0.0447)
ΔI_t	0.0144	-0.0537
	(0.0574)	(0.0701)
ΔI_{t+1}	-0.0144	-0.00968**
	(0.0574)	(0.00150)
DIVID	0.380	1.184***
	(0.327)	(0.393)
$\Delta DIVID_t$	0.681**	0.716
	(0.305)	(0.520)
$\Delta DIVID_{t+1}$	-0.616	-0.00257**
	(0.5487)	(0.2569)
ΔNA	−0.4380***	−0.3780**
	(0.376)	(0.00521)
ΔNA_{+1}	0.2085	0.1885
	(4.358)	(4.369)
ΔV_{t+1}	-0.435***	-0.400***
	(0.0166)	(0.0396)
Constant	0.405***	0.403***
	(0.0916)	(0.0203)
Observations	1,235	1.235
R-squared	0.2400	0.2449
Year / industry fixed effects	Yes	Yes

This table examines the relationship between board gender diversity and the value of excess cash. See Table A1 for variables' definitions. Year fixed effect and Industry fixed effect are both controlled in all regressions. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

3.2.2. Moderating Role of Earnings Quality

We examine the moderating role of earnings quality using accrual quality (AQ) on the relationship between board gender diversity and the value of excess cash. We used the [13] model to measure earnings quality. The model measures the quality of accruals based on the residuals of the model as follows:

$$\Delta WC_{it}/TA = \alpha 0 + \alpha 1 \Delta REV_{it}/TA + \alpha 2 PPE_{it}/TA + \alpha 3 CFO_{it}\text{-}1/TA + \alpha 4 CFO_{it}/TA + \alpha 5 CFO_{it+1}/TA + \varepsilon_{it} \quad (3)$$

Where, ΔWC_{it} is the change in working capital at year t; ΔREV_{it} is the change in revenues; PPE_{it} is the plant, property and equipment; CFO_{it} is cash flows from operating activities; TA is total assets.

Table 3 presents the regression results. The triple interaction variable (*SH*CASH*AQ*) in Column (1) shows a significant positive coefficient (68.65) at the 10% level. Columns (3) and (4) indicate significant positive coefficients (5.084; 7.185) for the interaction variables (*CASH*SH*AQ*) and (*CASH*BL*AQ*) respectively, at the 5% level. These results suggest that firms with high earnings quality experience reduced conflicts of interest between managers and sharehold-

ers. These firms are able to maintain a transparent informational environment and to minimize existing information asymmetry. The results show that in presence of a rich informational environment, the positive effect of board gender diversity on earnings quality is accentuated.

Table 3. Moderating role of earning quality.

VARIABLES	(1)	(2)
Excesscash	0.498***	-0.253**
	(0.161)	(0.119)
AQ	-0.512	-0.108
	(0.331)	(0.456)
SHANNON		-0.0105*
		(0.00628)
SHANNON* Excesscash * AQ		5.084**
		(2.514)
BLAU	0.0273***	
	(0.00844)	
BLAU* Excesscash * AQ	7.185**	
	(3.061)	
EBIT	-0.0053***	-0.00027
	(0.0020)	(0.0036)
Δ EBIT$_t$	-0.0008	-0.00010
	(0.0046)	(0.0039)
Δ EBIT$_{t+1}$	0.0008	0.0001
	0.0046	0.0039
I	0.1912***	0.0315
	(0.0428)	(0.0421)
ΔI$_t$	-0.0626	-0.0514
	(0.0695)	(0.0493)
ΔI$_{t+1}$	0.0584	0.0491
	(0.0703)	(0.0494)
DIVID	-1.083***	0.400
	(0.359)	(0.274)
ΔDIVID$_t$	0.842	0.703**

VARIABLES	(1)	(2)
	(0.517)	(0.304)
ΔDIVID$_{t+1}$	-0.0905	-0.2728
	(0.5351)	(0.3110)
ΔAN$_t$	-0.6738**	–0.5687***
	(0.524)	(0.374)
ΔAN$_{t+1}$	0.5560***	0.4572***
	(4.944)	(4.552)
ΔV$_{t+1}$	-0.399***	-0.433***
	(0.0394)	(0.0166)
Constant	0.318***	0.374***
	(0.0213)	(0.0252)
Observations	1.235	1.235
R-squared	0.244	0.2047
Year / industry fixed effects	Yes	Yes

This table examines the moderating role of earning quality on the relation gender diversity and value of excess cash. See Table A1 for variables' definitions. Year fixed effect and Industry fixed effect are both controlled in all regressions. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

3.2.3. Additional Analysis: The Role of Family Ownership

This section explores the impact of women on board on the value of excess cash in family companies. Previous research shows lower excess cash in family-owned firms [22] reflecting concerns about potential misuse by dominant families [8]. We then assume that the positive effect of board gender diversity on the value of excess cash to be less pronounced in family companies. Columns (1) and (2) of Table 4 reveal a significant negative coefficient for the interaction variable (ExcessCash*Women) in family firms at the 5% threshold. Similarly, in the excess liquidity model (columns 3 and 4), the coefficient for the variable (WOMENExcess cash) is negative and significant at the 1% level. In summary, the presence of family members, attenuated the positive effect of board gender diversity on the value of excess cash.

Table 4. The role of family firms.

VARIABLES	Value CASH		Value EXCESSCASH	
	Family =1	Family=0	Family =1	Family=0
CASH	-0.709**	0.221		
	(0.334)	(0.212)		
ExcessCash			-0.770***	0.0273***
			(0.288)	(0.00774)
SHANNON	0.275*	0.484***	0.515	0.0734
	(0.154)	(0.148)	(0.648)	(0.110)
CASH*SHANNON	-7.140**	5.075***		
	(3.257)	(1.521)		
ExcessCash *SHANNON			-8.831***	0.0614
			(2.510)	(0.0426)
EBIT	0.0207	0.000364	0.0178	0.000114
	(0.0344)	(0.00582)	(0.0343)	(0.00595)
I	-0.0137	0.0338	-0.00663	0.0298
	(0.0929)	(0.0964)	(0.0928)	(0.101)
DIVID	-0.562	0.857**	-1.149	0.791**
	(0.765)	(0.392)	(0.807)	(0.390)
Δ EBITt	-0.00860	-0.00301	-0.00652	-0.00222
	(0.0206)	(0.00640)	(0.0206)	(0.00648)
Δ EBITt+1	0.00892	0.00310	0.00688	0.00232
	(0.0206)	(0.00644)	(0.0206)	(0.00650)
Δ It	0.0820	0.00606	0.0843	0.0102
	(0.149)	(0.0961)	(0.149)	(0.0973)
Δ It+1	-0.0828	-0.0141	-0.0848	-0.0188
	(0.150)	(0.0965)	(0.149)	(0.0976)
Δ DIVDt	0.650	1.176**	0.735	1.110**
	(0.612)	(0.522)	(0.611)	(0.527)
Δ DIVDt+1	-0.486	-0.399	-0.570	-0.255
	(0.620)	(0.532)	(0.619)	(0.536)
ΔANt	-0.7836**	-0.2598***	-0.2369**	-0.0369**
	(0.4250)	(0.3582)	(0.2585)	(0.0369)
ΔANt+1	0.5560***	0.4572***	0.2085	0.1885
	(4.944)	(4.552)	(4.358)	(4.369)
ΔVit	-0.409***	-0.406***	-0.402***	-0.417***
	(0.0270)	(0.0535)	(0.0549)	(0.0396)
Constant	0.375***	0.359***	0.345***	0.360***
	(0.0400)	(0.0317)	(0.0394)	(0.0290)

VARIABLES	Value CASH		Value EXCESSCASH	
	Family =1	Family=0	Family =1	Family=0
Observations	546	689	546	689
R squared	0.238	0.2356	0.1768	0.2462
Year/industry Fixed Effects	Yes	Yes	Yes	Yes
Chow test	χ2=-2.06**		χ2=2.56**	

This table presents the results of OLS regressions aimed at examining the role of family firms. See Table A1 for variables' definitions. Year fixed effect and Industry fixed effect are both controlled in all regressions. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

4. Conclusion

The purpose of this study was to investigate for the first time the impact of board gender diversity on the valuation of excess cash. Using a sample of French-listed companies from 2005 to 2017, we find that board gender diversity positively affects the value of firms' excess cash. This result suggests that investors are more inclined to favorably recognize the value of excess cash held by companies with more females on the board because they perceive this cash to be used efficiently by managers. Furthermore, our findings indicate that the firm's informational environment accentuates the positive effect of board gender diversity on the value of excess cash. A rich informational environment acts as a positive signal, reducing conflicts of interests and information asymmetry and influencing favorably investors' perceptions. However, additional evidence shows that in family firms, the effect of gender diversity on the value of cash is less pronounced.

These results have valuable insights for companies, investors and policymakers. First, our results underscore the importance of gender diversity in enhancing the perceived efficiency and value of excess cash, with broader implications for corporate decision-making, investment strategies, and governance policies. Policymakers, in turn, may consider encouraging gender diversity as a governance best practice, recognizing its potential positive impact on corporate financial performance. This is in line with the Copé Zimmerman law adopted in 2011 in France and the recent adoption of the Rixain law in 2021. Both require quotas of women on boards and in top management respectively.

Author Contributions

Ibtissem Jilani is the sole author. The author read and approved the final manuscript.

Conflicts of Interest

The author declares no conflicts of interest.

Appendix

Table A1. Variables' definitions.

Variable	Definition	Measure
Vit	Firm's value	Market capitalization + total liabilities
SHANNON	Shannon index	$SH = -\sum Pi\ Ln*Pi$
BLAU	Blau index	$BL = 1 - \sum Pi^2$
WOMEN	WOMEN	is the proportion of women on boards of directors
CASH	Cash held	Cash and cash equivalents / total assets
ExcessCash	Excess cash	Actual cash - predicted optimal cash
EBIT	Earnings Before Interest and Taxes	Net result before interest and taxes

Variable	Definition	Measure
I	Interest expenses	
DIVD	Dividend payout	Dividend paid / total assets
NA	Net Assets	Total assets - cash and cash equivalents
ΔXt	Past 1-year change of variable $X_{i,t}$	
ΔXt+1	Future 1-year change of variable $X_{i,t}$	

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