



Capital Structure and CEO's Personal Characteristics: Evidence from Jordan

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Abstract

The aim of this study is to examine the effect of the CEO's personal characteristics (overconfidence, age and gender) on the capital structure choices among non-financial Jordanian companies over the period 2008-2013. We use panel data for 201 non-financial companies listed on the Amman Stock Exchange (ASE). The results of our study reveal that CEOs' overconfidence and gender are positively and significantly related to the leverage ratio as a proxy for capital structure. However, age is negatively and significantly associated with capital structure. The findings of the study should be of interest to policymakers, regulators and academics regarding the impact of CEO characteristics on the capital structure not only in Jordan but also in other developing countries. Further, the findings of this study are likely to be of interest to investors, since we introduce new empirical evidence about companies' capital structure in Jordan. Our study contributes to research into capital structure by examining another dimension, that is, the effect of the CEO's personal characteristics (age and gender), which has not been previously investigated in capital structure decisions and thus provides new empirical evidence in this area.

Key words

Capital Structure, CEO's Overconfidence, Gender Diversity, Amman Stock Exchange, Jordan

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1. Introduction

How firms make their capital structure decisions has been one of the most extensively researched areas in corporate finance (Harris and Raviv, 1991; Zeitun and Tian, 2007). Since the seminal work of (Myers and Majluf, 1984) on the irrelevance of capital structure in investment decisions, a rich theoretical literature has emerged that models a firm's capital structure choices employing different frameworks. Several theories such as trade-off theory rely on traditional factors such as tax advantage and potential bankruptcy cost of debt, while others use asymmetric information or a game theoretical framework in which debt or equity is used as a signalling mechanism or strategic tool (Ross, 1977; Myers and Majluf, 1984; Desai *et al.*, 2005). Many of these theories have also been empirically tested, yet there is little consensus on how firms choose their capital structure (Lemmon *et al.*, 2014). Our paper examines the role of CEOs' personal characteristics on the choice of capital structure. A large and growing body of research in experimental psychology reports that people frequently depart from this traditional paradigm; people tend to be excessively optimistic and overconfident. That is, they predict that favourable future events are more likely than they actually are, and they believe that they have more precise knowledge about future events than they actually have (Skala, 2008; Libby and Rennekamp, 2012).

Top executives are particularly likely to possess certain personality traits which, it is often argued have some bearing on corporate decision making. Consequently, it is important to understand how these managerial traits affect corporate outcomes and hence shareholders' welfare. Most of the studies on the relationship between capital structure and CEO's individual characteristics focus on developed countries (e.g. Malmendier *et al.*, 2011; Cronqvist *et al.*, 2012), although, the world economic structure varies and the situation of developing countries significantly affects global economic recovery. Companies in Jordan, as an emerging market, are gaining considerably more attention from the Middle East and Arab countries. Considering this bias, we examine the relationship between capital structure and CEO's characteristics in the context of the Middle East and Arab countries, and particularly among non-financial companies listed on the Amman Stock Exchange (ASE). Our study examines the impact of CEO's personal characteristics on capital structure; this differs from prior studies which attempted to explain the relationship between capital structure and different factors such as firms' performance (Ahmad *et al.*, 2012) or owners' equity return (Salawu and Agboola, 2008a). A review of previous studies does not clarify how CEO's characteristics affect the capital structure. These limitations provide the motivation for the present study to bridge this gap in the literature. Thus, the aim of this study is to extend the current body of literature by examining the effect of CEOs' personal characteristics (overconfidence, age and gender) on the capital structure choices among non-financial Jordanian companies over the period 2008-2013, all of which are often cited as important CEO's characteristics for corporate decisions (Frank and Goyal, 2007; Li *et al.*, 2017). The results of our study reveal that overconfidence and gender are positively and significantly related to the leverage ratio as a proxy for capital structure. However, age is negatively and significantly associated with capital structure. Thus, this study contributes to the capital structure literature by examining another dimension, that is, the effect of CEOs' personal characteristics, which has not been previously investigated on capital structure decisions, and provides new empirical evidence in this area. In particular, our evidence strongly complements that of Morellec (2004), implying that managerial dominance is a significant determinant of capital structure policy. Furthermore, our study contributes to the literature adding interesting empirical evidence to the debate over whether CEO matter to company outcomes and ultimately to overall corporate value.

2. Literature review

In corporate finance, capital structure appears to be an important aspect of financing choice since it strongly affects the equity return and risks related to ownership as well as the market value of the shares (Frank and Goyal, 2009). However, the wrong mix of finance may cause serious damage affecting the performance and survival of the business enterprise (Thomas *et al.*, 2014). As highest ranking executive, and the most powerful, the CEO's characteristics are likely to affect corporate decision making (Carpenter *et al.*, 2004). Furthermore, the CEO influences investment and financial decisions, his or her characteristics and risk preference influence the corporate leverage policy (Chen *et al.*, 2014). Risk-preference managers are more likely to take advantage of the tax effect of debt interest to conduct higher liability financing; whereas the risk adverse managers tend to hold more cash to avoid financial pressures of debt, the reputation damage. In response, researchers have started to examine individual characteristics, especially those of the CEO (e.g. Huang and Kisgen, 2013; Serfling, 2014; Faccio *et al.*, 2016). Faccio *et al.* (2016) and Li *et al.* (2017) highlight the impotence of managers in capital structure. For example, Faccio *et al.* (2016) document that female CEOs tend to associated with less risky firms which are less leveraged, have less volatile earnings, and are more likely to survive. Similarly, Armstrong *et al.* (2010) suggested that CEOs' characteristics can play an important role in capital structure choice, as the CEOs are appointed to meet the expectations of shareholder to maximize the firm's value. Similarly, Malmendier *et al.* (2011) stated that the CEO's characteristics have a significant influence on corporate financing decision. Whereas CFOs have the first responsibility to make financing decision, it is the CEOs who approve whether to undertake external financing or use cash and riskless debt. Salawu and Agboola (2008b) documented that corporate capital structure is considered as an important management decision as it greatly influences the owners' equity return, owners' risk as well as market value of the shares.

Recently, the corporate finance literature has come to consider the effect of corporate managers' personality traits on capital structure choices (e.g. Malmendier *et al.*, 2011; Cronqvist *et al.*, 2012; Faccio *et*

al., 2016; Li *et al.*, 2017). According to Hambrick (2007), the senior manager's personal characteristics affect judgement and decision making, and among these characteristics is overconfidence. Overconfidence is the tendency of individuals to consider them above average (Svenson, 1981; Alicke, 1985; Kruger, 1999). Langer (1975), defines overconfidence as "an overestimation of one's own abilities and outcomes relating to one's personal situation". The overconfident CEO can significantly influence debt/equity choice, and he/she will choose to issue more debt than their rational peers do (Alqatamin *et al.*, 2017). This occurs because the biased CEO believes that the firm is less likely to experience financial distress than is actually the case (Hackbarth, 2008). Overconfident managers generally maintain a higher liability level in debt financing as they believe this can provide considerably more advantage for the shareholders (Graham *et al.*, 2013). However, Malmendier *et al.* (2007) indicate that overconfident managers use a higher level of debt than rational managers. Thus, he/she will underestimate the expected cost of bankruptcy and will take on more debt to exploit its tax benefits. Weinstein (1980) and Alicke (1985) earlier reported that overconfidence is often seen in managers (Cooper *et al.*, 1988; Landier and Thesmar, 2009). The influence of CEOs' overconfidence on corporate decisions has received significant attention in the academic literature. For example, Malmendier and Tate (2008) and Frank and Goyal (2009) documented that it might have a significant influence on the variation in leverage across companies. Fairchild (2010) investigated the effect of managerial overconfidence on financing decisions, using two models: the agency problem to free cash and the agency problem and managerial shrinking. However, in both cases the effect of overconfidence is ambiguous. Oliver (2009) examined the relationship between CEOs' overconfidence and leverage ratio among the 500 largest US firms. The results concluded that managers tend to issue more debt when they are categorized as overconfident. However, Tomak (2013) investigation of the relationship between overconfidence and capital structure in 117 Turkish manufacturing firms, 2002 to 2011, found that the relationship between the variables was ambiguous, since there was insufficient evidence that overconfident managers were more likely to use a higher level of debt.

Taylor (1975) noted that managerial decision making and performance vary with age and decision-making experience. Previous empirical studies have offered conflicting predictions as to how age affects risk-taking behavior and leverage. One strand of literature argues that younger CEOs use more leverage and another argues the opposite to be true. Serfling (2014) documented that CEOs' characteristics such as age are associated with debt financing behaviour, and that older CEOs invested less than younger ones in pursuing a quieter life. Results of the study support the argument that older managers are likely take on less risk since they often think about the past, while young managers are more likely to think about the future (Chen *et al.*, 2014). Bertrand and Schoar (2003) and Frank and Goyal (2007) also argue that older CEOs are linked with conservative behaviour due to the experience of the past, but that younger CEOs are inclined to be radical because of their expectation of the future. Consequently, the former avoids debt financing, although their study does not find statistically significant evidence to support their argument.

A third demographic characteristic examined in the literature is the CEO's gender (Richardson *et al.*, 2016). For example, Singh and Zammit (2000) investigated the impact of gender on the international capital structure. It has been argued that female CEOs lose more than their male counterparts in unstable macro-economic conditions. Males are more concerned with financial benefits and a successful profession, and are more likely to break the law and rules to attain competitive success, while females learn more towards appropriate relationship and helping people, and are less likely to engage in unethical issues (Mason and Mudrack, 1996). Huang and Kisgen (2013) revealed that companies run by male CEOs are more likely to use debt than companies run by female CEOs. Graham *et al.* (2013) showed that companies managed by male CEOs have more debt than those with female CEOs. Likewise, Faccio *et al.* (2016) analyzed 21 countries between 1999 and 2009 and found a statistically significant relationship between female CEOs and leverage ratio. The upper echelon theory assumes that males are overconfident and risk-tolerant; while females, on the contrary, are more conservative and risk-averse (Huang and Kisgen, 2013). The same theory describes female CEOs as more conservative, preferring equity financing to debt financing (Frank and Goyal, 2007). To put it another way, female CEOs are inherently conservative and risk-averse and, as a result, are more likely to employ less debt financing (Huang and Kisgen, 2013; Faccio *et al.*, 2016). Therefore, based on the previous argument and findings of the studies mentioned above, we propose the following hypotheses:

H1: There is a positive relationship between CEO overconfidence and debt level among non-financial Jordanian companies.

H2: There is negative relationship between CEO age and debt level among non-financial Jordanian companies.

H3: The level of debt is positively associated with the presence of male CEOs among non-financial Jordanian companies.

3. Methodology of research

3.1. Data Source and Sample

The study collected data from the Amman Stock Exchange (ASE), which lists 270 companies divided into the financial, industrial and service sectors. All financial companies ($n=42$) were excluded from the initial sample due to their unique characteristics and specific regulatory framework (Al-Akra and Hutchinson, 2013; Athanasakou and Hussainey, 2014; Alzoubi and Alzoubi, 2016). 27 firms with missing data were also removed from the initial sample (Athanasakou *et al.*, 2009; Katmun, 2012; Alqatamin *et al.*, 2017). Thus, the final sample consisted of 201 companies covering the fiscal years 2008-2013, with 1,206 firm-year observations, as presented in Tables 1 and 2. This study adopted the six-year period from 2008 to 2013, since the financial crisis started in 2008 and triggered different reforms and corporate governance practices in the same year in Jordan (Alqatamin *et al.*, 2017).

Table 1. Description of sample

Description	2008	2009	2010	2011	2012	2013	Pooled
Initial Sample	270	270	270	270	270	270	1620
Excluded:							
Financial industries	42	42	42	42	42	42	(252)
Non-financial industries	228	228	228	228	228	228	1326
Industries with fewer than six firms							
Health Care	4	4	4	4	4	4	24
Technology and Communication	1	1	1	1	1	1	6
Media	2	2	2	2	2	2	12
Paper and Cardboard	3	3	3	3	3	3	18
Utilities and Energy	3	3	3	3	3	3	18
Printing and Packaging	1	1	1	1	1	1	6
Tobacco and Cigarettes	2	2	2	2	2	2	12
Glass and Ceramic Industries	1	1	1	1	1	1	6
(102)							
Firms with unavailable data	10	10	10	10	10	10	(60)
Final Sample	201	201	201	201	201	201	1206

Table 2. Final distribution of the sample by industry

Description	Number	Percentage
Educational services	26	12.93%
Hotels and tourism	38	18.90%
Transport	23	11.44%
Commercial services	41	20.39%
Pharmaceutical and medical industries	12	5.97%
Chemical industries	15	7.46%
Food and beverages	17	8.45%
Mining and extraction industries	14	6.96%
Engineering and construction	6	2.98%
Textiles, leather and clothing	9	4.47%
Total	201	100%

Source: (JSC 2015)

3.2. Data Collection

Data were collected from the annual reports published in the years 2008-2013. Each report was scanned manually. Most are published annually on company websites. Most firms release their annual reports within first the quarter of the following financial year. Annual reports are considered more easily comparable among companies than other less formal communication channels such as press releases or direct contact analyses (Chang and Most, 1985; Alqatamin *et al.*, 2017). Furthermore, to cover some missing financial information in the annual reports, the websites of the Securities Depository Centre (SDC), the ASE itself and the OSIRIS database were used as additional sources.

3.3. Measuring of Variables

Leverage is the dependent variable in our regression model. We measure the leverage by book value of total long-term debt divided by book value of total assets, using the data obtained from financial statements for each company (Wen *et al.*, 2002; Zeitun *et al.*, 2007; Olokoyo, 2013). Following previous studies (Davidson III *et al.*, 2007; Skalpe, 2007; Cornett *et al.*, 2008; Cornett *et al.*, 2009; Andriosopoulos *et al.*, 2013; Lin *et al.*, 2014), this study measured the CEO's age as the difference between date of birth and the years of the study period. The CEO's gender is a dummy variable with the value of 1 if the CEO is male and 0 if female (Skalpe, 2007; Yu *et al.*, 2010; Andriosopoulos *et al.*, 2013; Yim, 2013).

To measure overconfidence, we use the Net Buyer method, which focuses on option-holding behaviour and stock purchases. Following Malmendier and Tate (2008) and Alqatamin *et al.* (2017), we consider overconfidence as a reflection of the degree to which CEOs fail to minimize the degree to which their personal wealth is exposed to company-specific risk. This measurement is based on the tendency of CEOs to purchase extra stock in their own company despite their own personal wealth being exposed to a high level of company risk to. This is because overconfident CEOs overestimate the prospective returns on their own projects in the belief that the company stock price will rise more under their leadership than would normally be expected. If the CEO has such overconfident belief, he/she tends to buy up stock in the company in the hope of profiting from the expected future gains. Thus, we defined the CEO as overconfident based on the Net Buyer Measure if he/she is a net buyer of his/her own-company stock in the initial six years of the sample. It ought to be noted that in detecting overconfidence in a CEO, he/she is defined as being overconfident for all the relevant years. A dummy variable is established with 1 representing overconfidence and 0 otherwise.

To control company and governance attributes that influence the capital structure, the study adds the company size, profitability, dividends, sectors, board size, duality, board independence, board meeting, family ownership, managerial ownership, block holders and institutional ownership. Previous studies have suggested that these variables may affect the capital structure (e.g. Berger *et al.*, 1997; Wen *et al.*, 2002; Olokoyo, 2013). The following model investigates the relationship between capital structure and the CEO's characteristics. Table 3 provides the definitions and measurements of all variables. Equation (1) summarises the empirical model.

$$\text{FLEVER}_{it} = \beta_0 + \beta_1 \text{CAGE} + \beta_2 \text{CGEND} + \beta_3 \text{COVER} + \beta_4 \text{FSIZE} + \beta_5 \text{FPROFIT} + \beta_6 \text{FDIVID} + \beta_7 \text{FINDUST} + \beta_8 \text{BOARDSI} + \beta_9 \text{BOARDDD} + \beta_{10} \text{BOARDI} + \beta_{11} \text{BOARDM} + \beta_{12} \text{BOARDIN} + \beta_{13} \text{MANAOW} + \beta_{14} \text{FAMILLOW} + \beta_{15} \text{INSTITOW} + \beta_{16} \text{BLOCKOW} + \text{Industry Controls} + \text{Year Controls} + \varepsilon_i \quad (1)$$

Where:

β_0 = The regression intercept; $\beta_1 \dots \beta_{10}$ = The regression coefficients; ε = The error term.

Table 3. Variable definitions and measurements

Label	Variable	Description
FLEVER	Leverage Ratio	Used as a proxy for capital structure measured by total long-term debt divided by total assets.
CAGE	CEO's Age	Measured by the difference between the CEO's date of birth and the years of the study period.

Label	Variable	Description
CGEND	CEO's Gender	A dummy variable taking value 1 if CEO male, and 0 if CEO female.
COVER	CEO's Overconfidence	Measured using: Net Buyer: dummy variable taking value 1 if the proportion of CEO share ownership, options and stock exercise increases, and 0 otherwise.
FSIZE	Firm Size	The natural log of a firm's total assets.
FPROF	Firm Profitability	Measured by ROA (net income before tax divided by total assets).
FDIVID	Dividends Ratio	Cash dividends divided by net income for the same period.
FINDUST	Industry Type	A dummy variable that takes the value of 1 in the company operates under manufacturing sector and 0 if operates under service sector.
BOARDSI	Board Size	Measured by the total numbers of the board.
BOARDDD	Board Duality	A dummy variable that takes the value of one if the CEO and chairman are the same person and zero otherwise.
BBOARDM	Board Meeting	The number of meetings per year held by the board of directors.
MANAOW	Managerial Ownership	Measured by the proportion of total shares held by executive directors divided by the total number of shares.
FAMILOW	Family Ownership	Measured by the proportion of total shares owned by the family. Dummy variable takes 1 if a family or individual holds 10% or more of equity and 0 otherwise.
INSTITOW	Institutional Ownership	Measured by dummy variable would take one if any institutional-held shares and zero otherwise.
BLOCKOW	Block holder Ownership	A dummy variable that takes the value 1 if the firm has an external stockholder owning 5% or more of the outstanding shares, and 0 otherwise.

4. Results and Discussion

4.1. Descriptive Statistics

Table 4 shows that the mean value of leverage ratio is (0.295), comparable to the 29% documented by Frank and Goyal (2009). However, the minimum and maximum values of leverage ratio are (0.002) and (0.978) respectively with a standard deviation (SD) of (0.2320). The mean age is 51.11 with a range from 26 to 84, and the median value 51. This result is comparable to previous studies, such as Custódio and Metzger (2014) and (Serfling 2014), both of whom observe an average age of 52. The median age is used as a cut-off point to classify older and younger CEOs. In addition, the descriptive result shows that 95% of the CEOs are male and 5% managed by female CEOs. These percentages are lower than in comparable studies by Huang and Kisgen (2013) and (Faccio et al. 2016), who document 6.2% and 9.4% respectively. Table 4 shows that 43% of CEOs were overconfident about their company's performance based on Net Buyer method.

In respect of the control variables, the company size value indicate that the companies are widely dispersed, ranging from 0.9303 to 3.2309. The results reveal that profitability varies between minimum values of -85.90 percent (loss) and 95 percent (maximum profit), with SD 12.17 percent. Industry type has a 36.3 percent mean value with SD (48.11). In addition, Table 4 shows that the mean value of dividends ratio is 18.82 percent, minimum and maximum values are 0 and 97.51 percent respectively, and correspondingly the median value is zero (SD= 30.77 percent). Board size has a mean value 8.011, which is relatively consistent with the number reported by (Peasnell *et al.*, 2005). However, the maximum board size is 19 members, which indicates that, in general, Jordanian firms do not follow the Jordanian Corporate Governance Code number which recommends a maximum of 13 members (ASE, 2015). A dummy variable of board duality has a mean of 0.205, and board meeting number minimum and maximum values are 3 and 28 respectively. Board independence has a mean value 2.020. In terms of ownership structure, managerial and family ownership have mean values of 0.352 and 0.19 respectively, while institutional and blockholder ownership have mean values of 0.355 and 0.435 respectively.

Table 4. Descriptive analysis

Variables	Observations	Minimum	Maximum	Mean	Std. Deviation
FLEVER	1206	.0002	.9780	.295	.232
CAGE	1206	26	84	51.41	11.26
CGEND	1206	0	1	.9519	.214
COVER	1206	0	1	.435	.491
FSIZE	1206	.93	3.23	5.55	1.57

Variables	Observations	Minimum	Maximum	Mean	Std. Deviation
FPROFIT	1206	-.859	.950	.001	.121
FSECTOR	1206	0	1	.363	.481
FDIVID	1206	0	.9751	.188	.307
BOARDSI	1206	3	19	8.01	2.44
BOARDDD	1206	0	1	.205	.404
BOARDM	1206	3	28	7.57	2.13
BOARDI	1206	0	8	2.02	1.23
MANAOW	1206	0	.7185	.035	.085
FAMILOW	1206	0	.945	.190	27.20
INSTITOW	1206	0	1	.355	.272
BLOCKOW	1206	0	1	.435	.451

4.2. Multicollinearity

A correlation coefficients matrix was used to check for the incidence of multicollinearity between independent variables, as employed extensively in previous disclosure literature (e.g. Abdel-Fattah, 2008; Alqatamin *et al.*, 2017). Table 5 shows that the highest correlation is between the board size and board independence, with a coefficient of 41.54 percent. Therefore, Table 5 confirms that the multicollinearity problem does not exist in the data set used in this study.

4.3. Regression Analysis

To achieve investigate the relationship between CEOs' personal characteristics and capital structure choices, a panel regression random-effect method was used; the results are presented in Table 6. The R^2 value is 71.6 percent, which means that the independent variable demonstrates 71.6 percent of the variation in the dependent variable. The P -value is highly significant at the level ($P > .000$), meaning that the model is highly significant and thus has a good explanatory power of disclosure. The analysis of results shows a significant and positive relationship between CEOs' overconfidence and leverage ratio as a proxy for capital structure at the level ($P < .001$). This result supports H1, which suggested that there is a positive relationship between CEO overconfidence and debt level among non-financial Jordanian companies. Our results are consistent with the study of Fairchild's (2005) and Malmendier *et al.* (2011) who found a positive and significant relationship between CEOs' overconfidence and leverage ratio. This result indicates that the higher the level of leverage ratio, the higher will be the CEO's overconfidence, which suggests that specific personal characteristics of top management affect the decision-making process (Hambrick, 2007). A possible explanation for these findings is that overconfident managers are more likely to be more optimistic about future circumstances, overestimating their own abilities and issuing a high portion of debt. In respect to the CEO's age, we document a negative significant coefficient ($P < .006$), which implies a significant relationship between the capital structure and the CEO's age. This result provides support for the prediction that younger CEOs are bolder and use riskier financing than older CEOs, which is consistent with the predictions of Serfling (2014), who reported that age is associated with debt financing behavior. The result also supports the prediction of Hambrick and Mason (1984) that older managers have less physical and mental stamina, and therefore value financial security and stability by reducing leverage. This finding is also consistent with several studies that reported a significant negative association between the CEO's age and other factors such as investment decision (Serfling, 2012; Yim, 2013). The results of our study indicate that older managers tend to avoid risks more than do younger managers; younger managers want to show their capability to stakeholders. Therefore, H2 is supported.

The third hypothesis is related to gender, that male CEOs take more risks than female and as a result, employ higher levels of debt. Therefore, the third regression result is for CEOs' gender. It scored a positive and significant relationship to firm leverage ratio at level ($P < .001$). Thus, H3 is supported. The finding indicates that companies managed by male CEOs are associated with a higher leverage ratio than those managed by female CEOs. The result suggests that males more confident and may even be overconfident. As a result, they are more likely to undertake more debt in the same operational conditions. Their confident in their management ability makes them believe that more debt would bring higher return. This finding confirms that gender diversity is one of the attributes influencing capital structure decisions.

Table 5. Correlation Matrix

variables	CGEND	CAGE	COVER	FSIZE	FPROF	FSECTO	FDIVID	BSIZE	BDUAL	BMEET	BINPEN	MOWNE	FOWNE	INSTIT	BLOCK
CGEND	1.000														
CAGE	0.073**	1.000													
COVER	-0.148**	-0.018	1.000												
FSIZE	0.020	0.025	0.017	1.000											
FPROF	0.016	-0.008	-0.007	0.043	1.000										
FSECTO	0.092**	-0.024	0.117**	0.068**	0.371**	1.000									
FDIVID	-0.152**	0.082**	0.206**	0.032	-0.156**	0.034	1.000								
BSIZE	-0.012	-0.047	0.005	0.271**	0.017	0.040	0.026	1.000							
BDUAL	0.010	0.005	-0.077**	-0.019	-0.068**	0.009	-0.001	-0.061*	1.000						
BMEET	-0.024	0.022	-0.012	0.062*	0.052*	-0.029	-0.027	0.007	0.022	1.000					
BINDEP	0.034	-0.130**	0.012	0.049*	-0.007	0.062*	0.047*	0.415**	0.139**	-0.081**	1.000				
MOWNE	-0.038	-0.030	-0.032	-0.06*	-0.015	-0.025	0.036	-0.11**	0.239**	0.016	0.083	1.000			
FOWNE	-0.034	0.007	0.035	0.001	-0.040	-0.017	-0.034	-0.044	-0.013	0.006	-0.048	-0.009	1.000		
INSTITUT	0.042	0.064*	-0.033	0.033	0.052*	0.021	-0.083**	0.055*	-0.139**	-0.049*	0.011	-0.170	-0.041	1.000	
BLOCKKH	0.008	0.011	0.006	0.046	-0.082**	-0.053*	0.019	-0.040	0.035	-0.025	0.023	0.027	-0.028	-0.009	1.000

CAGE= CEO's age, measured by the difference between the CEO's date of birth and year of the study period. CMALE= CEO's male, take value 1 if CEO male, and 0 if female. COVER= CEO overconfidence, the proportion of CEO share ownership, options, and stock exercise. FSIZE= Firm size, the natural logarithm of firm's total assets. FPROF= profitability, measured by ROI (net income before tax divided by total assets). FDIVID= dividends ratio measured by cash dividends divided by net income for the same period. FLEVER= leverage ratio used as another proxy for CEO overconfidence, measured by total long-term debt divided by total assets. FINDU= industry type, measured by using the ISIN code, as stated by Jordanian Securities Depository Centre. BSIZE= board size, measured by the total numbers of the board. BDUAL= Board duality, a dummy variable that takes the value of one if the CEO and chairperson are the same person and zero if otherwise. BMEET= Board meeting, the number of meetings per year held by the board of directors. BINDEP= board independence, measured by the total number of outside directors. MOWNE= managerial ownership. Measured by the percentage of total shares held by executive directors divided by the total number of shares. FOWNE= family ownership, measured by the proportion of total shares owned by the family, a dummy variable would take one if a family or an individual hold 10% or more of equity and the value zero if otherwise. INSTITUT= institutional ownership, measured by dummy variable would take one if any institutional held shares and zero if otherwise. BLOCKKH= block-holders ownership, measured by a dummy variable that takes the value of one if the firm has an external stockholder owning 5% or more of the outstanding shares, and the value of zero if otherwise.

*** Correlation is significant at the 0.01, ** Correlation is significant at the 0.05, * Correlation is significant at the 0.10

Hence, CEO gender is relevant to debt ratio choice in the Jordanian case. The reason may be that both genders in Jordanian non-financial companies follow the same family rules of the company, as much of Jordanian businesses are family oriented. Our results are in line with the upper echelon theory, that assumes males are overconfident and risk-tolerant while females are more conservative and risk-averse (Huang and Kisgen, 2013). The upper echelon theory also describes female CEOs as being more conservative, which corresponds to equity financing rather than debt financing (Frank and Goyal, 2007; Huang and Kisgen, 2013; Faccio *et al.*, 2016).

With respect to a firm's characteristics and corporate governance factors as control variables, the coefficients of a firm's profitability and family ownership have a negative and significant association with leverage ratio as a proxy for capital structure. The study finds that more profitable companies require less external financing since they can rely to a greater degree on retained earnings (Myers and Majluf, 1984). This result is consistent with previous studies (e.g. King and Santor, 2008; Al-Fayoumi *et al.*, 2010).

Table 6. Regression estimates for panel sample of companies, N= 201

Variables	Predicted sign	Coeff.	t-stat.	P. Value
Constant	+	.2067638	3.31	.001***
COVER	+	.0973374	7.39	.001***
CAGE	-	-.0015618	-2.72	.006***
CGEND	+	.1257617	3.88	.001***
FSIZE	-	3.85e-11	0.74	.461
FPROFIT	-	-.3025583	-5.81	.000***
FSECTOR	-	-.0036318	-0.17	.686
FDIVID	-	.032575	1.54	.123
BOARDSI	?	.0004294	0.10	.918
BOARDDD	?	-.0005617	-0.03	.980
BOARDM	?	-.0009713	-0.29	.775
BOARDI	+	.0105255	1.32	.187
MANAOW	-	-.00247	-0.03	.980
FAMILOW	-	-.000366	-1.77	.076*
BLOCKOW	+	-.0023372	-0.20	.840
INSTITOW	+	.0105255	1.32	.187
Adjusted R ²	71.6%			
F-Stat.	14.991***			

*** Significant at the 0.01 level. ** Significant at the 0.05 level. * Significant at the 0.10 level.

4.4. Dealing with endogeneity

To address the endogeneity bias problem, the literature suggests two options; the use of instrumental variables (IV) (McKnight and Weir, 2009; Choi *et al.*, 2010) and a simultaneous system equation (Hermalin and Weisbach, 1991; Cornett *et al.*, 2008). This study used both Durbin and Hausman tests to check for bias in the endogenous and independent variables (Gujarati, 2003). The tests gave an X2 of 5.52% and 5.85% (P< .0169, P< .0179) respectively, which suggests that the null hypothesis is rejected. Both instrumental variable and two-stage regression were therefore used to control for the endogeneity and simultaneity problems. The results of the two-stage regression are presented in Table 7.

The coefficient of leverage ratio is positively and significantly (p <.016) related to the CEO's overconfidence. This result is in line with those of the panel regression random effect model reported in Table 6. The coefficient of CEO's age is significant and negatively associated with Leverage ratio (p <.001). The two-stage regression analysis shows similar results to the panel regression in Table 6, corroborating the results of Lin *et al.* (2014), who found a positive and simultaneous relation between CEO characteristics and internal control quality. The coefficient of leverage ratio is significant and positively (P<.001) related to gender, which suggests that these results are consistent with the main findings in Table 6. Regarding the control variables, the findings reported in Table 7 show similar results to those in Table 6, although, some values have greater significance in Table 7; nevertheless, the direction and significance of the association with capital structure remain the same. In summary, the instrumental variable two-stage model results are consistent with the primary results presented in Table 6, implying that the simultaneity problem between

capital structure and CEO characteristics does not affect the main results of capital structure and other control variables.

Table 7. Instrumental variable two-stage regression model (using linear regression model)

Variables	Predicted sign	Coeff.	t-stat	P. Value
Constant	+	.2858471	11.13	0.000
COVER	+	-.0025205	-2.40	0.016***
CAGE	-	.1060139	4.70	0.001***
CGEND	+	.3024688	6.64	0.001***
FSIZE	-	2.37e-10	6.51	0.001***
FPROFIT	-	-.067299	-1.64	0.101*
FSECTOR	-	.0727807	4.30	0.000***
FDIVID	-	6.92e-12	0.82	0.413
BOARDSI	?	.0040664	1.99	0.047**
BOARDDD	?	.0140643	1.18	0.237
BOARDM	?	-.0011452	-0.55	0.584
BOARDI	+	.005462	1.33	0.183
MANAOW	-	-.0587541	-1.07	0.285
FAMILOW	-	-.0479093	-2.51	0.012***
BLOCKOW	+	-.0467553	-2.76	0.006***
INSTITOW	+	-.0008176	-0.09	0.929
R Sq. value	0.781			
P. value	0.000			

** Significant at the 0.01 level. ** Significant at the 0.5 level. * Significant at the 0.10 level.

5. Conclusions

The paper examined the effect of CEOs' characteristics on the capital structure in Jordanian listed companies during the period 2008 to 2013, motivated by findings reported in the literature that the financial reporting process varies predictably with individual characteristics of CEOs. We found that 95% of the sample was managed by male CEOs, and that most Jordanian companies are family-owned. The limited number of female CEOs, 5%, still exceeds the averages of around 3% in Brazil, Botswana, Ireland, Japan, New Zealand and the UAE (Grant Thornton International Business Report, 2012). The overall results indicate that CEO overconfidence and gender have a positive and significant association with the capital structure. The regression further shows a significant negative association between the leverage ratio and CEOs' age, suggesting that older CEOs are less likely to acquire more debt than younger CEOs. The findings of the study should be of interest to policymakers, regulators and academics regarding the impact of CEO characteristics on the capital structure, not only in Jordan but also in other developing countries. Further, the findings of this study are likely to be of interest to investors, since this study introduces new empirical evidence about a company's capital structure in Jordan.

The results will also be of interest to shareholders, while police makers might find the findings to improve the performance of CEOs and their potential under-diversified influence in the top management team. The findings will also be relevant for practitioners (e.g. analysts, investors, and different claimants of the company); for those parties it could be relevant to know what kind of influence the CEO's characteristics have on capital structure outcomes, and how this varies with different levels of decision-making power. Information is valuable and knowing certain effects exist can help make governance practices more direct and effective. The results could be used to inform policy development initiatives for balancing CEO's decision-making power, as this study brings to light how CEO's personal characteristics effect leverage ratio. However, these findings are based on non-financial companies only, and future studies could focus on the financial sector, which plays an increasingly important role in developing economies, particularly Jordan, which is a bridgehead of market liberalisation in the Middle East North Africa region. At present, however, these results are not indicative of other countries, even within the Middle East, because of Jordan's unique liberalisation and other factors.

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