The effect of managerial overconfidence on debt financing decisions of Egyptian listed companies: empirical study

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Abstract

This study aims at investigating the effect of managerial overconfidence on debt financing. Based on a convenient sample of (125) companies drawn from Egyptian listed companies' qualified population for a period from (2012 to 2017) to constitute (750) firm observation. And depending on appropriate panel data regression model. The hypothesis test result indicates that managerial overconfidence positively affects debt financing. In other words, overconfident managers are more likely to depend on debt finance than less confident managers.

Keywords:

Managerial overconfidence – Leverage – debt financing.

1. Introduction

The issue of capital structure has been a central issue in the finance literature over the last 50 years (Davydov, 2014). However, in Myers (1984) paper titled the capital structure puzzle, which start by asking "how do firms choose their capital structure?" the answer is "we do not know!" (Myers, 1984, 575).

Static Trade-off theory and pecking order theory are the most acceptable theories of capital structure (Mostafa & Boregowda, 2014). A static trade-off theory, in which the firm is viewed as setting a target debt-to-value ratio, and gradually moving toward it, this optimal – target- debt ratio is determined by a trade-off of the costs and benefits of borrowing, the firm is portrayed as balancing the value of interest tax shields against various costs of bankruptcy or financial embarrassment (Myers, 1984).

In contrast to static trade-off theory, the pecking order theory is based on financing pecking order, firms prefer internal finance. If external finance is required firms issue the safety security first. That is, they start with debt, then possibly hybrid securities such as convertible bonds, then equity as a last resort (Myers, 1984).

The previous question could be answered if we know how managers make decisions. The current study attempts to provide a behavioral explanation for debt financing by proposing managerial overconfidence as an explanatory variable.

The term overconfidence might seem difficult to define. It is often used as an umbrella term for a variety of phenomena. At its hearts seems to be the notion that people tend to be optimistic in situations of uncertainty (Margolin, 2012). However, the behavioral corporate

finance literature draws a distinction between optimism and overconfidence. Optimism is defined as a subjective overvaluation of the likelihood of favorable future events, while overconfidence relates to underestimation of the risk or variance of future events (Delong et al., 1990; Goel and Thakor, 2008; Fairchild, 2009). Furthermore, overconfident people – e.g. managers- overestimate their abilities, believe that they know more than they actually do, and suffer from an illusion of control, believing that they exert more control over results than they in fact do. Moreover, they neglect their competitors' strategic countermoves (Paredes, 2005)

Goel and Thakor (2008) and Gervais et al. (2011) document that companies on average prefer overconfident CEO because it is less costly for a company to motivate a manager to take risky projects. However, as overconfident CEOs overestimate their ability and as a consequence underinvest in information production, overconfidence that exceeds an optimal point can result in negative impacts to firm performance.

A considerable number of studies investigated the effect of managerial overconfidence on financial reporting behavior and found a negative relation between CEO overconfidence and accounting conservatism (Ahmed and Duellman, 2013; Hwang et al., 2015), while Hasanikolavani and Mahfoozi (2015) documented a positive relation between managerial overconfidence and unconditional conservatism.

Oliver (2010), Mingguiet al. (2006) and Park and Kim (2009) provided evidence that managers tend to issue more debts when they exhibit overconfidence

Accordingly, the main research question of the current study can be stated as follows:

"What is the relation of managerial overconfidence with debt financing?"

2. Research objective

The main objective of this study is to investigate the relation between managerial overconfidence "independent variable" anddebt financing "dependent variable".

3. Research importance and contributions

This study contributes to the extant literature in several ways

3.1. This study adds to the literature by investigating the effect of managerial overconfidence on debt financing in Egypt as an emerging market.

3.2. This study is considered - to my best knowledge - the first study to introduce managerial overconfidence as an explanatory variable of debt financing in Egypt, and emerging markets in general.

3.3. The expected result of this study may help the users to partially understand why firms' acts the way they do.

4. Literature review:

With regard to the relation between managerial overconfidence and debt financing, Fairchild (2009) argue that the good manager is confident that he can repay the debt holders, while the bad manager is not. Then the good manager is able to separate himself from the bad

manager by issuing debt, while bad manager issue equity. Debt provides a signal of the manager's confidence in his ability.

Mingguiet al. (2006) analyzed whether managers' overconfidence will cause an enterprise to adopt radical decisions on financing by contracting debts. Based on a case study, the result indicated that there is a direct correlation between the management's overconfidence and liability/ asset ratio (especially short term liability/ asset ratio). Oliver (2010) provided evidence of a positive relationship between confidence and levels of debt; in other words, when confidence is higher firms have higher levels of debt. Also, Park and Kim (2009) provided evidence that managers tend to issue more debt when they have more overconfidence.

Ting et al. (2016)aimed to investigate the impact of managerial overconfidence on corporate financing decisions and the moderating effect of government ownership on the relationship between managerial overconfidence and corporate financing decisions. They found that: first, CEO overconfidence is significantly and negatively related to corporate financing decision (leverage); second, a higher degree of managerial overconfidence would result in lower leverage in government-linked companies (GLCs[1]), whereas the effect is not significantly in non-government-linked companies (NGLCs); third, a larger ownership of government in a firm will reduce the negative effect of managerial overconfidence on corporate financing decision; fourth, the moderating effect of government ownership on the association between managerial overconfidence and corporate

[1] GLCs were defined as companies that have a primary commercial objective and the Malaysian government has a direct controlling stake

financing decision in GLCs is more effective than NGLCs; and fifth, government intervention plays its role as moderating effect on the relationship between managerial overconfidence and corporate financing decision in firms with lower ownership concentration but not in firms with high ownership concentration (more than or equal 50 percent).

Tomak (2013) results show that the relationship between confidence and leverage is ambiguous. There is not enough evidence for the idea of overconfident managers tend to use higher debt level.

A hypothesis can be formulated as follows:

H0: Managerial overconfidence is not related to financing by issuing debt (leverage).

5. Method

5.1. Sample selection:

The population of the study includes all Egyptian corporations listed in the Egyptian stock exchange which amount to 224 companies as of October 1, 2018. Excludedare the banking sector (11 companies), financial services sector (37 companies), companies listed subsequent to 2010 to ensure date availability (25 companies), firms with inactive share trading price (5 companies) as share trading price will be used in measuring accounting conservatism, and companies that use US Dollar as their functional currency (6 companies), this end up with 140 companies "qualified population".

A convenient sample of 125 companies is drawn from this qualified population for a period from 2012 to 2017. Table (1) shows a summary of qualified population and the sample composition. The Periods 2010, 2011,and 2012 were not

incorporated into the sample period, because gross domestic product for this period was decreasing greatly as shown in figure (1).*Accelerator theory,* which explains the relation between gross domestic product and investment, argues that businesses undertake net investment when they need a larger capital stock, and they will want a larger capital stock if they expect increases in demand for output(Baddeley,2017). Thus, including such a period could distort the study investment-based measure

Table (1)
Qualified population and sample composition

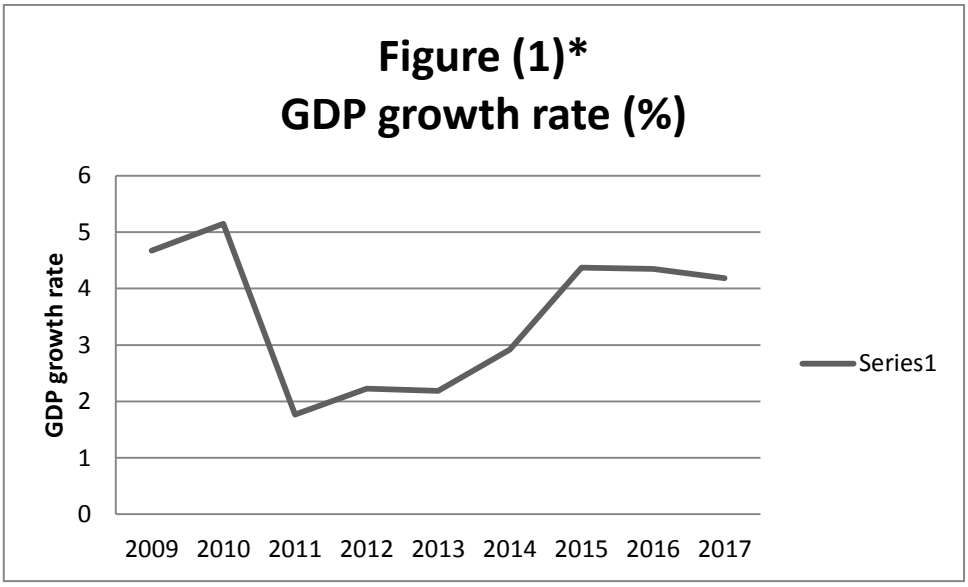
Qualified population		number of companies in sample	% in sample
Sector	Number of companies qualified		
Basic resources	8	7	0.056
Chemicals	7	7	0.056
Construction and materials	20	19	0.152
Food and beverage	23	21	0.168
Healthcare and pharmaceuticals	12	10	0.08
Industrial goods and services and automobiles	15	13	0.104
Oil and gas	2	2	0.016
Personal and household products	9	8	0.064
Real estate	24	19	0.152
Retail	4	4	0.032
Media	1	1	0.008
Technology	2	2	0.016
Telecommunications	3	2	0.016
Travel and leisure	9	9	0.072
Utilities	1	1	0.008
Total	140	125	1

The study data are collected from:

1- **Egyptian stock exchange.**

2- **Egyptian Financial Supervisory Authority.**

3- **Egypt for Information Dissemination – EGID.**



*** prepared by the researcher using World Bank data**

5.2. Model

Managerial overconfidence and debt financing decisions relationship is estimated as follows:

$$LEV_{it} = \beta_0 + \beta_1\ OVERCON_{it-1} + \beta_2\ MTB_{it-1} + \beta_3\ SIZE_{it-1} + \beta_4\ TANGIBLE_{it-1} + \beta_5 PROFITABILITY_{IT-1} + \varepsilon$$

Table (2) introduces operational definition of model variables.

Table (2): Operational definition of model variables

Dependent variable	
LEV_{it}	**Leverage of the firm i in year t, measured by** $\text{Leverage } (LEV_{it}) = \frac{\text{book value of total deb it}}{\text{book value of total assets it}}$
Independent variable	
$Overcon_{it-1}$	**Managerial overconfidence in year t-1(Overconfidence investment-based measure following Schrand and Zechman (2012:8) equals one if the firm's capital expenditures deflated by lagged total Assets are greater than the industry median of that year, zero otherwise).**
Control variables:	
MTB_{it}	**Market value of equity divided by book value of equity.**
$SIZE_{it}$	**The natural log of total assets at the end of year t.**
$TANGIBLE_{it}$	**The ratio of tangibility (the sum of fixed assets and inventories to total assets).**
$profitability_{it}$	**Return on assets, Net income divided by total assets.**

6. Empirical Findings

6.1. Descriptive statistics

The mean of leverage is 41.6% with a standard deviation 22.2% with a minimum of 5.9% and a maximum of 82%, which is near to 41% found by Cohen et al. (2008) in their USA sample. With regard to the independent variable (managerial overconfidence) 51.8% of the sample observations are classified as having overconfidence compared to 48.2 % not having overconfidence. As to control variables, about

34.8% of the sample observations are audited by big four and 65.2% are audited by non-big four auditors, also 41.12% of sample observation are classified as having audit tenure compared with 58.88% do not have audit tenure.

The mean size (log assets) is 8.760which falls between 7.780 and 9.853. Profitability mean is 0.051which falls between -0.103 and 0.202. The mean of market to book ratio is 1.156 with a standard deviation of 0.864 and a minimum of 0.118 and maximum of 3.419.

The mean of tangible assets is 43.6% and falls between 4.3% and 87.9% of total assets.

Table 3: Proportions of dummy variables:

	$OVERCON_{it-1}$	SAF_{it}	$TENURE_{it}$
Proportion of 1	**.518024**	**.3484646**	**.411215**
Proportion of 0	**.481976**	**.6515354**	**.588785**

Table4: Descriptive statistics for model

Variable	Mean	Std. dev.	Min.	Max.
LEV_{it}	0.416	0.222	0.059	0.820
MTB_{it-1}	1.156	0.864	0.118	3.419
$SIZE_{it-1}$	8.760	0.570	7.780	9.853
$TANGIBLE_{it-1}$	0.436	0.249	0.043	0.879
$PROFITABILITY_{it-1}$	0.051	0.075	-0.103	0.202

6. 2. Correlation Matrix

Pearson correlation is used to test the correlations among all variables of the study models. The correlation results mainly are used to get some initialinsights into the data and provide an indication about the multi-collinearity problem, however, multi-collinearity problem will be investigated later using the variance inflation factor.Table (5) provides the correlation coefficients for variables included in the debt financing model (LEV).

Table (5) presents the correlation coefficients for debt financing model. No correlation between overconfidence and debt financing (LEV) is noticed. Also, there is no indicator of multicollinearity between independent variables.

Table 5: Pearson correlations for model variables

Correlation	LEV_{it}	$OVERCON_{it-1}$	MTB_{it-1}	$SIZE_{it-1}$	$TANGIBLE_{it-1}$	$PROFITABILITY_{it-1}$
LEV_{it}	1.000					

$OVERCON_{it-1}$	0.042	1.000				
	0.262	-----				
MTB_{it-1}	-0.099	-0.007	1.000			
	0.008	0.843	-----			
$SIZE_{it-1}$	0.212	0.107	-0.036	1.000		
	0.000	0.004	0.340	-----		
$TANGIBLE_{it-1}$	-0.286	0.040	-0.021	0.195	1.000	
	0.000	0.286	0.566	0.000	-----	
$PROFITABILITY_{it-1}$	-0.309	0.087	0.247	0.163	-0.212	1.000
	0.000	0.019	0.000	0.000	0.000	-----

6. 3. Regression Models for Testing Hypotheses

Three common models are used to analyze panel data. First, Pooled Ordinary Least Squares. Second, Firm Fixed Effects Model. Third, Random Effects Model (various tests have been performed using STATA software as follows (Park, 2011). however, Debt financing model (LEV) will be estimated using quantile regression as indicated later on.

6.3.1. Models Validation

The validation tests for the models of this study (i.e. linearity, normality, multicollinearity, Heteroscedasticity and autocorrelation) are presented below.

6.3.1.1. Linearity

Ramsey reset test using powers of the fitted values of dependent variables is used to check the linearity for the study models. With a null hypothesis " model has no omitted variables", the assumption of linearity is satisfied if the null hypothesis of linearity is not rejected. Table (6) presents the results of this test which specify that the linear model is suitable for the data of the study models.

Table 6: Results of Ramsey's RESET for linearity

Ramsey'sRESET		Decision	Linearity
F	Prob> F		
2.16	0.091	H_0 cannot be rejected	Yes

6.3.1.2. Normality

The residuals of each regression model are tested for normality. Table (6) presents the results of the skewness / kurtosis test for normality. With a null hypothesis: residuals are normally distributed, the

assumption of normality is satisfied if the null hypothesis of normality is not rejected.

Results of normality test in Table (7) indicates that the residuals of all models are normally distributed, but the residuals of the last model (LEV) are not normally distributed. To overcome the violation of normality assumption, quantile regression will be used to estimate the last model (Ayyangar, 2007).

Table7: Results of skewness/kurtosis normality test

skewness/kurtosis		Decision	Normality
Chi^2	Prob.		
29.38	0.000	H_0 rejected	No

6.3.1.3. Multicollinearity

The simplest diagnostic test of multicollinearity problem is to use the correlation coefficients. Generally if the correlation coefficient between two variables is more than 0.9 (et al., 2010), this represents an indicator of substantial multicollinearity. As presented earlier in this chapter the correlation matrix between variables provides no suspicions of multicollinearity. Moreover, the variance inflation factor is also used to check for multicollinearity for each model. Hair et al. (2010) mention that a large VIF value (10 or above) indicates high collinearity.

Table (8) present the results of VIF for models estimated. The VIF value for all variables are less than 10, which indicate that multicollinearity problem is not present.

Table 8: Variance Inflation Factor of models (2) and (3)

Variable	LEV
	VIF
$OVERCON_{it-1}$	1.02
MTB_{it}	1.04
$SIZE_{it}$	1.09
$TANGIBLE_{it-1}$	1.12
$PROFITABILITY_{it-1}$	1.13

6.3.1.4. Heteroscedasticity

Heteroscedasticity occurs when the residuals have non-constant variance. To test for heteroscedasticity, this study uses Breusch-Pagan / Cook-Weisberg test, with a null hypothesis: constant variance, the assumption of homoscedasticity is satisfied if the null hypothesis is not rejected.

Table (9) presents the results of this test, which indicates that the heteroscedasticity problem is not present in the study models.

Table 9: Results of Breusch-Pagan / Cook-Weisberg test

Chi^2 Statistic	Prob.	Decision	Heteroscedasticity
3.01	0.083	H_0 cannot be rejected	No

6.3.1.5. Autocorrelation

Another assumption of OLS regression is that error terms are not correlated, when they are correlated, autocorrelation problem exist. The Wooldridge test is used to check for autocorrelation, with a null

hypothesis: no first order correlation exists. If the null hypothesis is not rejected, this means autocorrelation problem does not exists. Table (10) presents the results of this test.

Table 10: Results of autocorrelation test

Wooldridge test		Decision	autocorrelation
F statistic	Prob.		
36.47	0.000	H_o rejected	Yes

6.3.2. Hypotheses Tests

The following regression model is estimated to investigate the relation between managerial overconfidence and debt financing.

$$LEV_{it} = \beta_0 + \beta_1\ OVERCON_{it-1} + \beta_2\ MTB_{it-1} + \beta_3\ SIZE_{it-1} + \beta_4\ TANGIBLE_{it-1} + \beta_5\ profitability_{it-1} + \varepsilon$$

Table (11) reports the results of debt financing model. The model significance is not reported by STATA but it can induced from variables significance as all variables of the model are significant, the explanatory power of the model (R^2) equals(20.18%). The model shows that managerial overconfidence positively affects debt financing (LEV) with a coefficient of (0.069) and a probability of (0.002).

With regard to control variables, market to book ratio and firm size positively affect debt financing with coefficients of (0.056 and 0.154 respectively) and probabilities less than (0.001), which indicate that firms with high market to book ration and large size are more likely to use higher level of debt.

In contrast, tangibility of assets and profitability negatively affect debt financing with coefficients of (-0.409 and -1.193 respectively) and

probabilities less than (0.001), which indicate that firms with more tangible assets and high profitability are less likely to use higher level of debt.

Table 11: Results of debt financing model

Dep. Variable	LEV	
Indep. Variables	**Coeff.**	**Prob.**
Constant	**-0.794**	**0.000**
OVERCON $_{it-1}$	**0.069**	**0.002**
MTB $_{it}$	**0.056**	**0.000**
SIZE $_{it}$	**0.154**	**0.000**
TANGIBLE ASSETS $_{it-1}$	**-0.409**	**0.000**
PROFITABILITY $_{it-1}$	**-1.183**	**0.000**
N	**705**	
R-squared	**0.2018**	

7. Discussion and analysis

The results indicate that managerial overconfidence positively affect leverage (debt financing), indicating a rejection of hypothesis (H0) stating that "Managerial overconfidence is not related to debt financing". Therefore, it could be concluded that overconfident managers are more likely to depend on debt finance than less overconfident managers.

This result is consistent with the findings of Minggui et al. (2006), Oliver (2010), Park and Kim (2009), who reported a positive relation between managerial overconfidence and debt financing. However, this result is inconsistent with the findings of Ting et al. (2016) who reported a negative relation between managerial overconfidence and debt financing.

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