

The Financial Decisions Contribution to Different Levels of Firm Growth: Evidence from Egypt

Enas Hendawy

Assistant Lecturer of Business Administration
Faculty of Commerce
Zagazig University

Prof. Dr.

Tarek I. Eldomiaty

Professor of Finance and Banking
Faculty of Business Administration &
International Trade - Misr International University

Prof. Dr.

Mohamed E. Mansour

Assistant Professor of Business Administration
Faculty of Commerce
Zagazig University

Abstract

The aim of this research is to examine the independent and synergetic contribution of financing, investment and dividend decisions to firm growth; as one of firm's goals aimed to achieve, by studying the different types of those financial decisions whether it's long or short term, according to different growth levels; starting by low-level up to high-level of firm growth. In addition to that, this research aims to determine the relative importance (contribution) of the three decisions for monitoring different levels of firm growth, applied on non-financial firms listed in Egypt stock exchange; 182 firm, from 2000 up to 2010. This research applied new methodology by developing an accounting equation to measure this relation, the results of this study show differences in independent and synergetic relation of those three decisions and firm growth. In addition to that, the firm's financial decisions behave differently according to current and prospective firm growth level. Although, the relative importance of financing, investment and dividend decisions differ according to the level of growth of the firm.

Key Words: *Financial Decisions, Financing Decision, Investment Decision, Dividend Decision, Firm Growth, Stepwise Regression, Discriminant Analysis*

1. Introduction

The literature on corporate finance is concerned with the integration among the firm's different financial decisions; financing, investment and dividend decisions. The common understanding is that the well-being of a business entity requires a series of integrated decisions. The final outcome of the extent of integration is to realize that the firm is progressing at a certain pace. This progress is referred to as the growth of the firm. It is quite observed that a firm tries at all times to manage its financial resources in a way that leads to certain growth.

These resources are classified broadly into financing and investment decisions. This view takes into account that the dividend decisions are part of the financing decisions. The literature on corporate finance includes many attempts that examine the integration between financing and investment decisions on one hand and between both decisions and dividend decisions on the other hand.

The firm growth goal can be considered a general and common target for different firms in the same market, so each firm always attempts to determine the proper investments and arrange for the suitable required financing in order to meet the requirements of those investments. In the same time, the firm has to be able to compete with its competitors and achieve high growth levels exceeding which of them. This may exceed the firm's production capacity, and enforce it to increase its investments looking for suitable sources of fund.

Accordingly, it can be clearly seen that, firm growth is correlated; in one way or another, with the firm's financial decisions. This appears in details in the balance sheet and the income statement, so those financial statements can be used to measure this kind of relation. The methodology in this paper provides full details for the integration between different financial decisions and firm growth. Accordingly, this paper aims to investigating the separate and synergic interrelation effect between the different financial decisions and firm growth.

This paper is organized as follows: Section 2 reviews the relative literature, Section 3 outlines the research objectives, Section 4 summarize the research hypotheses, Section 5 describes the data and variables of the study, Section 6 investigate the statistical examinations applied in this study, Section 7 introduces the statistical results and discusses the main results and Section 8 the conclusion.

2. A Review of Relevant Literature

Firm growth can be considered as one of the most important goals that firms seek to achieve through providing their markets with required goods and services. According to *Hermelo and Vassolo (2007)*, the firm growth is the expected result for the increase that happens in the firm's available opportunities. This is consistent with *Penrose (1959)* view to the firm. He considers the firm as a group of resources that provide the firm with the appropriate tools to capture the available opportunities which will achieve its required and expected growth. In addition, *Garner et al. (2002)* argue that it is very important to study the concept of firm growth as it can be considered as one of the most important financial decisions that the firm has to make.

Accordingly, some literature tends to examine the dynamics of firm growth and the main financial predictors to this growth. *Gupta (1969)* examined the effect of the change of firm size and growth of the firm on the financial structure ratios according to different industry characteristics. He found that firm growth has a negative relationship with the liquidity ratios, positive relationship with the activity and the leverage ratios and no fixed relationship with profitability. There are some other studies argue that the relation between the growth of the firm and the financial leverage is depending on different aspects such as industry regulations (*Zingales, 1998*), availability of investment opportunities (*Lang et al., 1996*), market entry (*Khanna and Tice, 2000*), and macroeconomic shocks (*Campello, 2003*).

Lang et al. (1996) study assumes that there is a negative relation between leverage and growth rate for firms with low Tobin's q ratio –firms with unrecognized or invaluable investment opportunities- as some high leveraged firms may not be able to take the advantage of growth opportunities. This may result from the lack of investment opportunities recognition, the poor managerial performance and the absence of valuable opportunities to overcome the effects of increasing debt or any other reasons. In addition, the increased leverage can decrease the firm's ability to raise additional funds to invest, which leads to a decrease in the growth rate. Besides, *Campello (2003)* found that there is a negative relation between the firm's debt and its sales growth, especially for those firms who act in an unleveraged industry during recessions. Moreover, *Campello (2006)* extends the previous one by examining the different debt policies and show that the marginal effect of debt policies on product market outcomes varies according to the level of firm /rival indebtedness.

There are some other studies that examine the effect of cash holdings on the firm's decisions on the product market; measured by the market share growth, (*Fresard, 2010*) and predict the different determinants of cash holdings; concentrating on firm growth opportunities as one of the main predictors, (*Drobetz and Grüninger, 2007*). *Fresard (2010)* argues that larger relative-to-rivals cash reserves lead to systematic future market share gains that are obtained at the expense of industry rivals. Besides, *Liu and Hsu (2006)* study extends all the previous mentioned studies by examining a wide variety of variables related to industrial determinants of the firm growth and analyzing the effect of the different financing decisions and the financial structures on the growth of the firm. It reached that the growth rates of firms are positively related to firm size, age, capital intensity, R&D ratio, export ratio, investment ratio, and profit. In addition, high leverage ratio is associated with low firm growth. Besides, there is a positive relation between firm growth and return on total assets.

Moreover, *Eldomiaty and Ismail (2009)* study differentiate between the length of financing decision and its relation with firm growth. It reached that firm's long-term debt decisions affected mainly by growth of total assets and investment growth opportunities, while short-term one affected only by growth of total assets. However, *Aivazian et al. (2005)* study differs from the previous one as it finds that leverage is negatively related to investment decisions whether to over- or under-investment and this negativity is stronger for firms with low growth opportunities than those with high growth one. Furthermore, there are some other studies that examine this relation from different prospective such as *Campello and Hackbarth (2008)* which found that growth opportunities can be considered as a strong financial constraint that can be faced by the firm which can affect its investment and financing decisions.

Gal (1999) examines the relation between the growth opportunities, the capital structure and the dividend policies. This study used different measures of growth opportunities and reached that there is a negative relation between the firm's growth opportunities and the debt financing ratio and dividend payment; as firms with high growth opportunities tend to pay less dividends because they will depend on their cash in financing their growth opportunities or investment projects. The results of this study are agreed with *Adelegan (2003)* findings. It assumed that the expected dividend policies behavior for developing markets differs from that of developed markets and concluded that there is a negative relationship between the firm's dividend, the growth opportunities and the financial leverage.

Alonso et al. (2005) extend the previous one by examining the firm's market value by analyzing the effect of leverage decision, dividend payout policies and owners structure on the firm's market value when the firm faces growth opportunities or not and found that there is a negative relation between the firm value, the leverage and the payout dividend when there are profitable growth opportunities. However, this relation transferred to be positive when there are no profitable growth opportunities. In addition, *Faragher and Weigand (2006)* study examined the idea that signaling, agency and risk explanations for dividends have different implications for growth and value stocks in the context of the life cycle hypothesis. It reached that the firms' dividends decisions are differing according to the firm's life cycle phase

From what is mentioned before, we can assume that there is no unique relationship between the different determinants of the various financial decisions and the different measures of the firm growth, hence this relation is affecting by different factors inside and outside the firm. So, this can be considered as the main reason that

the researchers are interesting in examining the separate and the synergic effects of the different financial decisions on the firm growth considering the relative contribution of each decision predictors to the different levels of firm growth using more than one measure related to the dependent variable (firm growth) to determine the suitable one to the Egyptian data.

3. Research Objectives

This paper aims at achieving the following objectives:

- 1- To examine the explanatory power of the different financial decisions independently in relation to the firm growth.
- 2- To examine the collective explanatory power of the financial decisions in relation to the firm growth.
- 3- To examine the relative contribution (or weight) of the financial decisions for monitoring the different levels of the firm growth.

4. Research Hypotheses

The intrinsic relationship between the three financial decisions and firm growth helps develop five composite hypotheses as follows:

- H₁: There is a negative relationship between the financing predictors and the firm growth.
- H₂: There is a positive relationship between the investment predictors and the firm growth.
- H₃: There is a positive relationship between the dividends predictors and the firm growth.
- H₄: The financial predictors differ according to the different levels of firm growth.
- H₅: The relative importance of financial predictors differs according to the different levels of firm growth.

5. Research Data and Variables

5.1 Research Data

The researchers obtained the data from Egypt for Information and Dissemination - EGID for the non-financial (Industrial and Service) firms listed in Egypt Stock Exchange. The data cover the years 2000-2010. The data are unbalanced panel that includes 182 firms. However, there are two main research limitations; the first one is that this paper will be applied only on non-financial firms excluding the financial firms listed in Egypt stock exchange because of the different nature, operations and circumstances between both of them. The second one is that the span of time which

starts at year 2000 and stops at year 2010 in order to avoid the possible bias in the following years due to the 2011 revolution.

5.2. Research Variables

5.2.1 Dependent Variable

The dependent variable is the firm growth. According to literature there are different measures to firm growth, however this paper introduces four different measures which are *Sales Growth or Market Share* (Gupta, 1969; Campello, 2003; Iiu & Hsu, 2006; Alonso et al., 2005; Campello, 2006; Eldomiaty, 2010; Fresard, 2010), *Assets Growth* (Gul, 1999; Eldomiaty, 2010), *Growth of Investment Opportunities* (Lang et al., 1996; Aivazian et al., 2005; Fargher and weigand, 2006; Drobetz & Grüninger, 2007; Campello and Hackbarth, 2008) and "*Sales-Weighted Fixed Assets Growth*" this new measure introduced by Eldomiaty (2010) and Eldomiaty and Rashwan (2011) aiming to capture the fixed asset growth in relation with sales growth.

The Merits of Firm Growth Measures

An initial descriptive statistics utilized in order to assess the statistical properties of the four measures of firm growth. The table (1) shows the results of the descriptive statistics related to the firm's growth different measures; applied on research data:

Table (1): The Descriptive Statistics for Firm Growth Measures

	Sales Growth	Assets Growth	Growth Opportunities	Firm Growth (Sales-weighted Fixed asset Growth)
Mean	0.1029	0.1080	0.0003	0.1168
Standard Error	0.0178	0.0108	0.0106	0.0139
Median	0.0912	0.0583	0.0000	0.0225
Standard Deviation	0.6694	0.4050	0.3990	0.5219
Sample Variance	0.4480	0.1640	0.1592	0.2723
Kurtosis	29.35	134.92	16.61	56.85
Skewness	-0.27	0.81	1.59	0.88
Range	13.7711	14.0039	5.5164	13.8133
Minimum	-6.97	-7.04	-2.04	-6.93
Maximum	6.80	6.97	3.48	6.88
Sum	143.67	132.81	0.41	165.28
Count	1415	1415	1415	1415

The measure to be used as a dependent variable is the one associated with lower standard deviation, standard error and variance; which are Growth opportunities. The low values guarantee an improvement in the estimates of growth of the firm. The dependent variable is classified into four quartiles arranged in an ascending order from quartile 1 (lowest growth) to quartile 4 (the highest growth).

5.2.2 Independent Variables

The independent variables are classified into two groups which are Book-Value Factors of Firm Growth and Market-Value Factors of Firm Growth. Each group of independent variables will be interpreted as follows:

(a) Book-Value Factors of Firm Growth

This research offers a new development in the intrinsic relationship between the firm growth and the main corporate financial decisions (financing, investment and dividends). This development is based on understanding the interrelationship between firm's income statement and balance sheet which can be re-written in a generic way in order to accommodate the well-known measures of firm growth. This relationship is generically developed through the role of the retained earnings.

Since the latter is added periodically (either quarterly or annually) to the equity balance, the direct effect on the financing decisions is obvious. That is, the higher the retained earnings, the more internal financing are arranged. Therefore, the investment decisions (current assets and fixed assets) may be affected accordingly. These generic relationships ended with the following equation:

$$LN \frac{S_t}{S_{t-1}} = LN \left(\frac{CA_t}{S_{t-1}} + \frac{FA_t}{S_{t-1}} + \frac{CL_t}{S_{t-1}} + \frac{LTD_t}{S_{t-1}} + \frac{SE_t}{S_{t-1}} + \frac{RE_{t-1}}{S_{t-1}} + \frac{COGS_t}{S_{t-1}} + \frac{EXP_t}{S_{t-1}} + \frac{Dep_t}{S_{t-1}} + \frac{Int_t}{S_{t-1}} + \frac{Tax_t}{S_{t-1}} + \frac{Div_t}{S_{t-1}} \right) \quad (1)$$

Where: RE_{t-1} ; retained earnings in the current (t) and previous (t-1) period respectively, CA_t ; current assets in time t, FA_t ; fixed assets in time t, CL_t ; current liabilities in time t, LTD_t ; long term debt in time t, SE_t ; stock equity in time t, EXP_t ; total expenses in time t, S_t , S_{t-1} ; Sales in time t and t-1, $COGS_t$; cost of goods sold in time t, Dep_t ; annual depreciation in time t, Int_t ; interest expenses in time t, Tax_t ; taxes paid in time t and Div_t ; dividend paid out in time t. The book value accrual-based independent variables are the ratios listed in the right hand side of equation (1). These variables are classified into the three corporate financial decisions: investment, financing and dividend decisions.

(b) Market-Value Factors of Firm Growth

The market-value factors refer to the factors that have been found related to firm growth in the previous related literature. They are 14 variables which are Market-to-Book Ratio, Probability of Financial Distress, Tobin Q, Change in Market Value of the Firm, Asset Tangibility, Cash Conversion Cycle, Dividend Payments, Operating Free Cash Flow, Operating Cash Flow Ratio, Profitability, Leverage Ratio, Agency Cost,

Firm Age and Time Effect. In addition, the industry type; dummy values; with a value 1 for firms in the industry and 0 otherwise, and the firm size; the natural logarithm of total assets. This size will be classified as large, medium and small size, will be considered as controller variables.

6. Statistical Model Estimation

The estimation of the parameters required addressing three econometric issues; the normality, the linearity and fixed versus random effects estimation. Related to normality test, Anderson-Darling test is applied to determine whether the research society follows the normal distribution or not (Anderson-Darling, 1952, 1954). The calculated result compared with the tabulated values in order to determine the normality of data. All variables are transformed to normal scores using Van der Waerden's Formula.

In addition, Regression Equation Specification Error Test, RESET (Ramsey, 1969; Thursby, 1979) is employed to test the linearity hypotheses where the null hypothesis refers to linearity and the alternative refers to nonlinearity. The results of the F test ($\alpha = 5\%$) show that the F statistic is smaller than the critical value leading to the acceptance the assumption of linearity.¹

Additionally, since the data are cross section-time series panel, the Hausman specification test (Hausman, 1978) is required to determine whether the fixed or random effects model should be used. The test looks for the correlation between the observed x_i ; regressors, and the unobserved λ_i ; error term. The null hypothesis refers to random effect and the alternative hypothesis refers to fixed effects. The results ended with fixed effects model.

6.1 Stepwise Regression Model

In order to determine the independent explanatory power of the different financial decisions to the firm growth, the researchers have used the stepwise regression estimation in order to reach the statistically significant predictors. The stepwise estimation technique is one of the procedures used to select the most significant independent variables that introduce the best explanation for the dependent variable.

This technique is based on computing the F statistic and the corresponding p-value for each independent variable step by step. The independent variable with a greater p-value (insignificant) has been excluded from the model and the stepwise regression

1. $F\text{-statistic} = \frac{(SSE_R - SSE_U) / J}{SSE_U / (T - K)}$ where SSE_R and SSE_U are the least squared errors for the restricted and unrestricted models respectively, J refers to the two hypotheses under consideration, T is the number of observations, and K is the number of regressors.

analysis initiates a new step, depending on the right fitting model as the best model, which contains some insignificant variables, but it shows the lowest standard error and the highest accuracy, comparing with the over fitting model. The followed technique is the backward stepwise regression analysis.

Before applying the selected regression analysis (Stepwise) a number of statistical examinations has been applied in order to justify that the processed data are not subject to the statistical measurements problems; where the multicollinearity is examined using the Variance Inflation Factor (VIF) and the variables associated with $VIF > 5$ are excluded. The outliers are detected and excluded as well. In addition, the heteroskedastic effects are corrected using the White's HCSEB which improves the significance of the estimates. Moreover, the *Autocorrelation* examined by Durbin-Watson test which applied before every regression analysis; the calculated values for D-W test appear in the regression analysis tables.

6.2 Discriminant analysis (Z-Score Model)

The discriminant analysis is a common statistical technique used to develop a Z-score model. Hair et al. (2010) mentions that the main aim of this Z-score model is to separate two or more groups of observations given measurements for them on several variables. It shows that the main objective of this technique is to classify predictions for problems by which the dependent variable (a priori grouping variable) appears in a qualitative form (nonmetric variable) (e.g., high- or low-growth rates), depending upon the individual characteristics of the observation (Eldomiaty and Rashwan, 2011). In this paper, firm growth is classified into four quartiles that correspond to the escalating levels of growth (quartile 1 = low growth up to quartile 4 = high growth).

To guarantee the effectiveness of applying the discrimination analysis technique, three issues have to be considered which are discriminant, content and construct validity. Related to the discriminant validity, according to the objectives of the discrimination analysis and the research variables classification related to different financial decisions (financing, investment and dividend ones), a quite distinctive dimensionality can be addressed which provides a validation to the discrimination analysis. Related to the content validity, depending on the previous literature to extract the research variables related to the three financial decisions, an adequate coverage of the important contents can be guaranteed, and this leads to content validity. As for construct validity, the selected variables are examined in previous studies in relation with firm growth.

Hair et al. (2010) clarifies that the discriminant analysis involves creating the discriminant function (J) which can be defined as a linear combination of two or more independent variables (K) discriminate on the different a priori groupings (N). The form of this linear discrimination function is:

$$Z_{JK} = \alpha + a_1 X_1 + a_2 X_2 + \dots + a_K X_K$$

Where (Z_{JK}) represents the discriminant Z-score of discriminant function J for object K, (α) represents the intercept, (a) represents the discriminant coefficient of independent variables and (X) represents the independent variables. Accordingly, the discrimination analysis can be considered as a suitable statistical technique for this research goal.

The researchers derive three linear discriminating functions with their Z index (Z model). These functions can help classify the firm growth in the listed firms in the Egyptian Exchange using the independent variables related to financing, investment and dividend decisions. The three firm growth models considered in this paper correspond to the pair comparisons between the four quartiles (Q) of firm growth. Model 1 corresponds to Q1-Q2. Model 2 corresponds to Q2-Q3. Model 3 corresponds to Q3-Q4. The stepwise selection algorithm produces certain significant variables as predictors of grouping. The discriminating functions with p-value < 0.01 are statistically significant at the 99% confidence level.

7. Results and Discussion

Regarding to examining the explanatory power of each financial decision separately on the firm growth a stepwise regression analysis has been applied in order to determine the main predictors of each financial decision to firm growth. Accordingly, three regression models are applied in order to determine the main financing, investment, and dividend predictors to the growth of the firm as whole. The results appear in tables (2), (3) and (4). However, table (5) introduces the three z-score models of financial decision as whole in relation with different levels of firm growth and the relative contribution of the different financial decisions to various levels of firm growth. Accordingly, it becomes easy to capture the different effects of the independent variables on the different levels of firm growth, and to determine which group of independent variables and which variables can provide an explanation for the current and next level of firm growth.

Table (2): Regression results for the Financing-related predictors of Firm Growth

Predictors	Coefficients	Predictors	Coefficients	Predictors	Coefficients
(Constant)	0.0001	Firm Age	-0.0262 (-1.8833)**	Earnings Growth	-0.3906 (-13.501)***
Market-to-Book Ratio	-0.0293 (-1.6872)*	Proxy for Agency Costs (RevenueLoss)	0.9882 (2.738)***	Operating Income / Total Assets	0.0317 (1.503)
Probability of financial distress	0.0262 (1.5643)	High Expense Ratio	-0.0912 (-3.447)***	Return on Equity	0.0325 (1.206)
Change in Firm's Market Value	0.8511 (58.63)***	Medium Expense Ratio	-0.0563 (-2.364)**	Growth of Debt ratio	-0.0205 (-1.492)
Firm Age	-0.0262 (-1.8833)**	Debt Growth	0.0414 (2.988)***	Cash Flow / Fixed Assets	-0.0432 (-2.603)***
Current Liabilities / lag Sales	0.0292 (1.908)*	INDV ² : Oil and Gas Sector	0.0879 (2.791)***	R ²	0.7219
Long term Debt / lag Sales	-0.0259 (-1.722)*	Time	-0.0704 (-4.224)***	F-statistic	216.84***
				Durbin-Watson	2.029

*** Significant at 1% significance level. ** Significant at 5% significance level. * Significant at 10% significance level.

The statistical results indicate that the tested model is statistically significant as sig "F" $0.000 < 0.01$ and the explanatory power (Adjusted R^2) of financing-related independent variables to firm growth is approximately "% 72.2". This means that those financing independent variables have strong ability to explain more than % 72 of changes in the firm's growth behavior. Regarding the financing-book value predictors of firm growth, there is a significant positive relation between current liabilities/lag sales and firm growth; ($t_{stat} = 1.908$), however there is a significant negative relation between long term debt/lag sales and firm growth; ($t_{stat} = -1.722$). Regarding the market-value independent variables there is a significant negative relationship between M/B ratio ($t_{stat} = -1.6872$), firm age ($t_{stat} = -1.8833$), earnings growth ($t_{stat} = -13.501$), the operating cash flow ratio ($t_{stat} = -2.603$) and time variable ($t_{stat} = -4.224$) and firm growth. However, there is a significant positive relationship between change in firm market value ($t_{stat} = 58.63$), agency cost ($t_{stat} = 2.738$), debt growth ($t_{stat} = 2.988$) and industry type ($t_{stat} = 2.791$) and firm growth.

Accordingly, the firm has to make a suitable decision related to the required amount of current liabilities and the long term debt. In addition, the continuous increase in the firm's debt indicates the high growth level the firm has. However, the swinging increase in the firm's net income as well as in the operating cash flow to the fixed assets ratio will lead to a decrease in the firm growth. Yet, the firm has to pay attention to its share price and tries to make it reflect its real performance to guarantee

² Industry Dummy Variable

the positive effect to its growth. Moreover, the firm has to monitor the expenses level to decrease the agency cost which will consequently enhance the firm growth level.

Table (3): Regression results for the Investment-related determinants of Firm Growth

Predictors	Coefficients	Predictors	Coefficients	Predictors	Coefficients
(Constant)	-0.0973	Medium Expense Ratio	-0.0339 (-1.323)	IDV: Technology Sector	0.8531 (1.060)
Market-to-Book ratio	-0.0459 (-2.246)**	Growth of Fixed Assets	-0.0425 (-3.045)***	Time	-0.0824 (-4.957)***
Probability of financial distress	0.0315 (1.812)*	Current Assets / Lag Sales	-0.0226 (-1.482)	\bar{R}^2	0.6834
Change in firm's Market Value	0.8374 (34.177)***	Fixed Assets / Lag Sales	0.0300 (1.858)*	F-statistic	235.69***
Tobin Q	0.0460 (2.050)**	Medium Size firms - Dummy	0.0219 (1.069)	Durbin-Watson	1.990
High Expense Ratio	-0.0871 (-2.991)***	IDV: Oil and Gas Sector	0.0936 (2.788)**		

*** Significant at 1% significance level. ** Significant at 5% significance level. * Significant at 10% significance level.

The statistical results indicate that the tested model is statistically significant as $\text{sig}^* F^{0.000} < 0.01$ and the explanatory power (Adjusted R^2) of investment-related independent variables to firm growth is approximately "% 68.34". This means that those investment independent variables have strong ability to explain more than % 68 of changes in firm growth behavior. Regarding the investment-book value determinants of firm growth, there is a significant positive relation between Fixed Assets/Lag Sales and firm growth; ($t_{stat} = 1.858$), as the greater the ratio is, the greater the firm's growth will be. Regarding the investment-market value factors of firm growth There is a significant negative relationship between M/B ratio ($t_{stat} = -2.246$), firms with large expenses ratio ($t_{stat} = -2.991$), growth of fixed assets ($t_{stat} = -3.045$) and time variable ($t_{stat} = -4.957$) and firm growth. However, there is a significant positive relationship between probability of financial distress ($t_{stat} = 1.812$), change in firm market value ($t_{stat} = 34.177$), Tobin' Q measure ($t_{stat} = 2.050$) and industry type and firm growth; ($t_{stat} = 2.788$) and firm growth.

In general, when making an investment decision, the firm has to consider the following matters. First, it has to choose the suitable amount of the firm's fixed assets, to recognize the effect of this amount on enhancing the firm growth, and to pay attention that the growth of fixed assets can affect the firm growth negatively. Second, it has to monitor the market value of its assets and work on increasing this amount to guarantee an increase in the firm growth. However, the firm has to pay attention to its share price and let it reflect its real performance to guarantee a positive effect on the firm growth. Finally, the firm has to monitor the level of its expenses since this will decrease the agency cost and will enhance the firm growth level.

Table (4): Regression results for the Dividend-related determinants of Firm Growth

Predictors	Coefficients	Predictors	Coefficients	Predictors	Coefficients
Constant	-0.01421	High Expense Ratio	-0.12450 (-3.705)***	Medium Size Firms - Dummy	0.02244 (1.104)
Market-to-Book Ratio	-0.05046 (-2.507)**	Medium Expense Ratio	-0.06134 (-2.259)**	IDV: Oil and Gas Sector	0.09931 (3.002)***
Probability of financial distress	0.03224 (1.842)*	Expense / lag Sales	-0.02431 (-1.385)	IDV: Technology Sector	0.05298 (1.080)
Change in Firm's Market Value	0.83888 (55.333)***	Taxes / lag Sales	0.04172 (2.553)**	Time	-0.09124 (-5.187)***
Tobin Q ratio	0.05649 (2.575)***	Dividends per share	0.03485 (1.736)*	\bar{R}^2	0.6961
Proxy for Agency Costs (RevenueLoss)	-0.06173 (-2.209)**	Growth of Dividends per share	0.03794 (2.248)**	F-statistic	191.436***
High Sales Ratio	0.04944 (1.765)*	Dividends Payout Ratio	0.07083 (3.779)***	Darbin-Watson	2.0056

*** Significant at 1% significance level. ** Significant at 5% significance level. * Significant at 10% significance level.

The statistical results indicate that the tested model is statistically significant as sig "F" $0.000 < 0.01$ and the explanatory power (Adjusted R^2) of the previous dividend-related independent variables to firm growth is approximately "69.61". This means that those dividend independent variables have a strong ability to explain more than % 69.6 of changes in firm growth behavior. Regarding the dividend-book value determinants of firm growth, Taxes/Lag Sales is the only significant independent variable having a positive relation with firm growth; ($t_{stat} = 2.553$). Regarding the dividend-market value factors of firm growth there is a significant negative relationship between M/B ratio ($t_{stat} = -2.507$), agency cost ($t_{stat} = -2.209$) and time variable ($t_{stat} = -5.187$) and firm growth. However, there is a significant positive relationship between probability of financial distress ($t_{stat} = 1.842$), change in firm market value ($t_{stat} = 55.333$), Tobin ' Q measure ($t_{stat} = 2.575$), dividend per share, growth of dividend per share, dividend payout ratio ($t_{stat} = 1.736, 2.248, 3.779$, respectively) and industry type and firm growth.

Regarding Table (5), the following interpretations can be generated as follows:

The canonical correlation; which measures the strength of the overall relationships between the linear composites for the independent and dependent variables, is 0.72178, 0.7868 and 0.7759 in model 1, 2 and 3; respectively, so the larger this value is, the greater discriminatory ability to this function. In addition, Wilks-Lambda, which measures the proportion of the total variance in the discriminant scores that not explained by differences among the groups, is 0.47903, 0.3809 and 0.3978 in model 1, 2 and 3; respectively, the smaller this value is, the greater discriminatory ability to this function.

Table (5): The Components of the Discriminant Models for Firms' Low- to High-Growth Levels³

Components of the Z models	Equation Coefficients ^a	Relative Contribution (%) ^b	Components of the Z models	Equation Coefficients	Relative Contribution (%)	Components of the Z models	Equation Coefficients	Relative Contribution (%)
<i>Model 1: Monitoring firm growth from Q1 to Q2</i>								
Market-to-Book ratio	-0.5454	9.82%	Growth of Debt Ratio	-0.1283	2.31%	IDV: Oil and Gas Sector	0.1788	3.22%
Change in Firm Market Value	0.4975	8.95%	Coefficient of Variation for Operating Cash Flow	0.1708	2.35%	IDV: Telecommunication Sector	0.2229	4.01%
Tobin's Q ratio	-0.2652	5.11%	Cash Flow / Fixed Assets	-0.3643	6.56%	IDV: Travel and Leisure Sector	0.1606	2.89%
Medium Sales Ratio	0.2427	4.37%	Long Term Debt / lag Sales	-0.2704	4.87%	Eigenvalue ^c	1.088	-
High Sales Ratio	-0.2235	4.02%	Current Assets / lag Sales	0.2663	4.79%	% of Variance	100%	-
Low expense Ratio	-0.2406	4.33%	Expenses / lag Sales	-0.5992	9.16%	Canonical Correlation	0.72178	-
Dividend Payout Ratio	0.2087	3.75%	Depreciation / lag Sales	0.1695	3.05%	Wilks-Lambda	0.47903	-
Operating Income / Total Assets	0.4703	8.46%	Growth of Dividends Per Share	0.1193	2.15%	χ^2	510.41***	-
Cash Conversion Cycle	0.1432	2.58%	Large Size Firms	-0.1691	3.04%	N	708	-
<i>Model 2: Monitoring firm growth from Q2 to Q3</i>								
Market-to-Book Ratio	0.1403	2.32%	Fixed Assets / Total Assets	-0.3725	6.16%	IDV: Consumer Goods Sector	0.3092	5.12%
Natural Log of Firm Age	-0.2064	3.42%	Current Liabilities / lag Sales	-0.2318	3.83%	IDV: Healthcare Sector	0.1926	3.19%

³ All variables are transformed in to normal scores using Van der Waerden's Formula

^a Standardized Canonical Discriminant Function Coefficients.

^b The variance in a set of variables explained by a factor or component and denoted by lambda. An eigenvalue is the sum of squared values in the column of a factor matrix, or $\lambda_i = \sum_{j=1}^m a_{ji}^2$ where

a_{ji} is the factor loading for variable j on factor i , and m is the number of variables.

Components of the Z-models	Equation Coefficients ^a	Relative Contribution (%) ^b	Components of the Z-models	Equation Coefficients	Relative Contribution (%)	Components of the Z-models	Equation Coefficients	Relative Contribution (%)
Growth of Revenue	0.1542	2.55%	Long Term Debt / lag Sales	-0.2522	4.17%	IDV: Industrials Sector	0.1143	1.85%
Medium Expense Ratio	0.2932	4.85%	Current Assets / lag Sales	-0.3613	5.98%	Eigenvalue	1.625	-
High Expense Ratio	0.5813	9.62%	Expenses / lag Sales	-0.2365	3.91%	% of Variance	100%	-
Return on Equity	0.5911	9.78%	Depreciation / lag Sales	0.1420	2.37%	Canonical Correlation	0.7868	-
Low Market-to-Book Ratio	0.2269	3.75%	Cost of Goods Sold / lag Sales	0.3456	5.72%	Wilks-Lambda	0.3809	-
Cash Flow / Fixed Assets	0.2762	4.57%	Medium Size firms - Dummy	0.1935	3.20%	χ^2	671.25***	-
Net Income Margin	-0.5607	9.31%	IDV: Basic Material Sector	0.2590	4.28%	N	706	-
<i>Model 3: Monitoring firm growth from Q3 to Q4</i>								
Market-to-Book Ratio	0.5599	12.23%	Fixed Assets / Total assets	-0.2462	5.38%	Eigenvalue	1.514	-
Change in Firm Market Value	0.8133	17.77%	Current Assets / lag Sales	-0.6659	14.55%	% of Variance	100%	-
High Sales Ratio	0.4000	8.74%	Depreciation / lag Sales	-0.1382	3.02%	Canonical Correlation	0.7759	-
Medium Sales Ratio	-0.3055	6.67%	Dividends per share	0.1629	3.56%	Wilks-Lambda	0.3978	-
Debt / Equity Ratio	-0.1505	3.29%	Cost of Goods Sold / lag Sales	0.2547	5.56%	χ^2	644.28***	-
Earning Growth	-0.2211	4.83%	Small Size Firms - Dummy	-0.1985	4.34%	N	707	-
High Market-to-Book Ratio	-0.3502	7.65%	IDV: Basic Material Sector	0.1109	2.42%			

*** Significant at 1% significance level.

In model 1: monitoring firm growth from Q1 to Q2

For Financing Predictors; the larger amount of the long term debt will negatively affect the low growth firm and hinder it to move to the next level of growth, because of the high financial burden generated through it (Johnson, 2003) and (Shah and Khan, 2007). In addition, those firms tend to depend on external sources of finance more than internal ones to fund their growth opportunities and to take the tax advantage of an external long term fund. However, if there is no balance between external funds and total assets, this will lead to a decrease in the firm growth. So, moving to next growth level requires the firm to control its reliance on debt related to equity and total assets.

Additionally, higher Operating Cash Flow means that the firm is able to generate a large amount of cash from its operation which can guarantee a future growth, but when comparing Cash Flow to Fixed Assets, it appears that the higher ratio is, the lower the firm growth will be. This high ratio can encourage the managers to invest this generated amount of cash in new investment opportunities which can be non-profitable projects in comparison with previous one. This will negatively affect the growth and decrease it in the long run (Brush et al., 2000). So, in order to move to next growth level, managers have to achieve balance between generated amount of cash flow and its fixed assets and the manager's uses of those available resources have to be monitored.

For Investment Predictors; increasing the amount of the Current Assets will enable the low growth firm to have a quite high level of financial flexibility to meet any sudden or unexpected growth opportunities, and this will enable the firm to take this advantage and shift to the next growth level. In addition, it believes that credit extension is the suitable way to attract new customers and gain large orders to increase sales. So, those firms consider the high Cash Conversion Cycle an invested capital in customers and inventory which will negatively affect the firm's profitability but not its growth (Lazaridis and Tryfonidis, 2006).

For Dividend Predictors; the firm's higher total expenses will generate a negative impact on the firm growth, except the depreciation which indicates an increase in the firm growth. So, if low growth firm wants to move to the next growth level, it has to control its expenses (interest expenses and non-operating expenses) to keep it at a lower level except for depreciation in addition to achieve growth in Dividend Per Share as this will indicate that this permanent increase in the profit will enhance the firm growth in the long run (Lintner, 1956).

For Common Financial Predictors; higher Market-to-Book Ratio indicates that there is an overestimation for firm's stock price and this higher price is not generated from a real performance and this will be observed by investors through substantial evidence and lead to decreasing growth by the time (Fargher and Weigand, 2006). So, if the low growth firm wants to move to the next level of growth, it has to ensure that market-to-book ratio is reflecting its real performance and stock price is not overestimated. In addition, higher Changes in Firm's Market Value signaling to investors; current and new, a good expectation about market estimation for the firm and its future growth opportunities (Varaiya et al., 1987).

Although, lower agency cost; especially for firms with low expense and high sales ratios (Agency Cost) indicates that the firm is able to manage its agency conflict; which will enable it to move to the next growth level. However, this effect can be changed; positively affecting, if the low growth firm achieves a medium level of sales ratio. So, monitoring firm's different levels of expenses and sales ratios will enhance firm's ability to manage its agency cost to move to the next level of growth. Additionally, high Tobin's q ratio indicates that the market value of invested capital is over estimated comparable to its real value, which will lead to decreasing its growth level. So, for moving from Q1 to Q2, a low growth firm has to manage its invested capital to guarantee a real evaluation to its performance.

In model 2: monitoring firm growth from Q2 to Q3

For Financing Predictors; average growth firm has to decrease its dependence on debt; whether it is short or long term to fund its investment projects, in order to shift to the next growth level. In addition, higher return on equity means that the firm is efficient in using its equity by generating large amount of net income which will enable it to move to Q3. Although, the higher Cash Flow/Fixed Assets ratio, the greater the firm's efficiency in managing its generated amount of cash flow in profitable investment projects, which will enhance the firm's growth. However, the older the firm is, the lower its ability to increase its growth. Furthermore, higher Revenue Growth means that the firm's sales are increasing from year to the next year, which reflects the firm's good performance. However, instability of firm's profit not guarantees this relationship.

For Investment Predictors; increasing the firm's dependence on current assets will decrease its ability to move to the next growth level. However, increasing the proportion of fixed assets means decreasing the firm flexibility to capture any sudden or available growth opportunities which will burden its move to Q3.

For Dividend Predictors; average growth firm is affected positively with the production cost and depreciation. In addition, firm's higher total expenses will generate a negative impact on firm growth, except the depreciation and cost of goods sold which indicate an increase in firm growth. So, if average growth firm wants to move to the next growth level, it has to control its expenses; interest expenses and non-operating expenses, to keep it at a lower level.

For Common Financial Predictors; higher Market-to-Book Ratio is a good indicator that reflects the firm's real performance which will attract investors to invest on this firm which will enhance firm growth level. However, this relation is found to be more significant with low market-to-book ratio. In addition, as a result of increasing the growth opportunities, the Agency Cost is increasing too. So, firms with high and medium expense ratio will generate increases in firm growth and will be able to move to the next growth level.

In model 3: monitoring firm growth from Q3 to Q4

For Financing Predictors; there is a negative significant relationship between debt/equity ratio, earning growth and firm growth. This can be illustrated as each firm has the ability to increase its dependence on debt to fund its growth opportunities up to certain points where any additional increase in this ratio will affect its growth negatively (Drobetz and Gruninger, 2007; Campello, 2003; Eldomiaty, 2010), as firms with valuable growth opportunities and high leverage ratio will not be able to take the advantage of those opportunities by additional dependence on outside fund (Harris and Raviv, 1991). So, high growth firm can tend to decrease its debt to equity ratio in order to enforce managers to neglect poor growth opportunities which will eliminate agency cost and enhance its growth through the time. This is the same matter with earning growth (Lang et al., 1999). So, to shift from Q3 to Q4, the firm has to monitor the turning points on its debt to equity ratio and earnings growth.

For Investment Predictors; increasing the firm amount of current assets related to its lag sales will decrease its ability to move to the next growth level. In addition, increasing firm's dependency on large amount of fixed assets creates an inflexible situation and increases the degree of risks faced by the firm which will burden its move to higher growth level.

For Dividend Predictors; the high cost of goods sold comparable to last year sales can be an indicator for enhancing firm's sales this year which will enhance its growth by moving to the next level. However, there is a negative relationship between depreciation/lag sales and firm growth. This means that, firm's expenses and costs

have different effects on firm growth according to the type of expense examined. In addition, high growth firms tend to distribute dividends in order to eliminate faced agency cost and monitoring managerial behavior (Easterbook, 1984). Although, it's a way to eliminate the amount of cash inside the organization (Gomes, 2000) and (Fleck, 1998, 1999) which will enable the firm to shift from Q3 to Q4 of firm growth.

For Common Financial Predictors, high market-to-book ratio is a good indicator that reflects the firm's real performance which will attract investors to invest on this firm which will enhance firm growth level. However, higher firm's market value is a good indicator about market estimation for the firm, which reflects its real performance, which will attract new investors to the firm and enable this firm to shift to the next growth level. In addition, high sales ratio; low agency cost, means that firm's efficiency to manage the conflict resulted from agency. Because of its sensitivity to sales cost, this relation transferred to be positive with medium sales cost.

Cut-Off Points Calculation

The researchers calculate the cut-off points; shown in Table (6), on the Z-Scale using the estimated priori probability ratios. The cut-off points are calculated as $LN(P1/P2)$, where $P1$ is the prior probability of group 1 and $P2$ is the prior probability of group 2 (Hair et al., 2010). The prior probability ratio is an estimate of the proportion of companies with a ratio profile more similar to those of groups 1, 2 and 3. So, as the three groups are different in size, the model can be used operationally.

Table (6): The Cut-Off Point for the three Models

Prior Probability	Quartile no.		Cut-Off Point
	Q 1	Q 2	
Variables related to financial decisions in Model 1	49.9%	50.1%	-0.004
Variables related to financial decisions in Model 2	Q 2	Q 3	0.00
	50.00%	50.00%	
Variables related to financial decisions in Model 3	Q 3	Q 4	0.00
	50.00%	50.00%	

Relative Importance of Financial Decisions:

The value of the discriminant analysis appears when the profile of the final variables shows the relative contribution of each variable to the total discriminatory power of the Z-Score models and the interaction among them (Eldomiaty and Rashwan, 2011). The common approach to the relative contribution assessment is

based on the measurement of the proportion of the Mahalanobis D^2 or the distance between the centroids of the two constituent groups accounted for by each variable (Mosteller and Wallace, 1963; Taffler, 1981, 1983). It can be calculated as follows:

$$P_j = \frac{c_j(\bar{r}_{je} - \bar{r}_{ja})}{\sum_{j=1}^n c_j(\bar{r}_{je} - \bar{r}_{ja})}$$

Where; (P_j) represents the proportion of the D^2 - distance accounted for by ratio j , while $(\bar{r}_{je}$ and $\bar{r}_{ja})$ represents the means of the below-median and above-median groups for ratio j respectively. So, the relative contribution of each variable and financial decision according to different growth levels can be illustrated as follows:

Related to market value factors of firm growth shows the highest percentages comparable to book value factors of firm growth in the three models as it achieves the highest level of importance or contribution in model 3; monitoring firm growth from Q3 to Q4, with 70.12%, however the second highest percentage achieves in model 1; monitoring firm growth from Q1 to Q2, with 64.96 % and then in the model 2; monitoring firm growth from Q2 to Q3, with 56.33%. Moreover, the book value factors of firm growth achieves the highest level of importance or contribution in model 2 with 25.98 %, then in model 3 with 23.13%, and in model 1 with 21.87%.

In addition, the financing predictors achieves the highest importance comparable to other financial decisions in the three models starting with model 2 with 37.63 %, then model 1 with 28.30% and model 3 with 8.12%. Besides, the investment predictors shows great contribution in model 3 with 19.93 %, then in model 2 with 12.14% and then in model 1 with 7.37% . Furthermore, the dividend predictors shows great importance in model 1 with 14.36%, however shows approximate contribution in model 2 and model 3 with 12 % and 12.14% respectively.

The Accuracy-Matrix of the Z-score models

The discriminant analysis requires applying a measure of success; especially in a multi-group case, to determine the accuracy of the classifying group membership (Eldomiaty and Rashwan, 2011), this measure can be called as a classification table or an accuracy-Matrix; where the jack-knife test, or *Lachenbruch Holdout Test* (Lachenbruch, 1967) is the applied statistical technique to examine this. Type I and Type II errors (M_1 ; M_2 respectively) can be easily observed according to the accuracy matrix shown in Table (7); which shows that Type I and II errors are less than the Hits

(Hs) in different groups of firm growth. This result supports the high relative reliability of the estimated discriminant models.

Table (7): The Jack-knife Test, Low-High Growth Firms

Actual Group Membership	No. of cases	Predicted Group Membership	
<i>Model 1: Monitoring firm growth from Q1 to Q2⁷</i>			
		<i>Q1</i>	<i>Q2</i>
<i>Q1</i>	353	308	45 ^a
		87.3%	12.7%
<i>Q2</i>	354	44 ^b	310
		12.4%	87.6%
<i>Model 2: Monitoring firm growth from Q2 to Q3¹⁰</i>			
		<i>Q2</i>	<i>Q3</i>
<i>Q2</i>	354	314	40
		88.7%	11.3%
<i>Q3</i>	354	30	324
		8.5%	91.5%
<i>Model 3: Monitoring firm growth from Q3 to Q4¹¹</i>			
		<i>Q3</i>	<i>Q4</i>
<i>Q3</i>	354	338	16
		95.5%	4.5%
<i>Q4</i>	354	42	312
		11.9%	88.1%

8. Conclusion

This paper examined the contribution of firm's financial decisions to its growth through three steps. The first step started by examining the explanatory power of each decision; financing, investment, and dividend, separately on firm growth, to show the contribution of each decision independently on firm growth. The second step was to examine the synergy explanatory power of the three decisions; because of the difficulty of separating their effects actually in the real life, on the firm growth, which is distributed to four quartiles started by low growth level and ended by high growth level to capture the change on firm's financial decision and the effect of this change

⁷ Percent of grouped cases correctly classified: 87.4%.

^a M₁ is Type I error (α)

^b M₂ is Type II error (β)

¹⁰ Percent of grouped cases correctly classified: 90.1%

¹¹ Percent of grouped cases correctly classified: 91.8%

through different growth levels. The third step was to examine the relative importance of each decision related independent variables for the different monitoring levels of firm growth.

This paper introduces a new development in the intrinsic relationship between firm growth and the main corporate financial decisions. This development is based on understanding the interrelationship between firm's income statement and balance sheet which can be rewritten in a generic way in order to accommodate the well-known measures of firm growth. From the generated equation, the research examined the book-value related factors to the corporate financial decisions. In addition, through collecting the related literature review which examined the effect of one or more of corporate financial decisions on firm growth – according to the researcher knowledge – the researcher chose the other independent variables which are found to be correlated to firm growth; named with market-value related factors.

In addition, this paper examined different measures of firm growth to select the measure with lowest standard error, standard deviation and variance to introduce an accurate measure to firm growth related to Egyptian data; 182 non-financial firms which are listed in Egypt Stock Exchange from year 2000 up to 2010; excluding data from 2011 up to know as a result of researcher expectation for instability in firm's financial performance as a result of the Egyptian Revolution. By monitoring the three models of firm growth levels, the independent variables affecting firm growth are found to be change from one model to another; which means that through the firm's passing with different growth levels, there are many factors affecting it which differ in significant and trend from one level to another.

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