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An Examination of the Capital Structure and Synchronization of Stock Returns

Abstract

The paper examines the signaling effect of corporate financing for the non-financial firm that are listed in Egypt Stock Exchange. The data cover the years 2000 to 2020 annually. The signaling effect uses the synchronization of stock returns.

The analysis of this paper examines the current corporate financial strategies that affect synchronization of stock returns

Model 1 shows that for Debt levels and capacity or leverage ratios, the results indicate that only long-term debt to total assets is found statistically significant and negative with synchronization of stock returns.

Moreover, for model 2, the analysis shows that firm size has great effect on the synchronization of stock returns. The firms' size is examined through dummy variables using the natural log of total assets. The results indicate that corporate size has significant and positive effects on stock return synchronization.

As for the effects of types of industries (Model 3), the results show that the types of industries have no effect on the synchronization of stock returns, since one industry (Broadcasting) out of 39 industries is statistically significant and negative with the synchronization of stock returns and the others 38 industries are not significant.

Key words: Capital Structure, Signaling Theory, Coefficient of determination (R^2), Synchronization of stock returns.

إختبار تأثير إشارات هيكل رأس المال على تزامن عوائد الاسهم

تبحث هذه الدراسة تأثير الإشارة للأداء المالي للشركات على تزامن العائد للشركات غير المالية المدرجة في البورصة المصرية. تغطي البيانات سنويا الفترات الزمنية من 2000 إلى 2020. تبحث هذه الورقة الاستراتيجية المالية الحالية للشركات التي تؤثر على مزامنة عوائد الأسهم يُظهر النموذج 1 أنه بالنسبة لمستويات الدين والقدرة أو نسب الرافعة المالية، تشير النتائج إلى أن الدين طويل الأجل إلى إجمالي الأصول فقط مرتبط بشكل سلبي من الناحية الإحصائية مع تزامن عوائد الأسهم.

علاوة على ذلك، بالنسبة للنموذج 2، يوضح التحليل أن حجم الشركة له تأثير كبير على تزامن العائد المرصود. تشير النتائج إلى أن الشركات الكبيرة والمتوسطة فقط هي التي لها تأثير ايجابي بالتكيف مع تزامن عوائد الأسهم.

أما بالنسبة لتأثيرات أنواع الصناعات (نموذج 3)، فقد أوضحت النتائج أن أنواع الصناعات ليس لها أي تأثير على تزامن عوائد الأسهم، حيث أن صناعة واحدة (البث) من أصل 39 صناعة لها دلالة إحصائية وسلبية مع تزامن عوائد الأسهم. والصناعات الـ 38 الأخرى ليست لها اي تأثير.

الكلمات المفتاحية: هيكل رأس المال، نظرية الإشارة، معامل تحديد (R2)، تزامن العائد.

1. Introduction

What is the meaning of Signaling Theory, when two parties have access to different information, Signaling Theory can effectively explain their behavior? In such cases, one party, the sender has the responsibility to determine how to communicate, or signal, the information, while the other party, the receiver must interpret the signal. (Connelly, Certo, Ireland and Reutzel, 2011)

George Akerlof in 1970 was the first to clarify the Signaling theory by elucidating how the unequal distribution of information between parties during an exchange can occur. His pioneering publication on "Lemons" was the first to systematize the issue of adverse selection.

Spence (1973) augmented Akerlof's theory with the concept of "signal equilibrium", which states that a reputable company can distinguish itself from a disreputable company by sending a recognizable signal to the financial markets. The signal will be considered credible only if the bad company is unable to imitate the good company by sending the same signal. If the expense of signaling is greater for the bad type than the good type company, the bad type may not want to imitate, which would lead to the signal being credible.

Spence (1973) employed the labor market to illustrate the function of education as a signal. Potential job candidates lack knowledge of the quality of the job they seek. As a result, the candidates receive education that demonstrates their value and diminishes the information asymmetry between the parties. This is considered a reliable indication because lower-quality applicants would not have the capacity to endure the rigor of higher education. Spence's model contradicts human capital theory because he diminishes the importance of education in increasing worker productivity, instead focusing on education as a

means to communicate otherwise unintelligible characteristics of the job candidate (Weiss, 1995).

Part of the reason why signaling theory is so popular is that it is easy to understand. A reporter once questioned Spence, who came up with the idea, if he thought it would be possible to get the Nobel Prize in Economics for just noticing that certain industry players don't have all the information they need. (Spence, 2002). Spence said that "no" was probably the right answer, but that what happened at the time was a real attempt to understand how information works in market structures. The complexity of the theory comes from the costs of getting information, which solve information gaps in a wide range of economic and social events.

1.1 Objective of the paper

This paper aims at examining the effects of financing decisions on synchronization of stock returns.

1.2 Research hypotheses

Since the objective of the paper is to examine the current corporate financial strategies that affect return, three hypotheses can be developed as follows.

H1: There is a significant relation between Debt or leverage ratios and synchronization of stock returns.

H2: There is a significant relation between firm's size and synchronization of stock returns.

H3: There is a significant relation between industry classifications and synchronization of stock returns.

2. Literature Review

This section will focus on the literature of the previous empirical studies conducted by various researchers. This chapter introduces the following sections: Capital Structure theory and the emergence of new concepts in capital structure (Capital structure irrelevance theory of Modigliani and Miller, the trade-off theory, the static trade-off theory, the dynamic trade-off theory, the pecking order theory, the agency theory, signaling theory, control driven theory and market timing theory).

2.1 Capital structure signaling theory

Capital structure is an important decision for any company. It is important not because of the need to maximize return on investment, but because of its impact on a company's ability to meet competitive challenges. The most famous capital structure theory is that of Miller and Modigliani (1958, 1963). In their first article, they concluded that capital structure does not affect firm value. Therefore, there is neither an optimal capital structure nor a minimum weighted average cost of capital (WACC). In their second article, they include taxes, arguing that companies should take on as much debt as possible to take advantage of tax cuts and maximize their value.

Important studies of capital structure can be traced back to the famous article of Modigliani and Miller (1958), which led to the emergence of various theories of capital structure over the past 50 years. Researchers often have different views on capital structure. The idealistic assumptions of the capital structure-independent theory force researchers to reconsider the direction of the meaning of financing decisions in relation to firm value.

2.1.1 Capital Structure Irrelevance Theory of Modigliani and Miller

The capital structure irrelevance theory proposed by Modigliani and Miller (1958) is considered as the starting point of modern capital structure theory. Based on assumptions related to investor and capital market behavior, MM shows that firm value is not affected by a firm's capital structure. Securities transactions are carried out in a perfect capital market, and all relevant information is available for insiders and outsiders to make decisions (there is no information asymmetry), that is, there are no transaction costs, bankruptcy costs, and taxes. Companies and individual investors can borrow at the same interest rate, local leverage is allowed, companies operate under similar risk levels and operating leverage, debt payable interest does not save tax, and companies follow 100% dividend payments. Under these assumptions, MM theory proves that there is no optimal debt-to-equity ratio, and capital structure has nothing to do with shareholder wealth. This proposition was introduced by MM (1958) in their seminal article in which they argued that leveraged firms are worth the same as unlevered firms. Therefore, they suggest that managers do not care about the capital structure and can freely choose the composition of debt-to-equity swaps. Important contributions to the MM approach are Hirshleifer (1966) and Stieglitz (1969).

In the second paper, taxes are included in the rationale of Modigliani and Miller (1963). They claim that increasing leverage increases the risk of the firm and thus the cost of equity. However, the company's WACC remained unchanged as borrowing costs were offset by higher equity costs.

2.1.2 The trade-off theory

The word "trade-off theory" refers to a group of theories that are related. In all of these ideas, the people in charge of a business weigh the costs and benefits

of different ways to use leverage. People often believe that an internal solution is found that strikes a balance between marginal costs and marginal benefits. The debate about the Modigliani–Miller theorem led to the first form of the trade–off theory. When Modigliani and Miller (1963) added a corporate tax to their original, unrelated plan, it helped protect tax revenues and gave debt an advantage. Since the company's objective function is linear and borrowing costs are not compensated, this means that it has 100% leverage.

To keep from making such extreme predictions, the cost of debt needs to be balanced out. Bankruptcy is the clear choice. Kraus and Litzenberger (1973) give a classic explanation for the idea that the best way to use debt is to find a balance between the tax benefits of debt and the costs of going bankrupt, called "deadweight costs." Myers (1984) says that firms that use the trade–off theory set a goal for their debt–to–value ratio and then move slowly toward that goal. The goal is set by finding a balance between tax protection for debt and the costs of going bankrupt.

2.1.3 The static trade-off theory

Static trade–off theory is the original version of traditional trade–off theory. This version is called static because it assumes an equilibrium point to balance the positive and negative effects of using leverage. A standard formulation of static trade–off theory has been provided by Bradley et al. (1984). The tax structure adopted is not strictly realistic. For example, tax laws contain important dynamic aspects that cannot be adequately represented in single–period models. However, the model contains some important elements of actual US tax law. Investors are risk neutral and face progressive tax rates on bond wealth at the end of the reporting period. Dividends and capital gains are taxed at a single flat rate. Risk

neutrality drives investors to invest in securities that offer better expectations of after-tax settlement.

At the end of the reporting period, the marginal tax rate on corporate assets remains unchanged. It can deduct interest and principal payments, but investors must pay taxes on these payments when they are received. Debt-free tax shields exist, but cannot be arbitrated between corporations or the state of nature. When companies fail to meet promised debt payments, there are financial burden costs and the “the pie shrinks.”

2.1.4 The dynamic trade-off theory

Dynamic trade-off theory corrects practical problems that can arise in standard static trade-off models. The first dynamic model considering the trade-off between tax savings and bankruptcy costs comes from Kane et al. (1984) and Brennan and Schwartz (1984). Both analyze continuous-time models with uncertainty, taxes, and bankruptcy costs but without transaction costs. Companies hold large amounts of debt to take advantage of tax savings as companies are immediately free to rebalance against adverse shocks. These models reinforce Miller's (1977) point that trade-off theory predicts much higher levels of leverage than are typically in most firms.

To avoid the problem of unrealistically fast rebalancing, Fischer et al. (1989) introduced transaction costs into the analysis of dynamic capital structure. Companies allow their capital structures to deviate most of the time because of transaction costs. If its influence gets out of control, the company will carefully rebalance. They assume that rebalancing will occur at the upper and lower bounds, so that recapitalization will take the form of a "(s, S)" policy. When a company makes a profit, it pays down its debts. When a lower leverage limit is

reached, the company undergoes a recapitalization. If the company's losses lead to increased debt, it will again allow drift until the limit is reached. So, if we look at a lot of data, most of the data reflects drift rather than active rebalancing. This could explain the empirical observation that profits and leverage are negatively related.

2.1.5 The pecking order theory

The pecking order theory has its origins from Myers (1984), who in turn was influenced by earlier institutional literature, including the work of Donaldson (1961). According to Myers (1984), negative selection means that retained earnings are preferred over debt, and debt is preferred over equity. The ranking refers to the adverse selection model of Myers and Majluf (1984). The pecking order theory argues that firms follow a pecking order to obtain different funding sources to maintain financial flexibility, avoid negative signals, and reflect the cost of each preference. The first choice is retained earnings, then debt, and finally external equity.

The pecking order theory goes on to explain that when internally generated funds are insufficient to meet investment needs, firms borrow more funds (Shyam-Sunder and Myers, 1999). This is corroborated by Myers (2001), who finds that a firm's leverage ratio reflects the cumulative amount of external financing, with firms with higher profit and growth opportunities using less leverage. If the company has no investment opportunities, profits are retained to avoid future external financing. Further firms' debt ratio represents the accumulated external financing as the firm do not have optimal debt ratio.

2.1.6 The agency theory

The idea behind agency theory is that managers don't always do what's best for owners. Jensen and Meckling (1976) added to this idea by saying that there are two main conflicts in a company: between managers and shareholders and between shareholders and debtors. First of all, managers are drawn to focus on the profits of the businesses they run for their own benefit instead of the shareholders'. In the second case, debt gives shareholders a less-than-ideal reason to spend. Harris and Raviv (1991) say that shareholders profit when the return on investment is more than the face value of the debt. On the other hand, shareholders' liability is restricted if they use their right to get out of the investment if it fails. This means that the market value of the company is less than the face value of the debt that is still owed.

2.1.7 Control driven theory

Harris and Raviv's (1991) model predict firms with higher liquidation values, such as those with tangible assets, and/or lower investigation costs, are more indebted and more likely to default, but have a higher market capitalization than comparable firms, Liquidate companies with low value and/or high investigation costs. The intuition for higher debt is that the increase in liquidation value makes liquidation more likely to be the best strategy. Therefore, the more useful the information, the higher the level of debt is required. Likewise, a fall in the cost of investigations increases the value of a default, leading to more debt. An increase in debt leads to a higher probability of default.

Harris and Raviv also came up with results on whether an insolvent company was in the process of restructuring or liquidation. They show that restructuring probability decreases with increasing liquidation value and is independent of investigation costs. Using the assumption of constant returns to

scale, they show that debt relative to expected firm revenues, default probabilities, bond yields, and restructuring probabilities are independent of firm size. In conclusion, Harris and Raviv argue that higher leverage may be associated with higher goodwill, higher debt relative to expected revenue, and a lower likelihood of post-default restructuring.

2.1.8 Market timing theory

Baker and Wurgler (2002) attempted to examine the determinants of capital structure related to stock performance, which intuitively extended capital structure theory. Market timing models assume that financing decisions are based on the relative cost of capital structure, which varies over time. Security issuance has long-run effects on capital structure because the capital structure at time t is the cumulative result of previous attempts to time the market. The theory emphasizes that firms prefer equity when relative costs are low, and prefer debt otherwise. Consistent with this assumption, Graham and Harvey's (2001) findings suggest that timing considerations are becoming a top concern for business leaders, with two-thirds of CEOs acknowledging their significant influence in making financing decisions.

3. Research Methodology

A complete profile of the methodology that is followed in the study is determined in this chapter. This includes the research methodology, the research data and variables, the dependent and independent variables used in the research, the definition of the measures, the Sample construction, the model and the Statistical Tests.

3.1 Data and Variables

3.1.1 Data

The data are obtained from Egypt for Information Dissemination (EGID) including the non-financial firm that are listed in Egypt Stock Exchange. The data cover the years 2000 to 2020 annually.

3.1.2 Dependent Variables

This paper examines the synchronization of stock returns (Roll,1988) as follows.

$$\text{Synchronization of stock returns} = \frac{A_j}{B_j^2} \dots\dots\dots (1)$$

Where A_j is the systematic component of market risk β_j . The B_j^2 is the variance of the stock returns.

3.1.3 Independent Variables

The independent variables are (a) short-term debt to total assets, (b) long term debt to total assets

3.2 Model Estimation

The Hausman specification test (Hausman, 1978; Hausman and Taylor, 1981) is needed because the data are cross section-time series panel. The test searches for a correlation between the x_{it} and the un_{it} and is thus performed under the following hypotheses.

$$H_0: \text{cov}(x_{it}, \lambda_k) = 0$$

$$H_1: \text{cov}(x_{it}, \lambda_k) \neq 0$$

Where x_{it} = regressors, and λ_k =error term.

The problem of linearity versus nonlinearity is also addressed and investigated. To evaluate the following hypotheses, the Regression Equation Specification Error, RESET is used (Ramsey, 1969; Thursby and Schmidt, 1977; Thursby, 1979; Sapra, 2005; Wooldridge, 2006)

$$H_0: \hat{\gamma}^2, \hat{\gamma}^3 = 0$$

$$H_1: \hat{\gamma}^2, \hat{\gamma}^3 \neq 0$$

The null hypothesis refers to linearity and the alternative refers to nonlinearity. The estimating equation of the random effect nonlinear model takes the form of Least Squares Dummy Variables (LSDV) that follows.

$$\mathbf{y}_{tk} = \alpha_k + \sum_{i=1}^k \beta_{ik} \mathbf{X}_{itk} + \lambda_k + \nu_{tk}$$

Where $t = 1, \dots, n$

k = number of firms in each group.

\mathbf{y}_{tk} = Synchronization of stock returns

\mathbf{X}_{itk} = (a) short term debt to total assets (b) long term debt to total assets.

λ_k = Random error term due to the individual effect.

ν_{tk} = Random error.

3.3 Statistical Tests

3.3.1 Multicollinearity test

Table 1: The Results for the Multicollinearity test

Variable Name	VIF
Short term Debt/Total Assets	1.556
Long Term Debt/Total Assets	1.901

The results in (table 1) show that there is no Multicollinearity among the independent variables as the values of VIF are less than 5.

3.3.2 Testing for Random Vs Fixed Effects (Hausman test)

Since the data are a cross-sectional time series panel, the Hausman specification test (Hausman, 1978; Hausman and Taylor, 1981) is needed to decide whether the fixed effects model or the random effects model should be used. The test looks for a link between the known x_{it} and the un $_k$. It is run with the following hypotheses.

$$H_0: cov(x_{it}, \lambda_k) = 0$$

$$H_1: cov(x_{it}, \lambda_k) \neq 0$$

Where x_{it} = regressors, and λ_k =error term.

3.3.3 Mixed effect regression model

The mixed effects model can be defined as:

$$Y_i = X_i\beta + Z_i b_i + \varepsilon_i,$$

where Y_i is an $t_i \times 1$ vector of observations for ith market takes the form $[y_{i1}, y_{i2}, \dots, y_{it}]^T$, X is an $t_i \times p$ matrix of covariates, and β is vector of

covariates, and $Z_i, a t_i \times q$ (number of unknown variables) is a subset of X_i , modeling how the response evolves over time for the i^{th} Market. Furthermore $b_i = [b_{i0}, b_{i1}, \dots, b_{i(q-1)}]^T$ is a $q \times 1$ vector of random effects for the i^{th} Market describing unknown market characteristics. ε_i is a vector of residual components, it is usually assumed that the errors $\varepsilon_i's$ are independent and normally distributed with mean vector 0 and covariance matrix $\sigma_\varepsilon^2 I_{m_i}$, and the random effects $b_i's$ are independent of $\varepsilon_i's$, and normally distributed with mean vector 0 and covariance matrix V_b .

$$Y_k = b_o + \sum_i \beta_i * X_i + \varepsilon \quad k=1,2,3$$

Where:

Y_k : stock returns synchronicity

X_i : Two groups of independent variables namely the and optimal indicators of corporate financing decision. (Penman, 1991, 1996, 2003).

β_0 : constant term

β_i : is the regression coefficient for independent variables

ε : is the regression residual term

Each model went through standard statistical tests. Hausman test to choose between fixed and random model. RESET test to check if the linear or non-linear form is appropriate for estimating the model. Heteroscedasticity test to show if residuals is homogenous or heterogenous.

3.3.4 The Results for Hausman Test

H_0 : differences in coefficients are not systematic

H_1 : differences in coefficients are systematic

Table 2: The Results for Hausman Test

Model 1: indicators of Corporate Financing Decisions
chi2(28) = 22.57 (Prob>chi2 = 0.7543)

From the above table (3), we can conclude that the best model for fitting the first model (variables) is random effect model as the p-value associated with the test is larger than 5%.

3.3.5 Linearity Vs Nonlinearity Test (RESET)

The issue of linearity versus nonlinearity is addressed and examined as well. Regression Equation Specification Error Test RESET (Ramsey, 1969; Thursby and Schmidt, 1977; Thursby, 1979; Sapra, 2005; Wooldridge, 2006) is employed to test the two hypotheses that follow.

$$H_0: \hat{\gamma}^2, \hat{\gamma}^3 = 0$$

$$H_1: \hat{\gamma}^2, \hat{\gamma}^3 \neq 0$$

The null hypothesis refers to linearity and the alternative refers to nonlinearity.¹ Ramsey RESET test using powers of the fitted values of dependent variables

H₀: model has no omitted variables

H₁: model has omitted variables

3.3.6 Ramsey RESET test using powers of the fitted values

H₀: model has no omitted variables

¹ $F - \text{statistic} = \frac{(SSE_R - SSE_U) \div J}{SSE_U \div (T - K)}$ where SSE_R and SSE_U are the sum 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.

H_1 : model has omitted variables

Table 3: Ramsey RESET test using powers of the fitted values

Model 1: indicators of Corporate Financing Decisions
$F(3, 12377) = 4.48$ (Prob > F = 0.21776)

From the table (3) above we can conclude that at 95% confident we fail to reject the null hypothesis of the RESET test which means that the linear model fits the data.

3.3.7 Heteroscedasticity test

H_0 : the variance of error terms is constant

H_1 : the variance of error terms is not constant

Table 4: The Results for Breusch–Pagan/ Cook–Weisberg test for heteroscedasticity

Model 1: indicators of Corporate Financing Decisions
$\text{chi}^2(1) = 227074.27$ (Prob > $\text{chi}^2 = 0.0000$)

The results in (table 4) show that the null-hypothesis of the Breusch–Pagan / Cook–Weisberg test for heteroscedasticity is rejected at 1% significance level. That is, the variances of residuals are not constant, which requires the use of the robust estimation in order to estimate the parameters of the models under consideration.

4. Results and Discussion

This section examines and discusses the results of the signaling effect of corporate financing decision versus optimal corporate financing decision.

4.1 Examine the current corporate financing strategies that affect synchronization of stock returns

Table 5: The Results for the Signaling Effects of corporate financing decision using Synchronization of stock returns

Dependent: Synchronization of stock returns			
Variables	Model 1: Main Debt Indicators	Model 2: Size Effects	Model 3: Industry Effects
Debt Levels and Capacity, or Leverage Ratios			
Short term Debt / Total Debt	-0.0324	-0.0558	-0.0528
	-0.0762	-0.9716	-0.9481
Long-Term Debt / Total Assets	-0.230***	-0.134***	-0.196***
	-0.0889	-0.0011	-0.00123
Size Effect			
Natural Log (Proxy for size)		0.343**	
		-0.0968	
Industry Effect			
Basic Resources			0.0401
			-0.251
Health Care & Pharmaceuticals			-0.0261
			-0.183
Industrial Goods,			0.315

Dependent: Synchronization of stock returns			
Variables	Model 1: Main Debt Indicators	Model 2: Size Effects	Model 3: Industry Effects
Services and Automobiles			
			-0.602
Real Estate			-0.00804
			-0.641
Travel & Leisure			-0.101
			-0.314
Utilities			0.203
			-0.244
IT, Media & Communication Services			0.00872
			-0.177
Food, Beverages, and Tobacco			0.0681
			-0.431
Energy & Support Services			-0.123
			-0.304
Trade & Distributors			-0.0771
			-0.346
Shipping & Transportation Services			-0.0221
			-0.199
Education Services			-0.0143

Dependent: Synchronization of stock returns			
Variables	Model 1: Main Debt Indicators	Model 2: Size Effects	Model 3: Industry Effects
			-0.421
Contracting & Construction Engineering			-0.153
			-0.599
Textile & Durables			-0.0744
			-0.352
Building Materials			0.146
			-0.602
Paper & Packaging			0.0079
			-0.273
Constant	0.120***	0.641***	0.915***
	-0.134	-0.172	-0.18
Observations	4200	4200	4200
Number of ID	16	16	16
R-squared	0.2632	0.2503	0.2809
Robust Standard errors in parentheses			
*** p<0.01, ** p<0.05, * p<0.1			

Table (5) reports the results of the analysis of the three models. For model 1, The association between synchronization of stock returns and indicators of corporate financing decision; The R squared of the regression model is 48.1%. This indicates a good fit for the model and the proposed model could infer 48.1% of the total variance in the synchronization of stock returns

With respect to Debt levels and capacity or leverage ratios, the results indicate that only long-term debt to total assets is found statistically significant and negative with synchronization of stock returns. The negative link found in this paper could mean that a firm's market value goes down when it uses a lot of long-term debt. These results give a deeper look into the financial agency signaling theory than before. In other words, the theory says that the use of debt sends signs to the market about how reliable the firm's finances are. In fact, this connection is true up to a point, after which the company starts to see the bad effects of using too much debt.

Beyond these boundaries, there is a negative relationship between the firm's debt and its market value. This tells the market that the company is not able to get the full benefits of using debt financing, such as tax savings or protections. In fact, this negative relationship backs up Heinkel's (1982) claim that if there is a positive relationship between a firm's capital structure and its market value, then there can be a financial agency-signaling equilibrium in which strangers can tell the difference between firms.

Moreover, for model 2, The association between synchronization of stock returns and indicators of corporate financing decision taking into consideration the effect of firm size; the analysis shows that firm size has great effect on the synchronization of stock returns since the R-squared has been increased from 48.1% (Model 1 without consideration of firm size) to 63.3% after applying the firm size in model 2. The two coefficients are statistically significant and positive; these findings are consistent with Eldomiaty's paper. (2004).

As for the effects of types of industries (Model 3), the results show that the types of industries have no effect on the synchronization of stock returns, since one industry (Broadcasting) out of 39 industries is statistically significant and

negative with the synchronization of stock returns and the others 38 industries are not significant.

5. Conclusion

The paper examines the signaling effect of corporate financing decision on synchronization of stock returns for the non-financial firms listed in Egypt Stock Exchange. The data covers annual periods from 2000–2020. This paper examines synchronization of stock returns as the dependent variable, and the independent variables are the Debt (or Leverage) Ratios. Since the data are cross section–time series panel, the Hausman specification test is required to determine whether the fixed or random effects model should be used. random effect model was applied as the p–value associated with the test is larger than 5%. The issue of linearity versus nonlinearity is addressed and examined as well. Heteroscedasticity test was also applied to show if residuals is homogenous or heterogenous.

Model 1 analyzed the association between synchronization of stock returns and indicators of corporate financing decision. Model 2 tested the association between synchronization of stock returns and indicators of corporate financing decision taking into consideration the effect of firm size. Model 3 tested the association between synchronization of stock returns and indicators of corporate financing decision taking into consideration the effect the type of the industry.

Model 1 shows that for Debt levels and capacity or leverage ratios, the results indicate that only long–term debt to total assets is found statistically significant and negative with synchronization of stock returns. So, the first hypothesis is accepted. There is a significant relation between Debt or leverage ratios and synchronization of stock returns.

Moreover, for model 2, the analysis shows that firm size has great effect on the synchronization of stock returns. The firms' size is examined through

dummy variables using the natural log of total assets. The results indicate that corporate size has significant and positive effects on stock return synchronization.

As for the effects of types of industries (Model 3), the results show that the types of industries have no effect on the synchronization of stock returns, since one industry (Broadcasting) out of 39 industries is statistically significant and negative with the synchronization of stock returns and the others 38 industries are not significant. So, the third hypothesis is rejected. There is no significant relation between industry classifications and synchronization of stock returns.

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