Do firms have a target diversification ratio? Evidence from the Tunisian context

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A B S T R A C T

This study explores the diversification strategy adjustment mechanisms of firms that experience substantial changes in their activity for 30 Tunisian companies listed on the Tunis Stock Exchange for 15 years over the period 1997-2011. Adjustments appear to be asymmetric among firms with large increases and those with large decreases in diversification ratios. The different adjustments are due to differences in diversification targets. Speeds of adjustment are found to be affected by firm characteristics. In addition, we show that the Tunisian firms adjust their diversification ratios to a target ratio. Indeed, taking into account the fundamental variables that might explain the strategic orientation of a firm, namely the size, age, free cash flow, and profitability, we have shown that the speed of adjustment is on average between 4 and 5 years. The hypothesis of a partial adjustment is thus verified that it is possible to set target levels diversification.

1. Introduction

The issue of the diversification strategy as the implementation of a set of strategic activities to obtain competitive advantages (Barney and Hesterly, 2008), is a crucial matter, which has attracted the interest of several theoretical and empirical research in recent decades. The problem was examined in several ways without arrived at a final solution regarding the motives and interests of firm diversification. According to Denis et al. (2002), firms adopt different diversification strategy dimensions, either by penetrating new markets "geographical diversification" (Bodnar et al., 1999), or the adoption of simultaneous business operations (Fauver et al., 2004), through the sale of new products in several markets "product diversification," or by ingoing new geographic markets with new (or existing) diversified products (Barwise and Robertson, 1992).

In some cases, companies use geographic diversification as a basic strategy; at the same time, they adopt product diversification, as another important business activity. For example, Marriott International was developed in 49 states in the US housing market with 19 different brands. Similarly, Starwood Hotels and Resorts manages 9 simultaneously brands across 10 different states in the US. Given the proliferation of several companies, in various industries, diversification has become key research to the strategic management investigations (Denis et al., 2002) and its impact on business performance. However, the results of empirical tests of the importance of the diversification strategy in the improvement of the firm growth, have been inconclusive. Another research issue has noted the positive impact of the extent of geographic diversification on the valuation of the company's activity (Bodnar et al., 1999), and this has investigated following the internalization theory (Buckley and Casson, 1976) or theory resource Barney (1991).

From another point of view, by using arguments related to governance theory (Jones and Hill, 1988), free cash flow (Jensen, 1986; Jensen and Meckling, 1976) and transaction costs, several studies have noted the negative effect of geographic diversification (Denis et al., 2002; Fauver et al., 2004) on firm value. By balancing the costs and benefits of diversification, other avenues of research have proposed a U-shaped relationship (Capar and Kotabe, 2003) or reversed U (Kotabe et al., 2002) between geographical diversification and corporate performance.

For product diversification strategy, empirical tests, and theoretical foundations of the effect of strategic choice on the firm performance were

relatively scarce among the strategic research areas. A study by Morgan and Rego (2009) revealed a positive impact on the degree of product diversification on Tobin's Q. However, in another context, Choi et al. (2011) found a negative effect. These seemingly contradictory results of the effect of a diversification strategy on business performance can be caused by specific features of the industry or methodological differences between studies (Capar and Kotabe, 2003; Fauver et al., 2004; Hoskisson and Hitt, 1990). However, the failure to incorporate the effects of interaction with other dimensions of diversification may be critical because of inconsistencies in the results of the relevance of a diversification strategy (Bodnar et al., 1999; Sambharya, 1995). Sambharya (1995) found that the individual effects product and geographical diversification on performance are not significant, while their simultaneous impacts form a curve U.

The ultimate goal of any business is the sustainability of activity, where every company must know how to control and spread the level of its risk. This partition is oriented on the long term rather than the short term. Thus diversification strategy is considered as a reference for maximizing profitability and risk minimization. Each company is able to improve different existing conditions to focus on activity areas in order to achieve a competitive advantage, the highest level of competency, and generating more economies of scale. However, this competitive position is difficult to maintain on a medium and long term horizon without supporting pressures destabilization.

2. Literature review

2.1. The benefits of firm diversification

A company that develops a diversification strategy can benefit from several advantages, and the most known are:

(i) Diversification is a way to increase profitability. Given the economies of scale and synergy effects achieved through the development of interrelated activities or by using shared resources across multiple business lines, it is possible to ensure a better allocation of financial resources, leading to greater profitability.

(ii) Diversification is a way to minimize the risk associated with the dependence of the company on a single business. Indeed, given the cyclical and technological changes that threaten the company's survival with only one activity, by resort to the diversification of products and markets enables the company to meet the saying "do not put all eggs in one basket."

(iii) Diversification is a way to achieve better business growth. Indeed, the choice of specialization activity is limited by the critical size beyond which it is difficult to achieve high levels of growth, in this case, diversification is a logical step in the development of the activity of the business.

2.2. The limits of diversification

Diversification has several difficulties for a firm that adopts this strategic choice. Indeed, a company must often face significant and multiple financing constraints for the development of each activity. This can only be achieved if it uses high debt, which may worsen its solvency and financial stability. On the other hand, using this approach can result in some cases, the non-achievement of expected synergy effects due to the misallocation of resources, dispersion of skills, and lack of coherence between the different activities. Finally, a poorly planned diversification strategy causes employees a strategy of sometimes refocusing with massive divestment operations and the abandonment business, which constitutes a costly choice for the company.

2.3. Motivations to target diversification

Regarding the explanation of why a company diversifies, three theoretical approaches have led to contradictory research results: the approach based on the agency theory, the strategic approach, and the approach based on the theory of stewardship.

2.3.1. The approach of the agency theory

The first approach, rather than financial, is supported by the agency theory (Eisenhardt, 1989; Jensen and Meckling, 1976) and suggests that the existence of a controlling shareholder reduces the level of diversification. According to this perspective, diversification is beneficial for managers because it allows them to reduce the level of personal risk, increase their prestige and power to grow their earnings, and become indispensable (Amihud and Lev, 1981; Jensen, 1986; Shleifer and Vishny, 1986). On the other hand, shareholders prefer to diversify their equity portfolios and want to limit business diversification as it leads to a reduction in the value of the share (Berger and Ofek, 1995; Denis et al., 1997; Lang and Stulz, 1994). Under this approach, so there is a negative relationship between the level of control by shareholders and the level of diversification (Amihud and Lev, 1981).

In addition, analysis of Denis et al. (1997) gave a special perspective on the holding of shares by executives: The level of diversification is negatively related to the percentage of shares held by managers. This confirms the results of Lang and Stulz (1994) and Berger and Ofek (1995) and shows that from the point of view of the governance of a company, it should encourage managers to hold shares as they are also pushed to avoid taking decisions that contribute to a reduction in the share value.

2.3.2. The strategic approach

The second approach, rather than strategic, is based on the principles that inspired the theory of resources. According to this school, the company's interest to diversify using its surplus resources more profitably than selling them on the market. Furthermore, diversification can create synergy effects, producing a leverage effect on key skills, contributing to performance improvement. Diversification also allows for the strengthening of market power.

In this context, Lane et al. (1998) analyzed the relationship between diversification and ownership structure. Their results contradict the words of the agency theory. They demonstrate the non-existence of the link between ownership structure and the level of diversification. The existence of such strong opposition between the result of researchers (Lane et al., 1998; Amihud and Lev, 1981) is widely surprising because they used the same data. Following the results of this contradiction, the subsequent debate led to a controversy between Lane et al. (1999) on the one hand and Denis et al. (1999), on the other hand. These latest forward the idea that a relationship exists between the strategies of diversification and ownership structure. While Lane et al. (1999) maintained the idea that there is no theoretical or empirical evidence that could lead to the belief that shareholder control affects the diversification strategy.

2.3.3. The stewardship theory

A third approach is based on the theory of stewardship, which proposes to refer to the explanation based on the convergence of interests between the principal and the agent without being satisfied with the explanation linked to financial incentives and control. It tends to contradict the agency theory (Davis et al., 1997) or to extend it by showing that managers do not necessarily seek to maximize their personal interest, but their Shares are generally more oriented towards maximizing the value of the company. Managers can give significant value to cooperation. The commitment and motivation are, therefore, the engine of the work of managers. The result is the existence of long-term trust between managers and shareholders.

The stewardship theory has been proposed to provide explanations on the reasons for the diversification of companies other than those provided by the agency theory. Thus, it is possible that managers can decide to diversify the company's business in order to maximize the wealth of the owners whilst allowing the company to achieve a satisfactory level of performance.

In light of the foregoing, the motivations of diversification are much more related to the governance structure and agency problems and company resources. However, Denis et al. (1999) suggested that the relationship between the level of control by shareholders and the level of diversification is an independent empirical question of the chosen theoretical framework. Therefore, the authors called for greater diversification of research across disciplines and national contexts. The research conducted in different countries has actually proposed clarification of the relationship between the ownership structure and diversification. Similarly, Collin and Bengtsson (2000) proposed a new form of governance (capitalist control, by management, by banks and financial groups) they test on a sample of Swedish companies. But their results do not demonstrate the link between governance structure and level of diversification. Gourlay and Seaton (2004) used the results obtained on a sample of British companies to show that the impact of the governance structure of the diversification strategy depends heavily on the type of industry in which the company operates. Therefore, they reject the idea of a single model for the explanation of the diversification strategy.

Ramaswamy et al. (2002) showed a sample of Indian companies and shareholders of different types (government, institutional investors, investors, and foreign banks) whose roles vary across countries, and there is no systematic diversification profile (unrelated diversification) which takes into account of the key variables of the governance structure. Zhang and Li (2006) analyzed a sample of Chinese companies, their results show that government control explains the diversification strategy, but they do not find a relationship between the governance structure and diversification in the case of companies not controlled by the government.

Beyond the differences between countries, another recent line of research has shown that the time factor is a key variable affecting the relationship between the ownership structure and diversification. Singh et al. (2004) explained that the differences in the governance structure between diversified and not diversified businesses, which could be observed in some studies, are related to the fact that businesses are located on different stages of their development. Similarly, Goranova et al. (2007) showed that a longitudinal approach is needed to understand the complexity of the relationship between the ownership structure and diversification strategy.

Related Diversification, unrelated diversification, and the goal of a maximum of diversification strategies establish the extent of the business activities of a company and contribute to its performance. Since Rumelt (1974, 1982), the relationship between diversification and performance has often been studied by strategic management researchers. Lang and Stulz (1994) analyzed the endogenous relationship between diversification and firm performance. This work tested whether low performance in motivating business diversification. Rijamampianina et al. (2003) justified recourse to a diversification strategy for the following reasons (1) Improving the value of shares, (2) The growth of the business (sales), (3) The internal market efficiency (4) The stability of

income flows (5) The improvement of profitability. This suggests that low performance in the broad sense of the term could negatively influence diversification decisions. Because diversification can be seen as an investment behavior, companies could easily diversify into other sectors with sufficient financial resources and generate higher profitability.

Despite the improvement of various aspects of studies, theoretical rationale and empirical results remain contradictory, and the real effects of diversification strategies remain ambiguous. Rumelt (1974, 1982) proposal that the related diversification generates higher results than unrelated diversification is generally accepted by academic research. It is also verified that the diversification related or not, reduce earnings volatility with greater risk reduction effect accompanying unrelated diversification.

However, the results of empirical studies have failed to definitively validate the profitability and risk concepts. Datta et al. (1991) pointed out that these works have neglected in their tests, the structure of the industry (competition, concentration, growth rates, and profitability). This suggests that the diversification strategies of results depend on the specifics of the target industry. Thus, when the characteristics of the latter are ignored, the expected return of a diversification strategy could be insignificant, and associated costs (transaction costs and related loss of efficiency and control) are more important (Jones and Hill 1988).

Theoretical arguments about the profitability of diversification bound and unbound are contradictory. First, Rumelt (1974, 1982) argued that the related diversification generates higher profits as opposed to unrelated diversification, suggesting that related diversification allows a greater transfer of tangible and intangible core capabilities (for example, knowledge, skills, and experience) in the diversified firm (Rumelt, 1974). This reasoning is based on economies of scale and scope and the synergy hypothesis. In this perspective, unrelated diversification requires some high costs from the hazards and environmental risks, which could reduce profits. Bettis (1981) found that related diversification outperforms unrelated diversification by a three-point return on assets. In the same line of research, Palepu (1985) indicated that profitability growth is much more important for the diversification related, as opposed to unrelated diversification. Lubatkin and Rogers (1989) also reported that related diversification has a tendency to produce better returns than the market unrelated diversification.

Furthermore, the Efficient Market Hypothesis promotes unrelated diversification. This hypothesis argued that diversified companies could allocate their resources more optimally than non-diversified businesses. Consequently, these efficiencies allow companies to access external funding relatively inexpensively. Thus, profitability can be improved by independent diversification strategies. In this context, advocates unrelated diversification argue that companies using this strategy investment options more varied than those using related diversification strategies. In addition, Hill and Snell (1988) argued that companies with unrelated strategies realize higher profitability and are in a better position to reduce the cost of capital and optimize investment decision.

3. Research methodology

3.1. The partial adjustment model

The idea behind the partial adjustment model is that, while a dependent variable Y may be related to an explanatory variable X, there is inertia in the system and the actual value of Y_t is a compromise between its value in the previous time Y_{t-1} and the value justified by the current value of the explanatory variable. Let us denote the justified value Y (or target, desired or appropriate value) as Y_t^*.

The partial adjustment model comprises two parts, a static part to describe how the desired amount is determined and the dynamic partial adjustment process:

$$Y^* = \alpha_1 + \alpha_2 X_t + u_t \tag{1}$$
$$Y_t - Y_{t-1} = \lambda (Y_t^* - Y_{t-1}), \tag{2}$$

where y^* is the desired level of y. by arranging Eq. 2 we obtain:

$$Y_t = \lambda Y_t^* + (1 - \lambda)Y_{t-1}. \tag{3}$$

In the partial adjustment model, it is assumed that the actual increase in the depended on variable from time t-1 to time t, $Y_t - Y_{t-1}$ is proportional to the discrepancy between the justified value and the previous value $Y_t^* - Y_{t-1}$. λ is usually described as the speed of adjustment. From Eq. 3, the actual value of the dependent variable is, therefore, a weighted average of the desired value and the previous value. λ logically should lie in the interval 0 (no change at all) to 1 (full adjustment in the current time period. By substituting Eq. 1 in the Eq. 3, we obtain:

$$Y_t = \lambda(\alpha_1 + \alpha_2 X_t + u_t) + (1 - \lambda)Y_{t-1}. \tag{4}$$

When we develop this Eq. 4, we obtain a regression specification in terms of observable variables:

$$Y_t = \lambda\alpha_1 + \lambda\alpha_2 X_t + (1 - \lambda)Y_{t-1} + \lambda u_t, \tag{5}$$

which can be written as:

$$Y_t = \beta_1 + \beta_2 X_t + \beta_3 Y_{t-1} + \lambda u_t,$$

where $\beta_1 = \lambda\alpha_1$; $\beta_2 = \lambda\alpha_2$; $\beta_3 = 1 - \lambda$. Then we obtain:

$$\begin{cases} \alpha_1 = \dfrac{\beta_1}{\lambda} = \dfrac{\beta_1}{1 - \beta_3} \\ \alpha_2 = \dfrac{\beta_2}{\lambda} = \dfrac{\beta_2}{1 - \beta_3} \end{cases}$$

$$\lambda = 1 - \beta_3. \tag{6}$$

4. Empirical test of the partial adjustment model of the diversification strategy

The partial adjustment model describes the variation of the variable diversification from one period to another following as a proportion, δ, of the difference between the current level, DIV_{it} and the desired level DIV_{it}^*.

$$DIV_{it} - DIV_{it-1} = \delta(DIV_{it}^* - DIV_{it-1}) + \varepsilon_{it}. \tag{7}$$

Eq. 7 states that the actual change in the level of diversification of period t, DIV_{it}-DIV_{it-1}, will depend on the difference between the target value; DIV_{it}^* and the actual value of the last period DIV_{it-1} (shifted diversification of a period).

The coefficient δ determines the speed of adjustment, if δ=0, then there will be no adjustment at all, and if δ=1, Eq. 1 reduces to DIV_{it}=DIV_{it}^*, meaning that the adjustment is effected instantly and fully. The values of δ of between 0 and 1 reflect a partial adjustment to a target ratio of diversification. Since the level DIV_{it}^* is unobservable it can be expressed as a function of variables which can be observed.

$$DIV_{it}^* = \sum r_k X_{kit}, \tag{8}$$

with r_k: Target ratios, X explanatory variable could explain the target value.

Step 1 finds variables that might explain the target diversification: In the light of the results obtained from previous estimates, we consider diversification as measured by the entropy diversification index taking into account. Performance achieved values of all the control variables, and we used the following variables: Size, age, FCF, profitability as a proxy of a diversified business profile.

The estimate in Table 1 justifies this choice that these variables are highly significant in explaining diversification.

Table1: Choice of the variables of partial adjustment of the diversification strategy

Dependent Variable: ENTROPIE				
Method: Pooled Least Squares				
Sample: 1997 2011				
Included observations: 15				
Total panel observations 450				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
SIZE	**0.018184**	**0.002993**	**6.075675**	**0.0000**
AGE	**0.002378**	**0.000508**	**4.680341**	**0.0000**
FCF	**1.270088**	**0.193799**	**6.553642**	**0.0000**
PROF	**-0.714597**	**0.261707**	**-2.730527**	**0.0066**
R-squared	0.139547	Mean dependent var		0.333978
Adjusted R-squared	0.133759	S.D. dependent var		0.252418
S.E. of regression	0.234931	Sum squared resid		24.61588
F-statistic	24.11057	Durbin-Watson stat		0.351300
Prob(F-statistic)	0.000000			

Step 2: formulates the econometric model of the target adjustment.

$$DIV_{it}^* = \sum r_k X_{kit} = r_1 \text{ Size} + r_2 \text{Age} + r_3 \text{FCF} + r_4 \text{Prof}, \tag{9}$$

replacing Eq. 8 into Eq. 9, we have:

$$DIV_{it} = \delta DIV_{it}^* + (1-\delta)DIV_{it} + \varepsilon_{it} = \delta r_1 Size_{it} + \delta r_2 Age_{it} + \delta r_3 FCF_{it} + \delta r_4 Prof_{it} + (1-\delta)DIV_{it} + \varepsilon_{it}. \tag{10}$$

With the constant C, the model is then written in its form to estimate:

$$DIV_{it} = C + b_1 Size_{it} + b_2 Age_{it} + b_3 FCF_{it} + b_4 Prof_{it} + b_5 DIV_{it} + \varepsilon_{it}, \tag{11}$$

with, b_1=δr_1, b_2=δr_2, b_3=δr_3, b_4=δr_4, b_5=(1-δ). Knowing these coefficients, it is possible to calculate the speed of adjustment δ and target ratios r1, r2, r3, r4 as follows:

$$\delta = 1 - b_5, \ r_1 = b_1/\delta, \ r_2 = b_2/\delta, \ r_3 = b_3/\delta, \ r_4 = b_4/\delta.$$

Step 3 estimates the adjustment model and interpretations. The estimation of Eq. 3 gives the results in Table 2.

In this case, it is possible to calculate the speed adjustment and the target values as follows:

δ = 0.767844, the speed will be δ = 1-0.767844 = 0.232156, which means a 4.30-year adjustment period. Target ratios are then calculated as follows:

$$\begin{aligned} Size_r &= 0.001767/0.232156 = 0.007611 \\ Age_r &= 0.000892/0.232156 = .003842 \\ FCF_r &= 0.430086/0.232156 = 1.8525 \\ Prof_r &= 0.283363/0.232156 = 1.2205 \end{aligned} \tag{12}$$

The results of empirical tests show that Tunisian firms adjust their diversification ratios to a target ratio. Indeed, taking into account the fundamental variables that might explain the strategic orientation of a firm, namely the size, age, free cash flow, and profitability, we have shown that the speed of adjustment is on average between 4 and 5 years. This means that a target diversification strategy can be achieved on a medium-term horizon under the stress of a high level of free cash flow and profitability. Target ratios of size and age are low, indicating that their adjustment is increasingly long compared to other ratios. The hypothesis of a partial adjustment is thus verified that it is possible to set

target levels diversification. This result is a new visualization of the problem of the determinants of diversification strategy of a company through a dynamic perspective that takes into account both the current constraints and the medium and long term goals of the firm.

Table2: Estimation of the hypothesis of partial adjustment of the diversification strategy

Dependent Variable: ENTROPIE				
Method: Pooled Least Squares				
Sample: 1997 2011				
Included observations: 15				
Total panel observations 449				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
Intercept	0.026232	0.087104	0.301152	0.7634
RENTRO	**0.767844**	**0.028812**	**26.64999**	**0.0000**
SIZE	-0.001767	0.010560	-0.167346	0.8672
AGE	**0.000892**	**0.000336**	**2.651607**	**0.0083**
FCF	**0.430086**	**0.138898**	**3.096423**	**0.0021**
PROF	**-0.283363**	**0.163661**	**-1.731398**	**0.0841**
R-squared	0.669474	Mean dependent var		0.333851
Adjusted R-squared	0.665744	S.D. dependent var		0.252686
S.E. of regression	0.146090	Sum squared resid		9.454618
F-statistic	179.4579	Durbin-Watson stat		2.055922
Prob(F-statistic)	0.000000			

5. Conclusion

For the final test, the results show that the Tunisian firms adjust their diversification ratios to a target ratio. Indeed, taking into account the fundamental variables that might explain the strategic orientation of a firm, namely the size, age, free cash flow, and profitability, we have shown that the speed of adjustment is on average between 4 and 5 years. The hypothesis of a partial adjustment is thus verified that it is possible to set target levels diversification.

Compliance with ethical standards

Conflict of interest

The authors declare that they have no conflict of interest.

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