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Investigation of the association between entrepreneurship life cycle, ownership structure and market timing theory

Empirical evidence from Tunisian and French context

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Received 2 September 2019
Revised 9 October 2019
13 December 2019
22 December 2019
24 December 2019
9 January 2020
Accepted 4 February 2020

Abstract

Purpose – The purpose of this study is to explore at what stage of a company's life cycle the theory of market timing has explained debt. Drawing on a unified conceptual framework of market timing theory, the authors scrutinize the impact of life cycle and ownership structure on the market condition.

Design/methodology/approach – Based on a sample of 24 Tunisian companies listed on the stock exchange and 100 French firms listed on the CAC All-Tradable on a 10-year period, this paper grounded the market timing theory and attempted to clear the relation between ownership structure, life cycle of the firm and market timing theory by statistical analysis.

Findings – The findings of panel data modeling indicate that when the life cycle was used as an explanatory variable, it was found that the variable reflecting the market timing is not significant in either context; it means that no significant support is found in the theory of market timing in both countries. Whereas when the life cycle was used as a dummy variable, it was found that the life cycle has an impact on debt only in the Tunisian context.

Practical implications – This study has several important implications for researchers and practitioners. The findings reported here clarify the strength of the impact of life cycle on the market timing, when it explains the debt in the two contexts and the impact of ownership structure such as the managerial ownership and concentration of capital on debt.

Originality/value – This study contributes to examine the theory of debt in different phases of life cycle. Focused on the case of Tunisian and French firms, this study is unique and valuable.

Keywords Market timing, Corporate finance, Entrepreneurship life cycle

Paper type Research paper

Introduction

The pecking order theory based on the asymmetry of information suggests that the companies do not have leverage targets. They use debt as one last resort when retained

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Asia Pacific Journal of Innovation and Entrepreneurship
Vol. 14 No. 1, 2020
pp. 107-122
Emerald Publishing Limited
e-ISSN: 2398-7812
p-ISSN: 2071-1395
DOI 10.1108/APJIE-09-2019-0064

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earnings are insufficient and external stockholders' equity is a rising. More recent models of the capital structure choice include "windows of opportunity" and "the optimism of management" (Heaton, 2002). Baker and Wurgler (2002) suggest that the managers could minimize the cost of the capital by timing the market (issue of shares when stock exchange increases), which implies that the market rates influence the pecking order. However, Hovakimian (2006) shows that the timing of equity issuance does not have long significant durable impact on the structure of the capital. In a search of the factors which the managers consider to decide the composition of financing of a company many studies examine the role of several factors specific to the company.

These past years, much attention was devoted to the theory of the market timing which was introduced by Baker and Wurgler (2002). This theory suggests that the companies are more likely to emit equity when their values of market or share prices are high compared to booking and the last values of the market and to repurchase equity when their values of market or the prices of the actions are low. The positive abnormal return before the stock issue date can be because of the over-optimism of investors or be motivated by mispricing caused by managers. In Brazil, recent evidence indicates that firms generally manage their earnings to increase them, and this occurs more often around the share offering date with the objective of obtaining the best price (Domingos *et al.*, 2017). This behavior of financing implies that companies prefer external equity when the equity's cost is low. However, companies prefer debt when the cost of equity is high. On the basis of above-mentioned theoretical assumption, various researchers (Frank and Goyal, 2003; Huang and Ritter, 2005; Hovakimian, 2006; Mahajan and Tartaroglu, 2008) tried to find evidence empirical for the existence of the behavior market timing on different capital markets. Using an international sample (Tunisia and France) extracted from the Worldscope database for the period 2005-2014, we perform Fama–MacBeth regressions as well as generalized method of moment to test our hypotheses about the role of life cycle stages on the firms' leverage. Our results confirm the relevant role of the factor and provide information on the differential effect of variables across stages. This constitutes our main contribution: why firms choose different levels of debt in different stages of their lifecycles. Unlike the previous study by La Rocca *et al.* (2011) in which age is the criterion to distinguish between three life cycle stages, we use a measure that considers the ability of generating turnover at the different business levels of the firm. And this criterion allows us to identify three stages. Besides, our work is applied to quoted firms, while in La Rocca *et al.*'s (2011) study, only small and medium-sized firms are considered. Therefore, we contribute to two main research lines (market timing theory and business life cycle), by adding a dynamic factor to explain the choice of leverage by managers.

Literature review and hypothesis development

Market timing is one of the primary aspects that shape financing decisions. The market timing model does not appear to contradict trade-off theory. Both models predict that firms issue equity when their market performance is high. The market timing model states that firms have incentives to emit equity when their evaluations of market are relatively higher than their book values or past market values (Taggart, 1977; Baker and Wurgler, 2002). Most direct tests of market timing behavior are based on the positive relation between market valuation or past stock returns and equity issuance activities. There is well-documented evidence that firms time their security issuance decisions according to equity markets. The companies tend to emit equity when the cost of equity is low or when the values of market are relatively higher than their book values or past market values. Frank and Goyal (2003) declared that the theory of market timing cannot be regarded as a theory of

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the capital structure because there is no sufficient empirical evidence to test the theoretical assumptions of this theory. Asquith and Mullins (1986) find that firms tend to emit equity following a rise in their stock prices. Hovakimian *et al.* (2004) support the premise that high stock returns increase the probability of equity issue. Gomes and Phillips (2012) find that market timing behavior is an important characteristic of public equity markets and demonstrate that the probability of a firm issuing equity increases with higher stock return in the previous year. In an influential study, Baker and Wurgler (2002) ask how equity market timing affects capital structure. If equity market timing has only a short-term impact on capital structure and firms subsequently rebalance the effects of market timing decisions, market timing would have no persistent effect on capital structure over long time horizons. Whether or not market timing attempts have a lasting impact on capital structure is the key point of contention in Baker and Wurgler (2002). They measure the external finance weighted-average (EFWA) market-to-book (MTB) ratio, which summarizes the relevant historical variation in market valuation. They find that the explanatory power of EFWA MTB ratio increases with the time horizon and it remains highly significant even when the market timing variable alone is lagged by 10 years. These results lead Baker and Wurgler (2002) to conclude that managers prefer to raise capital when the market values are high relative to the book values. More importantly, capital structure is the cumulative result of attempts to time equity markets rather than the result of dynamic adjustments toward the target leverage:

H1. MTB_{tim} is negatively correlated with debt ratio (Flannery and Rangan, 2006).

A potential criticism of Baker and Wurgler's (2002) findings is that the MTB ratio indicates mis-valuation based on public information only but ignores the probability that managers have private information which allows them to time their equity issues. Jenter (2005) finds supportive evidence that MTB ratio is also a strong indicator of insider trading and documents more equity issues among firms with high MTB ratios. Furthermore, Chang *et al.* (2006) support the view that Baker and Wurgler's (2002) market timing variable best explains the capital structures for firms with fewer analysts. Leary and Roberts (2005) find that the market timing's or equity stock price's effect on leverage revealed by Baker and Wurgler (2002) and Welch (2004) is more possible to be because of adjustment costs and demonstrate that the effect of equity issues on firms' leverage is erased within two to four years by debt issues. This is inconsistent with the conclusion in Baker and Wurgler (2002). Hovakimian (2006) further comments on Baker and Wurgler's (2002) finding that although firms have the incentive to time the market, the effects of equity transactions on capital structure are small and transitory and this indicates that equity timing issue transactions are unlikely to be responsible for long-lived effects of MTB ratios on firms' capital structure. Alti (2006) suggests that the effects of market timing are short-lived for initial public offering (IPO) firms by showing that the effect of equity market timing on IPO firms' leverage has vanished by the end of the second year. Similarly DeAngelo *et al.* (2010) find that equity issuers are not in fact firms with more investment opportunities and that those firms with high MTB ratios fail to issue stock which is inconsistent with the market timing model. Using international data, Kim and Weisbach (2008) show that when firms have higher MTB ratios, insiders are more likely to take advantage of the high valuations to sell off some of their shares. According to Baker and Wurgler, the importance of historical MTB ratio in explanation of capital structure contradicts the trade-off theory. In addition, if firms' growth opportunities are measured with error by the current MTB ratio then historical MTB ratio can be a firm characteristic that also captures growth opportunities. The dynamic trade-off models (Fischer *et al.*, 1989) suggest long adjustment periods and large deviations

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from target capital structure in the presence of even small costs of adjustment. Thus, slow adjustment imposes a relation between historical ratios and leverage. The simulations of Hennessy and Whited (2005) suggest that in a dynamic trade-off model with no adjustment costs, historical MTB ratio is inversely related with leverage. In the same way, Liu (2005) and Hovakimian (2006) argue that a negative coefficient for historical MTB ratio is more reliable with models of trade-off with adjustment costs than with the equity market timing hypothesis. However, Chen and Zhao (2004) argue that past MTB ratios may explain leverage through persistent financing policies, which is more reliable with market timing hypothesis.

More specifically, a high MTB ratio indicates an overvaluation of the stock price and creates an incentive for the firms to issue new stock. The issue of new stocks means a lower debt ratio and thus we expect a negative correlation between MTB ratio and debt ratio:

H2. The MTB ratio is negatively correlated with debt ratio.

A recent development is the examination of the relationship between the capital structure and ownership structure with the associating impact on corporate governance and the value of firm; this is a major deviation from the traditional finance field of capital structure.

Claessens *et al.* (2002) predict that large controlling shareholders increase firm value. Demestz and Villalonga (2001) find no relationship between the capital concentration and firm performance. Dimitris and Psillaki (2010) summarize the contrasting effects of efficiency on capital structure using two hypotheses: the efficiency-risk and franchise value hypotheses. They believe the role of ownership structure and leverage on firm value. To resolve the agency problems, the external block holders reduce the managerial opportunism by using higher debt ratio as a control mechanism of manager's performance. At a low level of managerial ownership, it is positively related to debt-equity ratio, assuming that managers use more debt, possibly seeking for higher returns on equity or higher stock price by leveraging. Myers (1984) provides a negative relationship between profitability and leverage; he finds that firms prefer to finance new investments with internal funds rather than debt. Chung and Kainan (2015) analyze the dynamic relations between institutional ownership and a firm's capital structure. They conclude that firm's leverage decreases when institutional ownership increases and that firm decrease its debt level as institutional investors substitute for the monitoring role of debt. Their results prove that firm's suboptimal leverage decreases when the institutional ownership increases, and institutional ownership decreases when a firm's suboptimal leverage increases.

Driffield *et al.* (2005) observed the existence of a strong relationship between the capital structure and the entrepreneurship ownership structure, they argued that irrespective of whether this is family-owned or not, an increase in ownership concentration is associated with increase in leverage level of the firm. This result was supported by the findings of Cespedes *et al.* (2010) when they observed a positive relationship between leverage and ownership concentration. Margaritis and Psillaki (2010) observed that the leverage level of a firm increased with the outside owners and that these group of investors promote the use of debt finance, in other words, the use of leverage rather than equity; this result was supported by the results of Poyry and Maury (2010) and Pindado and Ganguli (2012). Zeitun (2014) in the study of the effect of ownership concentration on performance of the firm in five Gulf Cooperation Council countries (Qatar, Kuwait, Saudi Arabia, Bahrain and Oman) observed that ownership structure have some impact on the performance of the firm, that ownership structure affect performance positively and significantly and a firm's capital structure has no effect on performance while the age and size of the firm have positive and significant effect on performance:

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H3a. The BLOC 3 has a positive impact on long-term debt (LTD).

H3b. The managerial ownership has a positive impact on the leverage.

H3c. The institutional investors have a positive impact on the leverage.

Al-Najjar and Clark (2017) found a negative correlation between the size of the board of managers and the level of cash holdings, showing that firms hold less cash to reduce agency costs. External corporate governance activities are important in cash management decisions as firms in countries that have international standards of securities law and banking supervision to keep less cash. Chen (2016) showed that managers at the maturity stage are more willing for profit management, so the quality of internal controls at this stage can help improve the quality of earnings, yet such a thing is not in the process of growth and decline.

Nagar and Radhakrishnan (2015) stated that firms manage their profits through real activities in the growth and maturation stages, whereas they do not do so at the stage of emerging, which affects their future performance. Life cycle theory assumes that like all living organisms, firms and economic enterprises have a life curve or life cycle. Business enterprises face fluctuations given the economic, social and political conditions governing the external environment and internal management conditions over their lifetime, forming the life cycle of the firm. Theorists of economics and accounting have divided the firm's life cycle into several stages according to criteria such as firm's age, sales changes, capital expenditures, dividends and other factors (Akbarzadeh and Heidari Pahlavian, 2016). Under the conditions where financial and operational conditions of the firms differ significantly in different stages of their life cycles, they will pursue specific policies according to each stage of their economic life. For a young firm, the liquidity need goes up because of the improvement in the ability to serve as it moves from the initial stage to maturity. This move also increases the amount of debt, and a young firm needs more capital to advance its investment goals in the move from birth to maturity. On the other hand, with the reduction of the internal cash and cash funds, the firm will move toward the state of weakness and stagnation. The evidence in the study by DeAngelo *et al.* (2010) indicates that both market-timing opportunities and stage of corporate lifecycle have statistically material influences on the decision to behavior an seasoned equity offering (SEO) but the lifecycle result is quantitatively stronger and individually and collectively the explanatory influence of the two effects is modest, contrary to Kim and Weisbach (2008). Furthermore, we find that cash stockpile of SEO proceeds is the exception and not the rule, as mainly issuers would have run out of cash by the year after the SEO had they not expected the offer income and an overwhelming majority would have had below normal cash balances without those proceeds.

The period of time coincides with booming economy and is highly heavy upwards of a business cycle (B-cycle). The companies in the investigation have high proportion of tangible assets and show a high profitability compared to other studies. These are attractive circumstances to be in and further enables the companies to be proactive and in control of their capital structure. When capital structures are studied, the image of a certain point in time is usually used and several moments constitute time series of data. During the application of the theoretical framework, it is beneficiary to visualize the firm being in motion. A company may have a target level of debt that they have decided upon through usage of the trade-off theory. However, they can just as well be believers of the pecking order the consequence there of has a clear time aspect though. If they, for example, wish to decrease their leverage, they can limit themselves to reach that goal using only retained earnings, it will just take more time. It is not known what impact the B-cycle has across all these theories in explaining capital structure variation. Possibly, diverse phases of the B-

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cycle and diverse phases of the macro economy may show related patterns which might guide firms to make similar financial decisions:

H4. The life cycle has an impact on the debt decision.

H4a. Age has a negative impact on the leverage.

Methods

Data collection and sample selection. This study aims to analyze the relationship between the ownership structure, market condition and the entrepreneurship life cycle. To achieve this goal, we considered 24 Tunisian companies listed on the stock exchange and 100 French firms in the CAC All-Tradable on a 10-year period (2005-2014).

Measurement. Two measures of LTD ratio are proposed: the first is book leverage (BL) which measures the level of debt as the ratio of LTD over the sum of book LTD and book equity [BL = LTD/(LTD + Book equity)]; and the second measure uses a market leverage (ML) of the debt ratio by substituting book equity by market equity [ML = LTD/(LTD + market equity)].

Independent variables. For the independent variable, we chose the explanatory variables on the basis of their implications and explanations of the three theories mentioned above. We distinguish three categories of variables: variables directly related to the proposed theory, variable of life cycle and control variables. Consistent with previous empirical works, we use in our research the following variables:

The market timing (MTB_{tim}): To test the market timing hypothesis following Baker and Wurgler (2002) and Mahajan and Tartaroglu (2008) the EFWA MTB ratio is used. MB_{tim} which is the weighted average of the past MTB ratios starting with the first available observation to date *t*-1. Defined by Baker and Wurgler as follows:

$$\mathrm{MTB}_{\mathrm{tim.t-1}} = \frac{\sum_{s=0}^{t-1}(e_s + d_s)MBs}{\sum_{r=0}^{t-1}(e_r + d_r)}$$

Where *e* and *d* denote, respectively, the net equity issue and the net debt issue. According to Hovakimian *et al.* (2004), MB_{tim} is weighted average of a time series of past MTB ratios.

Market-to-book ratio. This ratio is often seen as a proxy of investment opportunities but may also be related to market mis-pricing of equity (Rajan and Zingales, 1995). According to the market timing theory, MTB should be negatively correlated with leverage and changes in equity. In accordance with Baker and Wurgler (2002), firm-years with an MTB ratio exceeding 10 will be dropped. This variable will also be used as a control variable for growth opportunities in the regression when the historic MTB measure is used to account for the effect of equity mis-pricing (Baker and Wurgler, 2002).

Variable of ownership structure. Concentration of ownership (BLOC 3). According to Stulz (1988). Harris and Raviv (1988) concentrated ownership incites blockholders opportunism who use debt to increase their power by dominating more resources. We measure concentration of ownership by BLOC 3 calculated as the sum of the capital held by the three main shareholders (Demsetz and Lehn, 1985).

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Managerial ownership ratio. In contrast, managerial ownership encourages directors to use less debt to limit the company's bankruptcy risk (Jensen *et al.*, 1992; Mehran, 1992). We measure managerial ownership by the sum of the capital held by the manager.

Institutional investors. According to Tong and Ning (2004), institutional investors differ from individual investors as they are more effective in monitoring the firm's management performance and they are better informed because of their ability to access different information resources. In addition, they are taxed differently and they make investments on behalf of other investors. In the same vein, Ozkan (2006) argued that institutional investors are different from individuals as they hold more equity shares and they manage large amounts of investment funds. Hence, institutional investors play a key role in monitoring firms that they invest in. This is because the benefits from such monitoring are likely to be higher than the related costs. Jensen (1986) and Pound (1988) argued that institutional investors can help minimize agency costs and effectively monitor a firm's performance.

Variable of life cycle. Age: Age is computed as the logarithm of the difference between the year t and the year in which the firm was founded (Zender and Lemmon, 2003; La Rocca *et al.*, 2011). In the trade-off theory, age is considered to reflect a stronger firm's market base. The firm better manages its cash flows requiring less debt (Ramlall, 2009).

Business cycle.

B-cycle is classified into three phases: growth, maturity and decline. We divided the sample into three sub-samples (B-cycle G, B-cycle M and B-cycle D). This variable is used as a priori criteria:

$$\begin{cases} \text{B- cycle G=1 if } \Delta \text{ turnover} > 0 \\ \qquad\qquad =0 \quad \text{otherwise} \\ \text{B-cycle M =1 if } \Delta \text{ turnover} = 0 \\ \qquad\qquad =0 \quad \text{otherwise} \\ \text{B- cycle D= 1 if } \Delta \text{ turnover} < 0 \\ \qquad\qquad =0 \text{ otherwise} \end{cases}$$

Retained earnings/total equity and retained earnings/total assets. RETE is retained earnings to total equity ratio and RETA is retained earnings to total assets ratio (as proxies of life cycle).

Control variables. Size: The size of the company is potentially something that could influence their capital structure. For example, big companies more diversified and could hence be considered safer debt holders. The logarithm of sales is used as a proxy for size, in accordance with previous research (Baker and Wurgler, 2002; Mahajan and Tartaroglu, 2008).

Tangibility. This is a measure of tangibility (*TANG*) which might be correlated to leverage, as the more tangible assets a company owns, the larger debt it should be able to hold. This is because of the fact that assets could serve as collateral and therefore decrease the agency cost of debt (Baker and Wurgler, 2002; Rajan and Zingales, 2007). As stated above, the use of total assets as denominator is to enhance the comparability between different firms and years.

Profitability. Another factor that might be correlated with leverage is profitability (*PROF*), as it is associated with the availability of internal funds (Baker and Wurgler, 2002).

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This would according to the pecking order theory, be associated with less leverage (Myers, 1984; Myers and Majluf, 1984). Earning before inetrest, tax, depreciation and amortization is also scaled with total assets to increase the comparability.

Statistical procedure

Panel data analysis and two-stage least squares regression analysis are applied to test the research hypotheses, determine the effect of ownership structure on firm performance and examine the relationship between these variables. The use of panel data model is based on the research of De Miguel *et al.* (2004), Zeitun and Tian (2007) and Shen and Lin (2009). The statistical calculations and analyses are done using Stata. Panel data involves the pooling of observations on a cross-section of units over several time periods and provides results that are simply not detectable in pure cross-sections or pure time-series studies. The panel regression equation differs from a regular time-series or cross-section regression by the double subscript attached to each variable. The models for panel data are powerful research instruments, which give the researcher the ability to take into account any kind of effect that the cross-sectional data may have, and finally to estimate the appropriate empirical model. Another advantage of using the panel data set is that, because of the several data points, degrees of freedom are increased and co-linearity among the explanatory variables is reduced; thus, the efficiency of economic estimates is improved. The Hausman test was carried out to determine whether the fixed effect model or the random effect model is more appropriate for this study.

Table I presents the descriptive statistics calculated for the research variables. According to the table, 240 firm-year observations from Tunisian context and 1,000 firm-year observations from French context have been studied. Mean BL and ML in the research sample are, respectively, 19.98 and 16.04 per cent in Tunisia while 32.5 and 26.13 per cent in France. These results show that the level of LTD is widely dispersed but with a tendency less than 50 per cent. The average MTB timing *(MTB_{tim})* is 1.636 with a minimum value of −16.530 and a maximum of 70.135, while in the French context, the average MTB_{tim} is 1.243 with a minimum value of −39.774 and a maximum of 39.999. The companies of the Tunisian sample seem to profit from very good future growth prospects, given that the ratio average "market-to-book" lagged is of 2.650 and for the French sample is of 2.043. According to the market timing theory, the high proportion of MTB encourages companies to issue new equity. Means of the ownership concentration *(BLOC3)* are 21.11 and 44.35 per cent, respectively, in Tunisia and France. The empirical analysis of the distribution of property titles shows that the ownership structure of the firms in our sample is concentrated. In addition, the managerial ownership *(MSO)* is relatively less important (5.2 per cent of the capital is on average in the hands of officers in Tunisian companies and 6.58 per cent in French firms). Also the part of institutional investors is important; the average of this variable is 44.33 and 33.23 per cent in Tunisian and French companies, respectively. The average age of Tunisian companies *(Ln AGE)* is 3.556 and the average age of French companies is 3.6. Concerning the two proxies of life cycle (*RETA* and *RETE*), we see that the average rate, respectively, of 0.033 and −0.029 shows that most of the sample firms are in the growth phase in Tunisian context and the average rate of 19.52 and 50.14 per cent, respectively, shows that most of the sample firms are in the mature phase in French companies.

From the descriptive statistics, it was found that 36.67 per cent of Tunisian companies were in the growth phase *(B_CYCLE G)*, 26.67 per cent reached maturity (*B_CYCLE M)* and 36.67 per cent declined *(B_CYCLE D)* and 40.3 per cent of French companies were in the growth phase *(B_CYCLE G),* 14.3 per cent reached maturity *(B_CYCLE M)* and 45.4 per

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Country	Variables	N	Min	Max	Mean	SD
	BL	240	0	0.9752	0.1998	0.2173
	ML	240	0	0.8115	0.1604	0.2080
	MTB_{tim}	216	−16.530	70.135	1.6369	6.9574
	MTB	216	−1.5328	26.988	2.650	3.4280
Tunisia	*BLOC3*	240	0	0.9	0.2111	0.2293
	MSO	240	0	0.685	0.052	0.1244
	II	240	0	0.9166	0.4433	0.2570
	RETA	240	−0.3812	0.2384	0.033	0.095
	RETE	240	−3.5656	0.4125	−0.029	0.4577
	AGE	240	0.6931	4.4886	3.5563	0.4891
	SIZE	240	16.5594	21.4281	18.0733	0.9294
	PROF	240	−0.1575	0.3751	0.1038	0.092
	TANG	240	0.0001	0.6834	0.2594	0.1723

Variables	Modality	Frequency	(%)
B-CYCLE G	1: Growth phase	88	36.67
	0 : otherwise	152	63.33
B-CYCLE M	1 : Maturity phase	64	26.67
	0 : Otherwise	176	73.33
B-CYCLE D	1 : Decline phase	88	36.67
	0 : Otherwise	152	63.33

Country	Variables	N	Min	Max	Mean	SD
	BL	1,000	−0.1946	1.2855	0.3250	0.2124
	ML	1,000	0	0.93009	0.2613	0.2071
	MTB_{tim}	900	−39.77453	39.99953	1.24347	3.680351
France	*MTB*	900	−1.86936	26.12175	2.04316	1.839478
	BLOC3	1,000	0.005	0.996	0.44359	0.24005
	MSO	1,000	0	0.83	0.44359	0.24005
	II	1,000	0	0.91	0.33236	0.29076
	RETA	1,000	−0.88743	2.07388	0.19511	0.22089
	RETE	1,000	−7.033673	21.17315	0.50107	1.17492
	AGE	1,000	0	5.303305	3.60007	1.09176
	SIZE	1,000	15.8169	26.3043	22.4568	1.73611
	PROF	1,000	−0.128236	0.954424	0.10256	0.06260
	TANG	1,000	0.000558	0.971913	0.220578	0.20340

Variables	Modality	Frequency	(%)
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B-CYCLE M	1 : Maturity phase	64	26.67
	0 : Otherwise	176	73.33
B-CYCLE D	1 : Decline phase	88	36.67
	0 : Otherwise	152	63.33

Notes: BL: Book leverage; ML: market leverage; $\mathrm{MTB}_{\mathrm{tim.t-1}} = \dfrac{\sum_{s=0}^{t-1}(e_s + d_s)MBs}{\sum_{r=0}^{t-1}(e_r + d_r)}$. MTB: market value of equity/book value of equity; BLOC 3: the sum of the capital held by three main shareholders; MSO: managerial ownership by percentage of shares held by executive officers; II: institutional investors; RETA: retained earnings/total assets; RETE: retained earnings/total equity; *Age:* the logarithm of the difference between the year t and the year in which the firm was founded; Size: in total asset; Prof: the profitability; *Tang:* property, gross planet and equipment/total asset; B-cycle is classified into three phases: growth, maturity and decline. It takes a value of 1 and otherwise 0

Table I. Statistic descriptive

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cent declined *(B_CYCLE D)*. Mean value of the size of companies *(SIZE)* is 18.073 per cent in Tunisia and 22.45 per cent in France. As to profitability (*PROF*), it is recorded that the average return on assets in place during the study period amounted to 10.38 and 10.2 per cent, respectively, in Tunisian and French companies, which is not very efficient.

Tables II and III present the correlation matrix. We calculated the correlation coefficients of Spearman. Based on the work of Kervin (1992), multicollinearity occurs when the correlations between variables are high (above 0.7) for the studied concepts are often linked. Overall the level of correlation between variables is low. The highest coefficient 0.7634 corresponds to the positive relationship between MTB and MTB_{tim} in Tunisian context and 0.4588 correspond to the positive relationship between RETA and profitability in French context.

Table II.
Panel A: Tunisian correlation analysis

	MTB	*MTB_{TIM}*	*RETA*	*RETE*	*LNAGE*	*BLOC3*	*MSO*	*II*	*Taille*	*Prof*	*Tang*
MTB	1.0000										
MTB_{tim}	0.4748	1.0000									
RETA	−0.0131	−0.0190	1.0000								
RETE	−0.2344	−0.0859	*0.6536*	1.0000							
Lnage	0.0753	0.0887	0.1931	0.1191	1.0000						
BLOC3	0.0098	−0.0062	0.1979	0.1994	0.0428	1.0000					
MSO	−0.0493	−0.0601	0.0530	0.0153	−0.0420	−0.1023	1.0000				
II	−0.0449	−0.0602	−0.0449	0.0039	−0.2686	−0.1115	−0.0291	1.0000			
Taille	0.2154	0.1501	−0.0416	−0.2048	0.4431	0.0618	−0.3127	−0.2803	1.0000		
Prof	0.0393	−0.0170	0.5039	0.3108	0.4147	0.0798	0.0878	−0.2478	0.0204	1.0000	
Tang	0.0188	0.0009	−0.1624	−0.1209	0.2369	−0.2396	−0.1002	−0.0122	0.0866	−0.1421	1.0000

Table III.
Panel B: French correlation analysis

	MTB	*MTB_{tim}*	*Taille*	*Prof*	*Tang*	*RETA*	*RETE*	*Lnage*	*BLOC3*	*MSO*	*II*
MTB	1.0000										
MTB_{tim}	0.2686	1.0000									
Taille	−0.1526	−0.0153	1.0000								
Prof	0.3301	0.1772	−0.1205	1.0000							
Tang	−0.1249	−0.0605	0.1273	0.0754	1.0000						
RETA	0.3005	0.1309	−0.1905	0.4588	0.0546	1.0000					
RETE	0.1807	0.0975	−0.0325	0.1566	0.0480	0.4535	1.0000				
Lnage	0.1178	0.0963	−0.0174	0.1550	0.1243	0.2216	0.1124	1.0000			
BLOC3	0.0840	−0.0073	−0.2238	0.0307	0.0728	0.2241	0.1266	−0.0264	1.0000		
MSO	−0.0162	0.0101	−0.3879	0.1378	0.0761	0.1556	0.0442	0.1334	0.1229	1.0000	
II	−0.0821	−0.1146	−0.0416	−0.0726	−0.0561	−0.0162	−0.0611	−0.0342	0.1073	−0.1501	1.0000

Notes: SIZE: in total asset; PROF: the carrying cost; TANG: property; gross planet and equipment/total asset; growth opportunity: MTB market value of equity/book value of equity; NDTS: depreciation and amortization/total assets; BR the inverse of the interest coverage ratio (interest expense/earnings before interest and taxes); BLOC 3: the sum of the capital held by three main shareholders; *MSO*: managerial ownership by percentage of shares held by executive officers; *Age:* the logarithm of the difference between the year *t* and the year in which the firm was founded; RETE: retained earnings/total equity; RETA: retained earnings/total assets; FCF: the difference between operating cash flow and investment scaled by total assets; liquidity is computed as the ratio of current assets to current liabilities. CRISIS binary variable; takes the value 1 in subprime crisis period and 0 otherwise

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Empirical results

First method: business cycle an explanatory variable

Models 1 and 3: the relationship between debt and market timing theory. The non-significance of the MTB_{tim} *(−1)* in the Tunisian and French context is similar to the results found in Japan where Mahajan and Tartaroglu (2008) explain this by a slowdown in tapping the equity market which leads to a conclusion that the relationship between leverage and MTB_{tim} in Japan cannot be attributed to market timing. Contrary work of Baker and Wurgler (2002) found a negative and significant coefficient at the 5 per cent ratio between MTB_{tim} and debt level. Good value on the market is interpreted by a low debt. In the regression where debt is measured in market value, the result confirms the evidence found theoretically and empirically. However, in the regression where debt is measured at book value, the coefficient of the MTB ratio [MTB (−1)] changes sign and becomes positive in Tunisia while in France is correlated negatively with the debt in the market formula and when the debt is measured with the book formula the variable is significantly positive. Regarding to the control variable, in Tunisia only size variable *(Size)* is positively and significantly related to debt as it is expressed in value on market value and book value (Rajan and Zingales, 1995; Hovakimian, 2005; Huang and Ritter, 2005). In the French context, we see a negative correlation between profitability *(Prof)* and debt. This result confirms the empirical results obtained by Titman and Wessels (1988), Rajan and Zingales (1995), Hovakimian (2005) and Ghazouani (2013). Regarding the size variable, *(Size)* is positively and significantly related to debt as it is expressed in value or market value and book value (Rajan and Zingales, 1995; Hovakimian, 2005; Huang and Ritter, 2005), while the tangibility variable *(Tang)* is positively and significantly related to debt. This result supports the hypothesis that tangible assets are used as collateral for creditors (Rajan and Zingales, 1995; Kremp *et al.*, 1999; Ghazouani, 2013).

Models 2 and 5: the relationship between debt, market timing and ownership structure. Concerning the variable of ownership structure in the Tunisian context only the managerial ownership *(MSO)* and *(BLOC 3)* are significantly and negatively related with the market debt ratio while in France any variable is significant.

Models 3 and 6: the relationship between debt, market timing, ownership structure and life cycle. In Tunisia, *RETE* and *RETA* are negatively correlated with debt, that means that when the firm is in maturity phase, it do not need a debt; while in France, we find that *(Age)* is correlated positively with the debt while the *RETE* is significant negative (Table IV).

Second method: business cycle a dummy variable

The variables of B-cycle are significant in three phases of life cycle of the firm, so the market timing explains the leverage in all Tunisian companies while in France we found any impact of the variable of life cycle on the debt (Table V).

Discussion

Using data of 24 Tunisian firms and 100 French firms, we investigate the impact of life cycle and ownership structure on financial policy. Our study makes a number of key contributions to life cycle firm's research. First, we study when the market timing explain the debt in Tunisian and French context. Second, we study the relationship between debt and market timing. This contribution is valuable because prior entrepreneurship research on the behavioral patterns and characteristics of market timing has been undertaken exclusively within Tunisian and French contexts. Overall,

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Table IV. Results of linear regression panel data with the method B-cycle as an a explanatory variable

Variable	(1)	(2)	(3)	(4)	(5)	(6)
Market timing tests (Tunisia)						
Constant	*−1.526 (0.000)*	*−1.477 (0.000)*	*−1.222 (0.000)*	*−1.401 (0.000)*	*−1.371 (0.000)*	*−1.2276 (0.000)*
MTB_{tim} (−1)	−0.0001 (0.880)	−0.00015 (0.882)	0.00029 (0.739)	0.0002 (0.726)	0.00020 (0.761)	0.00054 (0.332)
MTB (−1)	*0.0136 (0.000)*	*0.01359 (0.000)*	*0.0057 (0.073)*	*−0.0064 (0.012)*	*−0.00697 (0.011)*	*−0.01148 (0.000)*
ln age			−0.02276 (0.210)			−0.02078 (0.189)
RETA			*−0.30188 (0.008)*			*−0.44283 (0.005)*
RETE			*−0.11382 (0.000)*			*−0.05511 (0.056)*
MSO		−0.0919 (0.134)			*−0.0881 (0.039)*	
II		0.01168 (0.818)			0.01549 (0.766)	
BLOC3		−0.04761 (0.375)			*−0.10703 (0.003)*	
Prof	−0.1766 (0.195)	−0.1959 (0.160)	−0.16951 (0.169)	−0.188 (0.166)	−0.2273 (0.102)	−0.13797 (0.282)
Size	*0.0929 (0.000)*	*0.09116 (0.000)*	*0.08295 (0.000)*	*0.0866 (0.000)*	*0.08700 (0.000)*	*0.08300 (0.000)*
Tang	0.1205 (0.148)	0.09962 (0.257)	0.04564 (0.502)	0.1429 (0.154)	0.09774 (0.338)	0.0821 (0.325)
R^2	*0.2334*	*0.2382*	*0.4178*	*0.1651*	*0.1843*	*0.2999*
Observation	*216*	*216*	*216*	*216*	*216*	*216*
Market timing tests (France)						
Constant	*−0.5466 (0.000)*	*−0.55065 (0.001)*	*−0.5478 (0.001)*	*−0.4041 (0.002)*	*−0.4599 (0.006)*	*−0.4432 (0.002)*
MTB_{tim} (−1)	−0.0008 (0.631)	−0.00076 (0.650)	−0.0008 (0.615)	0.0006 (0.721)	0.00072 (0.700)	0.00067 (0.716)
MTB (−1)	*0.0188 (0.000)*	*0.01888 (0.000)*	*0.01646 (0.000)*	*−0.02469 (0.000)*	*−0.02455 (0.000)*	*−0.0268 (0.000)*
ln age			*0.0285 (0.002)*			*0.02952 (0.001)*
RETA			−0.0779 (0.219)			−0.05292 (0.351)
RETE			*−0.02043 (0.007)*			*−0.01604 (0.027)*
MSO		−0.00834 (0.853)			0.01824 (0.751)	
II		0.00877 (0.790)			0.01814 (0.560)	
BLOC3		0.00508 (0.896)			0.02612 (0.474)	
Prof	*−0.3833 (0.001)*	*−0.38083 (0.001)*	*−0.3727 (0.001)*	*−0.32494 (0.002)*	*−0.32240 (0.002)*	*−0.31106 (0.002)*
Size	*0.0371 (0.000)*	*0.0370 (0.000)*	*0.03446 (0.000)*	*0.03150 (0.000)*	*0.0331 (0.000)*	*0.02962 (0.000)*
Tang	*0.16986 (0.021)*	*0.1695 (0.023)*	*0.1680 (0.0021)*	*0.15380 (0.009)*	*0.15135 (0.008)*	*0.14263 (0.014)*
R^2	*0.2005*	*0.2002*	*0.2456*	*0.1405*	*0.1413*	*0.1748*
Observation	*900*	*900*	*900*	*900*	*900*	*900*

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we empirically confirm the validity of three of our hypotheses. Consistent with previous studies such as Baker and Wurgler (2002), firm-years with an MTB ratio exceeding 10 will be dropped. This variable will also be used as a control variable for growth opportunities in the regression when the historic MTB measure is used to account for the effect of equity mis-pricing (Baker and Wurgler, 2002).

Implications for research and practice

Our study has several important implications for researchers and practitioners. The findings reported here clarify the strength of the impact of life cycle on the market timing, when it explains the debt in two contexts and the impact of ownership structure such as the managerial ownership and concentration of capital on the debt.

Limitations and future research

As with all research studies, several limitations of this study should be noted. First, there is a scarcity of studies that have talked about the relationship between life cycle and financial policy. Second, the non-availability of some data is also a limitation.

Conclusion

This paper brings together various aspects of corporate finance and entrepreneurship life cycle of the firm and examines whether variations across firms in observed market timing theory result in systematic variations in observed life cycle of the firm in the Tunisian and French context. We test this hypothesis by assessing the impact of the ownership structure and life cycle on the market timing theory using data of 24 Tunisian firms listed on the stock exchange and 100 French firms listed on Paris trading.

We integrated two measures of debt, namely, the BL and the ML, to study the impact of the life cycle theory and ownership structure on market timing theory. We used the MTB timing to present the market timing. The paper was primarily motivated by a lack of evidence regarding the relationship between market timing theory and life cycle of the firm. This paper contains several interesting results.

First, when we used the life cycle as an explanatory variable, we found that the variable reflecting the market timing is not significant in either context; it means that no significant support is found for the theory of market timing in both countries.

	Tunisia		France	
Variables	BL	ML	BL	ML
MTB_{tim} (−1)	−0.00082 (0.672)	0.00059 (0.756)	−0.00078 (0.636)	0.00075 (0.684)
MTB (−1)	*0.01166 (0.004)*	*−0.01766 (0.000)*	*0.01883 (0.000)*	*−0.02481 (0.000)*
Prof	*−0.7685 (0.000)*	*−0.66378 (0.000)*	*−0.38027 (0.001)*	*−0.31617 (0.002)*
Size	*0.0902 (0.000)*	*0.09781 (0.000)*	*0.03701 (0.000)*	*0.03140 (0.000)*
Tang	*−0.05667 (0.421)*	−0.0405 (0.556)	0.16780 *(0.021)*	*0.14897 (0.009)*
B-cycle G	*−1.3676 (0.000)*	*−1.4823 (0.000)*	−0.0495 (0.382)	−0.05540 (0.221)
B-cycle M	*−1.4161 (0.000)*	*−1.5320 (0.000)*	−0.03857 (0.500)	−0.03533 (0.444)
B-cycle D	*−1.3372 (0.000)*	*−1.445 (0.000)*	−0.04567 (0.412)	−0.04446 (0.313)
R^2	*0.6397*	*0.5810*	*0.2019*	*0.1447*
Observations	*216*	*216*	*900*	*900*

Table V. Results of linear regression panel data with the method B-cycle as a dummy variable

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Second, when we used the life cycle as a dummy variable, we found that the life cycle has an impact on debt only in the Tunisian context; this explain that the Tunisian companies applies the market timing to explain the leverage.

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