

Impact of Financial Structure on the Economic Profitability of Enterprises: Case of SME Processing Agricultural Products in the Republic of Tatarstan

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Abstract

This article analyzed the impact financial structure of small and medium enterprises on their economic profitability. The econometric method on panel data on neoclassical production function Cobb-Douglas had been used. The data was collected in the financial statements of 25 SME processing agricultural products in the Republic of Tatarstan from 2013 to 2017. After the diagnostical analysis, the Hausman test recommended the Random Effect Model. The result showed positive elasticities of 0.13 and 0.10 for equity and short-term debt financing, respectively. These elasticities are significant at 1% and 5% level, respectively. The positive variation of equity respectively short-term debt financing to 1% increases the return of equity respectively by 0.13% and 0.10%. The contribution of long-term debts to the economic profitability of small and medium enterprises was positive but not significant. Indeed, the expense of investment impacts positively the profitability of small and middle-sized enterprises. From the analysis, it profitable to SMEs to finance their business respectively by own equity, short-term debt and long-term debt while respecting financial orthodoxy.

Keywords: Small and Medium Enterprises, Financial Structure, MEA, Elasticity, Republic Tatarstan.

I. INTRODUCTION

Enterprises, as a production unit are essential elements for the effective functioning of any economy in the world (Vladika 2015). SMEs, accounting for about 80% of total enterprises in the economies, have become in recent decades one of the essential links in economic development (Dietsch 2003). Significantly, SMEs contribute to the creation of stable jobs, to the creation of wealth and consequently to improving social welfare. SMEs represented 99% of French companies in 2014 [13], 65% of American companies, 99.5% of Japanese companies [41], and 90% of all private companies on the African continent [18]. In terms of hiring, Small and Medium Enterprises employ 70% of the French workforce [13], 65% of the Japanese labor force and 54% of the US workforce [41]. In Africa, where SMEs are even less job-rich, they employ 20 to 40 percent of the urban labor force and around 70 percent of the rural labor force [18]. In 2014, the share of SMEs in the GDP was about 35% for America, 46% for France, 56.6% for

Japan. They represent more than 99.5% of the total enterprises in China, contribute 50% of China's GDP and consume more than 70% of the Chinese workforce [16]. Globally, they provide 30% of the GDP of developing countries against 60% for developed countries. These achievements clearly demonstrate the economic and social role SMEs play in all economies. In the Russian Federation in 2014, 19.9% of GDP was allocated to SMEs, and provided 25.6% of all Russian jobs. The Republic of Tatarstan (RT) in the Russian Federation, registered an average of 30% of GDP from SMEs between 2013 and 2017. The share of SMEs in the region's public revenue was 20%, and they employed 35% of the population [28]. These positive results in the RT suggest various support received from the regional state. These supports include the creation of two viable industrial zones in the RT, subsidy to the SMEs, encouragement of SMEs to take part in public tenders, and the existence of special tax for SMEs. Also, facilitation of access to bank loans by legislation and the surety of the State makes it easy for SMEs to conduct and build up businesses. The State, acting as a guarantor for companies in the money market, gives security to the credit institutions, which now grant financing to SMEs.

It should be noted that in 2015, about 70% of African SMEs and 30% of SMEs in OECD countries had difficulty financing their projects (OECD 2018). These difficulties were due to SMEs limited access to creditors, difficult conditions set to get the credit, and insufficient guarantee (OECD 2014). Therefore reducing the productive capacity of SMEs and economic profitability. Indeed, the approach of the RT by easing financing conditions has impacted the financial structure of SMEs. It is therefore rare to notice foreign capital in SMEs assets. This is what motivates this research, which aims to analyze the financial structure impact of SMEs processing agricultural products on the economic profitability of their activities.

In literature, many authors addressed the issue of firms financial structure and profitability [24; 33; OECD 2014; 34; 7; Aidar and Adaskou 2011; OECD 2018). This research seeks to emphasis on SMEs processing agricultural products. In the previous studies, the determinants of the financial structure of SMEs were analysed. This research tries to complete previous studies and evaluates the effect of each financing type on the

economic performance of SMEs, taking the example of SMEs that transform agricultural products in the RT. This paper presents the theoretical framework, literature review, methodological framework, results, discussions, suggestions, and conclusion.

II. THEORETICAL PART

Company financial structure theme dates back to the works of Modigliani & Miller (1958) [21], which started from the consideration of two financing sources and the hypothesis of a perfect market. They affirmed the neutrality of the structure of capital on the value of the firm. In 1961, Donaldson (cited by [14]) emphasized that the capital structure depends on the interests of the firm's internal actors. Thus, they suggested two approaches theories to the financial structure. The trade-off theory, which assumes that the optimal structure is reached according to an arbitration between the advantages and disadvantages of the financing main sources. The theory of pecking order, which unlike the previous one, Rejects the determination of an optimal debt ratio (target ratio), but favors the existence of a funding sources hierarchy established on the assumption of information asymmetry.

II.I Trade-off theory

The trade-off theory dealt with the optimal financing of the companies activities (large companies) by proposing an arbitration between the different sources of financing [21]. In 1963, Modigliani & Miller included in their analysis the effect of taxation on corporate earnings. Following this, Akerlof (1970) [2], Jensen & Meckling (1976) [17], Leland & Pyle (1977) [20], Stiglitz & Weiss (1981) [36] extended this idea by integrating the notions of moral hazard, information asymmetry, adverse selection, agency relationship costs, credit rationing, and bankruptcy costs.

II.II The pecking order theory

The theory of pecking dates back to 1961 in economic theory [14]. It was taken over by Myers & Majluf (1984) [24] as a consequence of the information asymmetry between internal (owners, managers) and external (financial backers) actors in the company. Managers adopt a financial policy that aims to minimize the costs associated with capital, and they, therefore, prefer internal financing over external financing. In fact, the manager respects the following hierarchy: self-financing, non-risky debt, risky debt and finally the increase of capital. Respecting this hierarchy has the advantages of avoiding a reduction in the prices of the company's shares, limiting the distribution of dividends to increase cash flow, and reducing the cost of capital by limiting the use of borrowing as much as possible.

Ang (1991) [3] points out that this theory can be easily applied to the case of SMEs, which do not aim to achieve an optimal financial structure, but whose financing decisions aim at ordering their preferences for internal financing over financing external. The objective of SME managers is to maximize their own wealth while maintaining their independence in the face of external actors, which is why internal funds are the first choice of their funding choice. If internal funds are insufficient, they prefer to resort to the debt rather than the capital increase, because the debt has the advantage of

company dependence reducing the degree on the other contributors of capital, which allows them to maintain control and decision-making power. It must be remembered that according to the trade-off theory, in this case, the model of Modigliani & Miller (1958) [21], no form of financing is a priori privileged, only the opportunities offered by the debts or the own funds make it possible to make a choice. In contrast, Myers & Majluf hierarchy theory (1984) [24] gives priority to self-financing before debt, which in turn is preferred to the capital increase.

II.III Empirical literature

Modigliani & Miller (1958) [21] emphasized the neutrality of the financial structure on the value of the firm. Including the effect of taxation in their analyzes in 1963, they specified that indebtedness has a positive effect on financial profitability if the operating profit is higher than the interest on borrowings, otherwise, the effect leverage becomes a negative effect. Brick & Ravid (1991) [6], Petersen & Rajan (1997) [29], Nguyen (2002) [25] affirmed the positive effect of long-term debts on business efficiency. By considering Cameroonian SMEs, unlike Petersen & Rajan (1997) [29] and Nguyen (2002) [25] who worked on big enterprises, Tioumagneng (2004) [39] noted that SMEs prefer to use their own funds in short-term, as well as long-term, in order to avoid to share with banks the profit created or to preserve their autonomy. In 2011, Tioumagneng (2011) [38] qualified his conclusion by emphasizing that long-term debts could positively influence the performance of the companies if they have a relationship with banks. Thus, he joins the analyzes made by Bevan & Danbolt (2000) [5], Datta & Raman (2005) [9] on the effects of investment projects on business performance. In the same order, Eric (2012) [35] made the existence case of a positive relationship between the maturity of the debt and the performance of French SMEs. As for Myers (1977) [23], the use of indebtedness could lead to a sub-optimal investment strategy leading to poorer economic performance. The studies by Titman & Wessels (1988) [40] and Eric (2012) [35] supported this position by Myers (1977) [23], who argued that there is a negative relationship between long-term debt and corporate profitability. In this same study of 469 firms over a 9-year period, Titman & Wessels (1988) [40] demonstrated that there is a strong negative correlation between profitability and the ratio of short-term debt to equity market value. Emery (2001) [12] was more explicit about the impact of short-term debt on corporate profitability. He notes that short-term debt helps to increase the company's earnings and output, except that it faces two major risks, namely refinancing risk and interest rate risk. Demsetz & Kenneth (1983) arrived at a similar result to that of Modigliani & Miller (1958) [21] on the relationship between debt structure and profitability. For Demsetz & Kenneth (1983) [10], the capital structure of the firm has no impact on its value given the existence of other corrective mechanisms. According to Miloud (2007), the best performing SMEs are those whos finance by equity investments.

III. METHODOLOGY

Econometric analysis of panel data is used on 25 enterprises that process agricultural products. The data were collected

from the financial statements of the enterprises over a period of 5 years. There are 245 registered as such in the RT. From 245 these SMEs, we randomly selected 25 companies those who regularly prepared their financial statements between 2013 and 2017. The sample size is determined by applying the Dagnelie formula (2006) [8].

The formula is written as: $T = \frac{4p(1-p)}{d*d}$ (1), with p: the proportion of SMEs that process agricultural products to food on the total SME population, $p = 0.0163$; d: the margin of error (here $d = 5\%$). Note that the SME in the Russian Federation, is any firm that employs between 14 and 250 people or any firm that annual revenue is between 120 million and 2 billion rubles. The econometric model is formulated from the neoclassical production function of Cobb-Douglas. The function is written: $Y_{it} = A_{it}L_{it}^{\alpha}K_{it}^{\beta}$ (2);

with Y_{it} = production of the company i at the date t. In this study, Y_{it} refers to the economic profitability of each SME. It is calculated by the ratio of the profit before financial expenses and taxes on total assets. In other studies, the authors measure economic profitability by gross operating surplus over total assets.

$$Y_{it} = ROI = EBIT / \text{Total Assets} \quad (3).$$

Y_{it} - Represents the endogenous variable of the equation.
 L_{it} - Is the amount of work needed for production in the Firm (i) at a time (t). This is one of the exogenous variables. It is measured by the total annual payroll in the firm. However, it can be quantified by the number of total hours of work within the firm in a year. Under the assumption of optimal exploitation of human resources within the firm, its expected sign is positive.

- K_{it} : The capital needed to product Y_{it} in the company (i) at a time (t).

Within SMEs, there are 3 types of capital from 3 different sources in the RT. Equity, which comes from the owners of the business; public capital from the state in the form of a subsidy and private capital that may be short-term or long-term from non-state financial partners. In SMEs processing agricultural products, public capital is almost zero. Assistance is provided by the guarantee given by the State to facilitate the granting of loans to SMEs. SMEs in our sample do not operate in the financial market. They obtain loans from banks and

microcredit institutions. Thus, the capital in the equation is subdivided into three:

- K_{1it} : Represents the equity in the model. They are resources of business owners. The financing of projects or the exploitation of the enterprise by its resources is called self-financing. This type of financing appears to be the most beneficial for SMEs in general. Ceteris paribus, equity would have a positive effect on the ratio of economic profitability of agricultural processing SMEs.

- K_{2it} : Short-term debts are credits of up to one year obtained from banks or other financial institutions or from suppliers for the financing of operating activities. In banks and other institutions, this type of credit is given to growing businesses, which usually have long-standing relationships with the financial institution. Otherwise, the cost of this credit is expensive, and therefore negatively impacts the results of the operation of SMEs.

- K_{3it} : Long-term debts, are financial resources of more than one-year duration obtained from banks and other institutions. According to financial rule, these resources must finance fixed assets or long-term projects in the company. Indeed, these projects should generate cash flows likely to repay the debt at maturity. Ceteris paribus, these debts should have a positive impact on the economic profitability of SMEs processing agricultural products. α and β the coefficients to be estimated; A_{it} = technology within each SME.

- Mathematical formulation of the model

The mathematical expression of the equation is:

$$Y_{it} = f (A_{it}, L_{it}, K_{1it}, K_{2it}, K_{3it}) \quad (4).$$

By replacing the variables in equation (1), we obtain:

$$Y_{it} = A_{it}L_{it}^{\alpha}K_{1it}^{\beta1}K_{2it}^{\beta2}K_{3it}^{\beta3}; \text{ avec } (\beta1 = \beta2 = \beta3 = \beta) \quad (5).$$

The econometric form of the model

The econometric form of the model passes through the linearization of equation 5. Thus, we have:

$$\text{Log } Y_{it} = \text{Log } A_{it} + \alpha \text{Log } L_{it} + \beta_1 \text{Log } K_{1it} + \beta_2 \text{Log } K_{2it} + \beta_3 \text{Log } K_{3it} + \mu_{it}; (\mu_{it} = \text{error}) \quad (6).$$

Let, $\text{Log } A_{it} = \delta_0 = \text{constante}$.

$$(4) \text{ involved : } \text{Log } Y_{it} = \delta_0 + \alpha \text{Log } L_{it} + \beta_1 \text{Log } K_{1it} + \beta_2 \text{Log } K_{2it} + \beta_3 \text{Log } K_{3it} + \mu_{it} \quad (7).$$

The data collected relates to the variables described above. The expected signs of each variable are summarized in Table 1.

Table 1. The expected sign of model variables

variables	Nature of the variable	The measure of the variable	Expected sign
Y_{it}	Endogenous	EBIT/ Total assets	
L_{it}	Exogenous	Wages/ Total assets	+
K_{it1}	Exogenous	(Social capital + reserves + report)/ Total liabilities	+
K_{it2}	Exogenous	(Commercial debts + financial debts of less than one year)/ Total liabilities	-
K_{it3}	Exogenous	(Financial debts of more than one year)/ Total liabilities	+

IV. PRESENTATION AND INTERPRETATION OF RESULTS

IV.I Description of the individuals in the sample

The sample is made up of 25 randomly selected enterprises among agricultural processing SMEs. However, it should be noted that our samples are enterprises that have regularly prepared their financial statements from 2013 to 2017. In fact, 36% of companies that meet the conditions are bakeries. SMEs processing fruit to juice, making alcoholic beverages and producing sugar make up 16% of the sample, dairies, and food and tuber processing enterprises into flour also account for 16% of the sample. Excluding these latter companies, canned meat and fish processing SMEs and then condiment supply enterprises each account for 8% of the sample (Fig 1). The enterprises in our sample do not participate in the financial market.

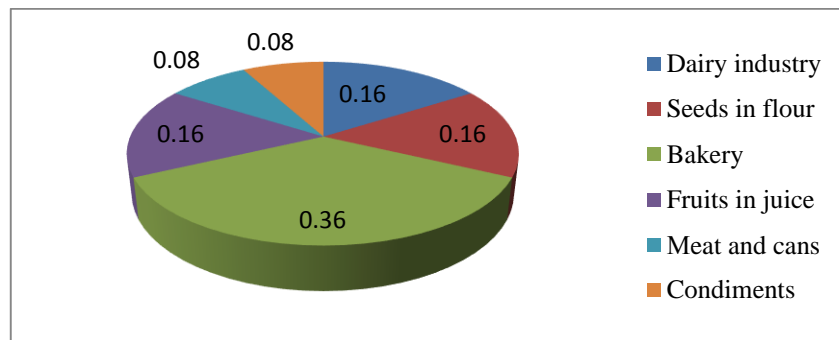


Fig 1. Distribution of selected enterprises by sector

Source : Data provided by Rosstat [32]

IV.II Econometric analysis

The Im Pesaran Shin stationarity test was performed on the data. The probability of each variable was significant at 1% level. All variables were stationary in levels (Appendix 1). Then, estimates of the fixed effects and random effects models were made. The results are summarized in Tables 2 and 3 respectively.

Table 2. Result of the fixed effects model estimation

Variables explicative	coef	Std err	t	P /t/	[95% Conf. interval]	
LogL _{it}	0.046	0.218	0.21	0.832	[-0.387	; 0.480]
LogK _{1it}	0.102	0.086	1.18	0.243	[-0.070	; 0.274]
LogK _{2it}	0.087	0.084	1.04	0.302	[-0.079	; 0.255]
LogK _{3it}	-0.002	0.115	-0.02	0.981	[-0.231	; 0.225]
δ_0	-0.0254	0.083	-0.30	0.763	[-0.192	; 0.141]
R-sq: within = 0.0303 Num of obs = 125						
between = 0.2050						
overall = 0.0979 F(4,96) = 0.75						
corr(u _i , Xb) = -0.0918						
Prob > F = 0.0561						
F test that all u _i =0: F(24, 96) = 1.90 Prob > F = 0.0155						

Source: Data provided by Rosstat [32]

The Hausman test states that the Fixed Effects Model is best indicated if the probability of the Chi-2 test is less than 10%. In Table 4, the probability ($\text{prob} > \text{Chi}^2$) is 0.9594, greater than 10%. The appropriate model is, therefore, the random-effects model, which is consistent with the result of the R-sq within and the R-sq. Thus, Table 3 will be used for the interpretation of the results.

IV.III Results and interpretation

The K_{it} variable that represents the equity of the company has a positive coefficient of 0.13. This coefficient is significant at 1% level. *Ceteris paribus*, in Tatarstan's agricultural product processing SMEs, a 1% change in equity induces a positive and significant change at 1% level of their economic profitability. The respective elasticities of long and short-term debt are 0.07 and 0.1. They are positive, but only the short-term elasticity is significant at 5% level. *Ceteris paribus*, a 1% increase in short-term debt contributes significantly to the increase in profitability by 0.1%. Not only that the contribution of short-term debt is greater than the contribution of long-term debt to profitability, it is also significant. This result can be explained by precarious long-term loan conditions for SMEs. Banks being rational, remain cautious about the economic condition of the Russian Federation highly dependent on fluctuations in oil and gas prices therefore unstable. From the SMEs point of view by Lahmini & Ibenrisoul (2015) [19], SMEs in the R T may not yet benefit from long-term loan conditions because of their young age. The cost of the long-term debt would seem to be expensive, only that they participate in the efficient operation of these SMEs.

As for short-term capital, dominated mainly by commercial debts, they allow SMEs to better manage the period of activity, to cope with the need for working capital. All this strengthens various partners (suppliers and customers especially) of the company, and therefore positively influences economic profitability.

According to the theory of hierarchical financing within the company, we note that the return on equity (ROE) is beneficial to the SME more than any other financing. And for SMEs, short-term debt is more beneficial because of its lower cost than the cost of long-term loans. Banks that are able to assess the risks of short-term information asymmetry in SMEs are more favorable to short-term debts than long-term ones. It is also important to emphasize that, in the short and long term, the contribution of loans to the economic profitability of SMEs processing agricultural products. This relationship demonstrates the ability of SME leaders in lending decision-making.

For the labor factor, it contributes positively to the economic profitability of SMEs processing agricultural products. This contribution is not significant and can be explained by the highly industrial characteristics of the processors. Technology and know-how, therefore, characterize SMEs in the transformation of agricultural products in the RT.

V. DISCUSSION

Firms are at the heart of the economy of any nation and they have been the subject of research for centuries. Many authors have touched the theme of the relationship between financial structure and the economic profitability of an enterprise [21; 22; 24]. Their research gave rise to two major theories of finance corporate: the trade off theory and the theory of pecking order. The result of this research shows that equity contributes significantly more than short-term and long-term debt in SMEs processing agricultural produce into food products, seems to be in line with the theory of pecking order.

Indeed, the positive and significant variation found between the variable of the economic profitability and those of the equity of the company, corroborates the conclusions of the Tioumagneng works (2004, 2011) [38; 39], which the use of the equity for the projects are profitable for SMEs in Cameroon. Seder & Belouard (2005) [34] found similar results for Algerian construction SMEs and claimed that internal financing has a positive effect on business performance. For Lahmini & Ibenrisoul (2015) [19], apart from self-financing, short-term debts have a positive effect on the economic profitability of Moroccan SMEs. For the positive relationship between long-term debts and the rate of return, Eric (2012) [35] found similar results in this research on French SMEs. In contrast to Titman & Wessels (1988) [40], Harris & Raviv (1995) [15] and Rajan & Zingales (1995) [31] on SMEs in G7 countries, Lahmini & Ibenrisoul (2015) found a negative relationship between long-term debt and the profitability of SMEs in Morocco and France. These results are similar to those of Lahmini & Ibenrisoul (2015). Also, Plesko (2000) [30] reached a similar conclusion, stated that short-term debt makes it possible to fully capture the cash flow requirements required to pay debt service, unlike long-term debt that does not provide information on debt-service obligations. Emery (2001) [12] shared this view of Plesko (2000) [30] and argued that short-term debt helps to increase the firm's earnings and output if it does not face the refinancing risk and interest rate risk. In contrast to these results Titman & Wessels (1988) [40] demonstrated a strong negative correlation between profitability and the ratio of market-based on short-term debt to equity using data from a sample of 469 firms from 1974 to 1982.

Labor as a factor of production contributes to the increase in the profitability of a company. Indeed, these results corroborates the economic theory according to which the population by its labor force is a lever of growth; as well as the results Schultz and Becker's theory of human capital according to which the work factor is more productive if it is formed.

VI. CONCLUSION AND SUGGESTIONS

In this article the impact of financial structure on the enterprises economic profitability investigated. In this regard, case of SME processing agricultural products in the republic of Tatarstan is studied

The enterprise is an economic unit, legally autonomous organized, which produces goods and services useful for the

satisfaction of economic needs. In fact, to achieve its main objective of profit maximization, enterprise regardless of its size seeks to minimize the cost of production, including the cost of inputs. Capital as one of the production essential factors in enterprise, its acquisition is subject to arbitration between internal sources and external sources. On effect of financial structure enterprise on her profitability, the conclusions are various in the economic literature. The results have shown that there is a significant gain at the threshold of 1% of 0.13 point on the economic profitability if the projects are financed by the equity, a significant gain at the threshold of 5% of 0.10 point for the debts of short term, then no significant contribution for the long term debts. It is clear, therefore, that SMEs should have a preference for equity financing before resorting to external financing. Thus, based on the results, it can be suggested SMEs that the use of short-term debts should be prioritized than the use of long-term debt for financing the activities.

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Appendix 1

Table A1- 1 : **Unit root test of IPS level**

Variables	Statistic IPS	Prob - IPS	Decision
LogY _{it}	-21.2165	0.0000	Stationary
LogK _{1it}	-5.1260	0.0000	Stationary
LogK _{2it}	-11.7180	0.0000	Stationary
LogK _{3it}	-1.9e+02	0.0000	Stationary
LogL _{it}	-19.4000	0.0000	Stationary

Source : Author under Stata 11