Financial Slack and Performance of Bulgarian Firms

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Abstract

Financial slack is a valuable buffer that makes a firm more robust in an uncertain and changing environment. In addition to this strategic advantage, it mitigates conflicts in organization, stimulates innovation activity of firm, and increases the potential for long-term growth. On the other hand, financial slack has negative effects due to reduced control on management. Abundant financial resources could slow the reaction of firm to changes in environment and stimulate irresponsible and reckless behavior of management. This study examines the relationship between financial slack and performance of the Bulgarian firms. The results show positive effects on firm performance, especially for small firms. There are positive effects for both types of slack – available and potential. Some negative influence is found only for the largest companies. The study identifies weak nonlinear relationship between financial slack and performance. This means that negative effects of financial slack will dominate only at very high level.

Keywords: financial slack, capacity, corporate performance, profitability

1. Introduction

According to standard economic theory, firm performance is maximized if the firm achieves certain result with the minimum resources. Following this logic, policy of downsizing is widely accepted by management. However, according to historical evidence, downsizing and reduction or resource use often does not achieve expected positive effects (Cameron, Freeman & Mishra, 1993). This can be explained with many positive implications that "idle" resources or "slack" have for firm performance. This study examines the relationship between slack and performance and presents arguments for positive performance impact on Bulgarian firms.

Cyert and March (1963) gave first definition of organizational slack and set the foundations for modern research in this field. They defined slack as "the difference between total resources and total necessary payments. Slack consists in payments to members of the coalition in excess of what is required to maintain the organization" (p. 36). Later many other researchers developed the concept of slack. In summary, organizational slack is:

a) Resources in excess of the level necessary to produce current output of organization (Bourgeois, 1981; Nohria & Gulati, 1996; Mishina, Pollock & Porac, 2004);
b) Potentially utilizable resources that can be diverted or redeployed for the achievement of organizational goals (George, 2005);
c) Reserve of resources and opportunities that can act as cushion against unexpected events and change in the environment (March, 1979; Bourgeois, 1981). Organizational slack is not just idle resource but it is a valuable potential for increasing the agility, robustness, and adaptability of organization to changes in internal and external environment.

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2. Literature Review and Theoretical Framework

2.1. The Financial Slack in Firms

According to Voss, Sirdeshmukh, and Voss (2008) organizations accumulate four different types of slack – financial slack, operational slack, customer relational slack, and human resource slack. The financial slack is "financial resources in excess of what is required to maintain the organization" (Ang & Straub, 1998, p. 537). It differs from other types of slack in two dimensions – rarity and absorption. Financial slack is related to financial resources with low rarity and low absorption (Voss et al., 2008). In particular, these are high liquid assets (cash, short-term investments, receivables, etc.), and the ability to receive financing (credit lines, reserve borrowing capacity, etc.). Such resources are not rare because there are many ways to be generated internally or acquired from financial markets in short. In addition, financial resources have the lowest degree of absorption because its perfect divisibility, which facilitates easy and quick allocation in different activities.

Another characteristic of financial slack is heterogeneity. According to classification of Bourgeois and Singh (1983) financial slack can be divided in three parts – available, recoverable and potential slack. Available slack includes all available financial resources not included in any specific activity. Recoverable slack refers to financial resources involved in a certain activity but can easily be used for something else (for example receivables, inventories, securities). Potential slack consists of financial resources that can be provided by additional financing from external sources and depends on current level of debt.

Financial slack, like financial reserves, is a buffer that not only covers the losses from changes in the external environment, but also cushions the internal shocks arising from conflicts in coalition of stockholders (Sharfman, Wolf, Chase & Tansik, 1988). The concept of financial slack extends the view of financial reserves as a buffer with the idea that available financial resources facilitate corporate development and growth. In this regard, financial slack has both passive function as protection and active function as resource for investments and innovation. Companies that maintain a financial slack have additional resources and are able to benefit from good investment opportunities. This is particularly valuable in an environment that requires constant innovation. It is known that innovation processes are associated with a very high degree of uncertainty and there is no guarantee of success. Financial slack makes it possible for companies to innovate without diverting from current business activities.

2.2. Influence of Financial Slack on Firm Performance

2.2.1. Positive Effects

Resources of financial slack are not rare and can easily be relocated within a company. This makes financial slack appropriate source of financing for new ventures and increasespotential for success in long run. On the other hand, management can use free cash and other financial resources in inefficient way. Hence, the general effect of financial slack on firm performance is not clear.

Positive effects of financial slack can be outlined in three directions: greater resilience to external shocks, curbing internal conflicts, and facilitating innovation and development. Financial slack is a buffer from external environment, protecting firms from negative influences on their performance for three main reasons. First, by absorbing variance of external environment, financial slack prevents interruption in internal business processes, increasing organization's efficiency (Thompson, 1967). Second, slack gives the company "leeway in managing changes in response to a changing environment" (Sharfman et al., 1988, p. 601). Third, financial slack provides resources "to pay the price of a structural design which may stray from the contingent requirements of contextual variables" (Litschert& Bonham, 1978, p. 217). The value of financial slack as a protective buffer is significant in times of great change in external environment, especially in financial and economic crises.

Second positive effect of financial slack on performance is based on conflict resolution. In behavioral theory of the firm, a firm includes different participants with diverse interests and slack refers to "payments to members of the coalition in excess of what is required to maintain the organization" (Cyert & March, 1963, p. 36). Thus, slack can diminish conflicts between different groups and decrease cost of control (Moch & Pondy, 1977). Resolution of conflicts and reduced cost of control due to financial slack improve firm performance. Third positive effect of financial slack is related to strategic advantages and growth potential of firm.

According to resource-based theory, acquisition of specific resources gives competitive advantages to the firm (Penrose, 1959). Financial slack is a valuable resource that can make firm more competitive and "take advantage of opportunities afforded by environment" (Thompson, 1967, p. 150). Unused slack resources encourage firm to experiment with new strategies (Hambrick & Snow, 1977). Thus, firm can innovate and obtain significant strategic advantages, which increases vastly performance in long run. In addition, financial slack facilitates innovation by diminishing risk aversion of managers. Available slack protects from losses and makes "experiments" more acceptable for management (Singh, 1986). Companies with financial slack react more aggressively to shifting environmental demands, because of increased risk appetite of their managers (Cheng & Kesner, 1997).

Financial slack creates more strategic options for firm to obtain competitive advantages because it provides resources to exploit opportunities when external environment changes (Moses, 1992; Chiu, Liaw, 2009). This strategic advantage is highly valuable in economic downturns and crises when firm with financial slack can acquire strategic resources for price below their economic value.

2.2.2. Negative Effects

Financial slack is not always beneficial for companies. Unused slack resources create opportunity cost, which decrease profitability of business and worsen firm performance. Besides opportunity cost, financial slack has negative influence because it aggravates agency problems and cost. The separation of ownership and control creates agency conflict between shareholders and managers and decrease performance (Jensen & Meckling, 1976). In this context, financial slack gives to managers excess resources for their opportunistic behavior, which does not serve to shareholder interests and destroys value.

Financial slack can harm firm performance in four directions. First, financial slack is a cushion, protecting firm from negative external impacts, therefore it reduces the pressure on management to seek successful strategies. Firms become less sensitive to developments in environment and make wrong decisions (Starbuck, Greve & Hedberg 1978). In addition, unused resources may give false sense of safety and slow down the manager's reactions (Cheng & Kesner, 1997).

Second, excess resources may diminish firm's innovation ability. The buffer of financial slack allows the company to exist without introducing new products, technologies and processes. Another impediment to innovation is the lower discipline of management (Jensen, 1993; Nohria& Gulati, 1996). Abundant financial resources do not force managers to invest in the best projects because errors in projects are compensated with additional financing (Clayton, Gambill & Harned, 1999).

Third, financial slack creates reserves, which compensate the losses from bad decisions. This reduces the criteria for "feasibility" and leads to projects and decisions with low value (Bourgeois 1981: 36). This is particularly common in investment decisions, where financial slack supports inefficient investment projects (Jensen, 1986; Donaldson & Lorsch, 1983).

Fourth, protective buffer of financial slack may encourage irresponsible, reckless, risky, and too optimistic behavior of managers, which is reason for significant losses in long run (Lin, Cheng & Liu, 2009). Reserves create incentive for unnecessary costs and suboptimal use of resources, diminishing firm performance (McGrath & MacMillan, 2000).

2.2.3. Total Effect

Financial slack has controversial influence on firm performance because slack combines not only positive, but also negative effects. Their joint impact could possibly cause nonlinear interactions in which positive or negative impact of slack depends on its size.

Bourgeois (1981) pointed out that slack would improve firm performance until certain size. Further increasing of slack would have a negative effect. When slack is small its positive effects associated with better response to uncertainty (in the form of threats and opportunities) will prevail. However, if slack becomes too large, the negative effects from the inefficient use of resources will lead to a decline in performance. Thus, the function of company's performance on slack would be concave (inverse U-shaped).

As result, "there is an optimal level of slack resources for any given firm. If the firm exceeds that level, performance will go down" (Sharfman et al., 1988, p. 603). This view is also supported by Noria and Gulati (1996) with regard to innovation activities.

Bromiley (1991) hold the alternative view, arguing for convex (U-shaped) relationship between slack and performance, because "firms with much slack obtain a competitive advantage and firms with little slack must manage carefully. Either action should increase performance" (p. 44). Firms with moderate amount of slack might have the worst performance. Whether slack influence on performance is concave or convex is a matter of empirical testing. In general, evidence supports inverse U-shapes relationship (Nohria & Gulati, 1996; Tan, 2003; Tan & Peng, 2003) or can not reject it (George, 2005; Lee 2011). There are no studies that confirm convex function of performance.

2.3. Research Hypotheses

Financial slack should have positive effects on performance of the Bulgarian firms for several reasons. First, Bulgarian firms' environment is very uncertain and shifting due to frequent changes in economic policy, legislation and vulnerability to external shocks. In these circumstances, financial slack is a valuable buffer, protecting firms from negative environmental changes. Hence, more financial slack would lead to better firm performance. In addition, opportunities for innovation and growth potential also contribute to positive effects of slack. Underdeveloped financial system in Bulgaria limits firm's access to external financing. Therefore, companies with more slack would have more internal resources to finance their innovation and long-term growth and would be more successful than firms with lower level of slack.

Negative effects of financial slack, related to bad management decisions, would emerge in conflict between shareholders and managers. However, due to high ownership concentration, such conflict is absent or insignificant in Bulgarian firms. Overall, cost of suboptimal use of financial slack would be smaller than benefit form enhanced robustness, innovation and growth, hence the following hypothesis are suggested:

Hypothesis 1: Financial slack has a positive effect on performance of the Bulgarian companies.

Firm size is an important determinant of financial slack. As mentioned above, larger firms are more able to maintain financial slack. On the other hand, financial slack is more valuable for small businesses in Bulgaria because they operate under conditions of high information asymmetry, expensive external financing, limited access to capital and greater vulnerability to external influences and crises. For large companies excess resources are not critical for their survival and growth and, therefore, there is a great chance of wasting slack. This leads to the following hypothesis:

Hypothesis 1a: Effect of financial slack depends on firm size. There is a positive relationship between financial slack and performance in small Bulgarian firms and negative relationship in large firms.

Although positive effects of financial slack on performance dominate, performance will decline if financial slack is too large. A firm with large amount of slack resources might react to environmental shifts slowly, reduce the criteria in management decisions, and become too aggressive and reckless. As a result, if financial slack exceeds certain level, performance will fall. This suggests the following hypothesis:

Hypothesis 2: There is a nonlinear concave relationship between financial slack and performance of the Bulgarian companies. Very high levels of slack result in low level of performance.

3. Research Methodology

3.1. Data and Variables

For empirical tests of hypotheses this study uses panel data set of all nonfinancial companies listed on premium and standard equities segments of Bulgarian Stock Exchange – Sofia (BSE) main market. The data set includes information from annual financial reports, published by companies, and year-end stock prices, published by BSE, between 2003 and 2016.The panel data is unbalanced – the sample consists of 83 firms and the total number of observation is 996.

In econometric models the dependent variable measures firm performance, and independent variables indicate size of financial slack. In all models performance is measured by return on assets (*ROA*). *ROA* is often calculated by dividing net income by total assets.

However, net income may be biased measurement of performance for three reasons. First, net income depends on taxation, which firm can not control. Second, net income depends on leverage, but leverage determines potential financial slack. Thus, net income is affected by two performance effects – of debt capital and of potential slack, but study examines only the latter. Third, net income of Bulgarian firms often is distorted due to frequent related party transactions (especially with majority shareholders or their companies).

These transactions are not part of usual business and its actual performance. To avoid described issues, this study follows approach of Love and Nohria (2005) and Ju and Zhao (2009) and measures firm performance by *ROA*, calculated by dividing earnings before net interest, depreciation, and special charges by total firm assets. This study uses several independent variables as relative measures of financial slack. Relative measures are more appropriate than absolute because financial slack is an excess of available or potential financial resources over company's needs. In addition, relative measures of slack can be compared between different firms and in different moments of time (Bourgeois, 1981).

As in previous studies, financial slack is examined by analysis of available and potential slack (Daniel et al., 2004; Gral, 2014). Available slack is measured by two indicators – current ratio and level of working capital. *CR*, current ratio is calculated as current assets divided by current liabilities and measures available slack by liquidity. Current ratio measures firm's liquidity comparing available liquid assets to short-term financial needs. Firm with higher current ratio have higher level of financial slack (Bourgeois & Singh, 1983). *WCS* is working capital divided by sales. Usually working capital is constant as a percentage of sales. If working capital increases with faster rate than sales, then excess liquidity grows. Thus, increasing ratio between working capital and sales indicates increasing slack (Bourgeois, 1981). Potential financial slack is measured by debt-to-equity ratio and interest coverage. *DE*, ratio of debt to equity, is leverage-related indicator for potential slack. Decrease in debt-to-equity ratio means lower future interest payments, which reduce the potential of creditors to affect management (Bourgeois, 1981). In addition, firms with less leverage have better ability to receive additional financing and thus have bigger potential financial slack (Bromiley, 1991). In general, *DE* ratio is in negative relation to financial slack. *IC* is interest coverage ratio, calculated as earnings before interest and taxes divided by interest charges. A company with better interest coverage has better ability to take on additional debt and thus has larger potential slack (Bromiley, 1991).

In addition to financial slack, firm performance is affected by other factors. To take into account such factors, additional control variables are used. *S* is firm size measured as natural logarithm of sales. In addition to direct impact on firm performance, size has indirect influence through financial slack. For a small firm financial slack is expected to have positive effect on performance, because in small firm financial slack is a buffer against uncertainty, limited access to capital and external shocks. On the other hand, in large companies due to agency problems financial slack is expected to have negative effects on performance. *Q* is investment opportunities measured by Tobin's q (Tobin, 1969). Tobin's q is calculated by dividing market value of equity plus book value of debt by book value of total assets. According to Hayashi (1982) higher *Q* values mean better investment opportunities. Thus, increasing in Q is related to better firm performance. *D* are year dummies which equal 1 for a given year and 0 for all other years. Year dummies control for time effects affecting all firms in the sample. The summary statistics of variables is presented in Table 1.

Table 1. Summary statistics

	Variable	Median	Mean	Standard deviation
All firms	ROA (performance)	3.2404%	4.1114%	9.9398%
	CR (available slack-current ratio)	1.7357	3.9512	14.9725
	WCS (available slack-working capital)	0.6145	2.9694	24.1342
	DE (potential slack-debt/equity)	0.2214	0.5404	2.7356
	IC (potential slack-interest coverage)	4.3106	29.1342	215.2156
	S (size)	11.0732	11.0092	1.8134
	Q (investment opportunities)	397.8585	874.1145	2111.4509
Small firms (first quartile)	ROA (performance)	0.3421%	0.9101%	12.5843
	CR (available slack-current ratio)	2.3105	6.0102	22.9894
	WCS (available slack-working capital)	1.1572	7.9910	43.8231
	DE (potential slack-debt/equity)	0.0915	0.4099	0.6185
	IC (potential slack-interest coverage)	2.3476	27.1483	195.3583
	S (size)	8.7513	8.3145	1.0450
	Q (investment opportunities)	497.3494	1639.0583	4949.3412
Large firms (third quartile)	ROA (performance)	4.2676%	5.1216%	7.7878%
	CR (available slack-current ratio)	1.4152	3.3131	12.5601
	WCS (available slack-working capital)	0.4293	0.6611	0.9237
	DE (potential slack-debt/equity)	0.4235	0.7193	1.9934
	IC (potential slack-interest coverage)	4.5894	51.0348	323.1452
	S (size)	12.7175	12.9276	0.6911
	Q (investment opportunities)	401.5924	615.9105	524.0535

Descriptive statistics for all firms shows positive performance with average ROA 4.11%. Equity dominates in capital structure with DE less than 1. Small and large firms have different characteristics. Small firms (with size smaller than lower quartile Q_1) have ROA 0.91%, which is lower than large firms. Large companies (with size bigger than third quartile Q_3) have average return on assets of 5.12% and are about a hundred times bigger than small firms. Small firms have larger available financial slack according to both indicators – CR (current ratio) and WCS (working capital). In regard to potential slack, small firms are with less debt (lower DE), but with worse interest coverage IC. It is not uncommon for smaller firms because their solvency depends to a lesser extent on interest coverage. There is difference in investment opportunities (Q) too. Small companies have better investment opportunities and growth potential than large firms, which is expected. Multicollinearity between explanatory variables is a potential issue in estimation of econometric models. Table 2 presents correlations between variables.

Table 2. Correlation matrix

	ROA	CR	WCS	DE	IC	S	Q
ROA	1.0000						
CR	-0.0301	1.0000					
WCS	-0.0187	0.0213	1.0000				
DE	-0.0066	-0.0103	0.0222	1.0000			
IC	0.1692***	0.0691*	-0.0192	-0.0262	1.0000		
S	0.1973***	-0.1726***	-0.2304***	0.0642	0.0061	1.0000	
Q	0.1845***	0.0827	-0.0306	-0.0174	0.0057	-0.2069***	1.0000

Note: *,**,*** indicate significance levels at the 10, 5, 1 percent, respectively.

There are no strong correlations between explanatory variables. Variance Inflation Factor (VIF) analysis also does not indicate presence of multicollinearity.

3.2. Econometric Models

The study uses panel data models with dependent variable ROA as a measure for firm performance and several independent variables, measuring financial slack. Since data come from firms, which are not random sample form the population, fixed effects are more appropriate.

In addition, fixed effects models are supported by Hausman test (Hausman 1978). In order to overcome issues with heteroskedasticity and serial correlation, feasible generalized least squares (FGLS) model described by Greene (2012) is employed. First part of analysis is to estimate direct impact of financial slack on performance with the following linear regression:

$$ROA_{it} = \alpha + \beta_1 CR_{it} + \beta_2 WCS_{it} + \beta_3 DE_{it} + \beta_4 IC_{it} + \beta_5 S_{it} + \beta_6 Q_{it} + \sum_{m=2}^{14} \gamma_m D_m + \mu_i + u_{it} , \qquad (1)$$

where i is the observed firm; t is the year of observation; $\alpha, \beta_1, \beta_2, ..., \beta_6, \gamma_2, \gamma_3, ..., \gamma_t$ are estimated parameters, D_m is a dummy variable that takes value 1, if $m = t$ and 0, if $m \neq t$; μ_i is a firm-specific (fixed) effect; u_{it} is an error term.

The next step of empirical analysis is to take into account the size of firm as a factor for the influence of financial slack. For this purpose, model form equation (1) is estimated separately for small and large companies.

Small firm group comprise of firms with size S smaller than lower quartile Q_1 of all companies ranked by size. Large companies are companies with size S greater than upper quartile Q_3. A number of previous studies (see Daniel et al., 2004) have shown that the effect of financial slack may lag in time. In order to include lag effects, variables measuring financial slack are lagged one and two years:

$$ROA_{it} = \alpha + \beta_1 CR_{it-1} + \beta_2 WCS_{it-1} + \beta_3 DE_{it-1} + \beta_4 IC_{it-1} + \beta_5 S_{it} + \beta_6 Q_{it} + \sum_{m=2}^{14} \gamma_m D_m + \mu_i + u_{it} \quad (2)$$

$$ROA_{it} = \alpha + \beta_1 CR_{it-2} + \beta_2 WCS_{it-2} + \beta_3 DE_{it-2} + \beta_4 IC_{it-2} + \beta_5 S_{it} + \beta_6 Q_{it} + \sum_{m=2}^{14} \gamma_m D_m + \mu_i + u_{it} \quad (3)$$

The final step of this study was to examine nonlinear relationship between slack and performance. The function of performance dependent on financial slack has parabolic form, thus a quadratic regression model is applied:

$$ROA_{it} = \alpha + \beta_1 CR_{it} + \beta_1^{'} CR_{it}^2 + \beta_4 IC_{it} + \beta_4^{'} IC_{it}^2 + \beta_5 S_{it} + \beta_6 Q_{it} + \sum_{m=2}^{14} \gamma_m D_m + \mu_i + u_{it} , \qquad (4)$$

where $\beta_1^{'}$ is a parameter for nonlinear influence of available financial slack; $\beta_4^{'}$ is a parameter for nonlinear influence of potential slack. Available slack is measured only by CR (current ratio), and potential only by IC (interest coverage), because results of this study have shown that another two variables (WCS and DE) are not significant for slack-performance relationship.

4. Results and Discussions

In order to examine direct impact of financial slack on firm performance, parameters of Equation (1) were estimated. Results are reported in Table 3.

Table 3. Effects of financial slack on firm performance

Independent variables	Model 1 (available slack)	Model 2 (potential slack)	Model 3 (both)
CR (available slack-current ratio)	0.0401**		0.3936***
	(0.0135)		(0.0613)
WCS (available slack-working capital)	0.0206**		0.0245***
	(0.0076)		(0.0015)
DE (potential slack-debt/equity)		-0.0551	-0.0021
		(0.0615)	(0.0952)
IC (potential slack-interest coverage)		0.0026**	0.0027**
		(0.0008)	(0.0008)
S (size)	1.3911***	1.2828***	1.7634***
	(0.0714)	(0.0674)	(0.0707)
Q (investment opportunities)	0.0012***	0.0013***	0.0011***
	(0.0002)	(0.0002)	(0.0002)
Constant	-14.0211***	-10.2890***	-17.2407***
	(1.2256)	(1.3282)	(2.0102)
Wald χ^2	301.67***	291.03***	903.54***

Note: Dependent variable is ROA. Models are estimation of Equation (1). Number of observations is 996. Standard errors are shown in parentheses below coefficient estimates. *,**,*** indicate significance levels at the 10, 5, 1 percent, respectively. Year dummies are included but not reported.

Models 1 and 2 examine the effects of available and potential slack in isolation, whereas Model 3 – their combined influence. According to results, available slack has significant and positive influence on performance. Both measures CR (current ratio) and WCS (level of working capital) have positive and significant effects, not only in isolation, but also in combination. Thus, firms with more available slack, due to higher liquidity, and more working capital will have better return on assets, which supports Hypothesis 1. Potential slack has similar influence. The negative coefficient of DE (debt-to-equity) is expected. Firms with higher leverage will have less financial slack and worse performance. Results confirm positive effect of potential slack if it is measured by IC (interest coverage). Positive and significant influence is observed in isolation (Model 2) and in combination with available slack (Model 3) and fully comply with Hypothesis 1.

It should be noted that DE (debt-to-equity) is not a significant variable, in contrast to interest coverage IC. This suggests that current income and cash flows are more important to firms than level of debt to equity. A company with high leverage can have better return on assets if it manages to maintain a good ratio between operating income and interest charges. Interest coverage is a more accurate measure of potential slack because the ability to obtain additional financing depends more on current income than past financing, reflected in debt-to-equity ratio. Control variables S (size) and Q (investment opportunities) have positive and significant coefficients. However, their positive effects do not diminish impact of financial slack on performance. In general, the results fully supported Hypothesis 1 and the conclusion that financial slack improves performance of Bulgarian firms.

Effects of financial slack on performance depend on firm size. Results for small and large companies are reported in Table 4.

Table 4. Financial slack, performance, and firm size

Independent variables	Model 4 (small firms)	Model 5 (large firms)
CR (available slack-current ratio)	0.3328***	2.6246***
	(0.0367)	(0.1725)
WCS (available slack-working capital)	0.0517***	-0.7831*
	(0.0157)	(0.3517)
DE (potential slack-debt/equity)	-0.0892	0.9101*
	(0.6398)	(0.3716)
IC (potential slack-interest coverage)	0.0102**	0.0016
	(0.0033)	(0.0127)
S (size)	5.0123***	3.1126***
	(0.3891)	(0.4934)
Q (investment opportunities)	0.0015***	0.0039***
	(0.0002)	(0.0005)
Constant	-41.2387***	-31.1754***
	(2.7193)	(4.9191)
Wald χ^2	437.11***	216.93***

Note: Dependent variable is ROA. Models are estimation of Equation (1). Number of observations is 201 for small firms and 235 for large firms. Standard errors are shown in parentheses below coefficient estimates. *,**,*** indicate significance levels at the 10, 5, 1 percent, respectively. Year dummies are included but not reported.

For small firms (Model 4) financial slack has strong positive influence implied by positive and significant coefficients for current ratio, level of working capital and interest coverage, and negative sign of debt-to-equity. On the other hand, for large companies (Model 5) there is positive effect only of available slack measured by current ratio CR. The other measure WCS (working capital) has negative impact to ROA. Potential slack measured by DE has negative influence too. Only interest coverage IC has positive sign, but the coefficient is close to zero. In general, Hypothesis 1a is partially supported. There is positive relationship between financial slack and performance in small Bulgarian firms. However, for large firms impact of financial slack is mixed – positive influence of current ratio, but negative effects of working capital and leverage. Next step of analysis is to examine lagged effects of financial slack, estimating Equation (2). The results are shown in Table 5.

Table 5. Lagged effects of financial slack (1-year lag)

Independent variables	Model 6 (available slack)	Model 7 (potential slack)	Model 8 (both)
CR_{t-1} (available slack-current ratio)	-0.02214*** (0.0021)		0.1942* (0.0811)
WCS_{t-1} (available slack-working capital)	0.0029 (0.0138)		0.0106 (0.1672)
DE_{t-1} (potential slack-debt/equity)		0.06145 (0.1562)	0.06932 (0.0998)
IC_{t-1} (potential slack-interest coverage)		0.0029 (0.0056)	0.0002 (0.0016)
S (size)	1.2592*** (0.0894)	1.4056*** (0.1014)	1.5103*** (0.0194)
Q (investment opportunities)	0.0014*** (0.0002)	0.0012*** (0.0002)	0.0014*** (0.0002)
Constant	-22.4103*** (1.2013)	-19.1852*** (1.4040)	-25.0345*** (1.6156)
Wald χ^2	345.24***	244.89***	301.93***

Note: Dependent variable is ROA. Models are estimation of Equation (2). Number of observations is 895. Standard errors are shown in parentheses below coefficient estimates. *,**,*** indicate significance levels at the 10, 5, 1 percent, respectively. Year dummies are included but not reported.

Only available slack in isolation (Model 6), measured by current ratio CR, have significant and negative lag effect. However, this result can be attributed to the issue of missing variables and estimation bias. Indeed, when available slack is examined in combination with potential slack (Model 8), CR has positive sign. All other slack variables are insignificant, which suggest that there is no delay in time.

The analysis of two-year lag effects produced similar results, which are reported in Table 6. Again, only available slack via current ratio CR has positive and significant effect.

Table 6. Lagged effects of financial slack (2-year lag)

	Model 9 (available slack)	Model 10 (potential slack)	Model 11 (both)
CR_{t-2} (available slack-current ratio)	0.0462 (0.1523)		0.1968** (0.0712)
WCS_{t-2} (available slack-working capital)	0.0063 (0.0256)		0.0019 (0.0121)
DE_{t-2} (potential slack-debt/equity)		0.0421 (0.0848)	0.0624 (0.0791)
IC_{t-2} (potential slack-interest coverage)		-0.0005 (0.0009)	-0.0005 (0.0010)
S (size)	1.5183*** (0.0956)	1.4791*** (0.0704)	1.8181*** (0.1045)
Q (investment opportunities)	0.0015*** (0.0002)	0.0002 (0.0003)	0.0007** (0.0003)
Constant	-22.5293*** (1.1109)	-18.6352*** (1.0194)	-20.4671*** (1.3141)
Wald χ^2	293.01***	572.01***	321.74***

Note: Dependent variable is ROA. Models are estimation of Equation (3). Number of observations is 812. Standard errors are shown in parentheses below coefficient estimates. *,**,*** indicate significance levels at the 10, 5, 1 percent, respectively. Year dummies are included but not reported.

Financial slack impacts on firm performance of Bulgarian firms immediately in current year and its lagged effects are weak. The only exception is available slack through current ratio, which is significant with one and two-year lag. Theory suggests that financial slack may have nonlinear effects on performance. In order to examine nonlinear relationship, parameters of quadratic regression in Equation (4) were estimated. The regression coefficients and their significance are shown in Table 7.

Table 7. Nonlinear effects of financial slack

Independent variables	Model 12 (available slack)	Model 13 (potential slack)	Model 14 (both)
CR (available slack-current ratio)	0.1724***		0.7135***
	(0.0396)		(0.1194)
CR^2	-0.0003**		-0.0093**
	(0.0001)		(0.0013)
IC (potential slack-interest coverage)		0.0233***	0.0274***
		(0.0031)	(0.0019)
IC^2		-0.0000***	-0.0000***
		(0.0000)	(0.0000)
S (size)	1.4174***	1.2012***	1.4201***
	(0.0501)	(0.0845)	(0.1011)
Q (investment opportunities)	0.0016***	0.0014***	0.0015***
	(0.0002)	(0.0002)	(0.0002)
Constant	-17.2523***	-10.5291***	-15.5714***
	(1.2015)	(1.1101)	(1.2952)
Wald χ^2	341.54***	322.80***	631.74***

Note: Dependent variable is ROA. Models are estimation of Equation (4). Number of observations is 996. Standard errors are shown in parentheses below coefficient estimates. *,**,*** Indicate significance levels at the 10, 5, 1 percent, respectively. Year dummies are included but not reported.

The results about available slack (Model 12) showed positive and significant coefficient for CR and IC, and negative and significant coefficient for the square of CR and IC, supporting Hypothesis 2. There is a concave (inverse U-shaped) relationship between financial slack and performance of the Bulgarian companies. If slack is small, it will improve performance until certain optimal level, after which performance will fall. At the same time, though, coefficients of quadratic terms (CR^2, IC^2) are very close to 0. This implies that while curve of performance is concave, it is very close to a straight line with positive slope. The observed nonlinear function is very close to linear, which is similar to reported by Lee (2011). In addition, the result also indirectly confirms Hypothesis 1 and positive influence of financial slack on firm performance.

In general, financial slack improves performance of companies. The negative impact of financial slack exists only at extremely high levels. According to previous results, negative effects can be observed only in large companies. Optimal slack in small firms would be at very high levels and it is not really possible to reach. Hence, for small firms financial slack will have only positive effects. In summary, the results form empirical analysis confirmed that financial slack improves performance of Bulgarian firms. The positive effect is present mostly among small companies. For them the ability to generate slack resources is crucial for survival and growth in an uncertain environment. Financial slack in small firms is valuable in both types – available and potential, and should be increased when it is possible. Negative effects of slack are exception for Bulgarian firm and were observed mostly in large firms. There is nonlinear relationship with extremely high level of optimal slack, which can be reached only form the biggest companies.

5. Conclusions

Slack financial resources may have positive impact on company's results. Financial slack has several strategic advantages. First, slack is a valuable buffer, enhancing robustness and adaptability of firm in the constantly changing environment.

In addition, slack facilitates conflict resolution between different stakeholders in a company. Third, financial slack is an important resource to innovations and long-term growth. Excess resources have negative effects, but only when control on management is weak. This study found that for Bulgarian firms financial slack improves performance, especially if the size of the company is small.

This can be attributed to high environment uncertainty, limited access to external financing of investments, and lack of agency problems between shareholders and managers. Positive influence is observed for both available and potential slack. Negative effects were observed only for the largest Bulgarian companies. Their performance is lower if the firm generates financial slack by maintaining high level of current ratio and working capital and low debt-to-equity ratio. It is worth mentioning that observed parameters of nonlinear relationship between slack and performance suggest that negative effects dominate only at very high level of slack. The results suggest that smaller firms should maintain large amount of financial slack keeping higher level of liquidity, more working capital as percentage of sales, and better interest coverage. Large firms should have high liquidity, but lower level of working capital. The potential financial slack of large firms has mostly negative impact on performance, and should be limited.

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