

Profitability or Liquidity: Influencing the Market Value

The Case of Poland

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Abstract

Company liquidity management is connected to working capital, which is determined by decisions made at the level of cash, receivables, inventory, and payables. It can be assumed that the greater the liquidity, the higher the net working capital invested in a company; the higher the level of capital, the greater its cost, and thus the lower the ROE and EVA indicators. In such a case, investors monitoring company performance could interpret high liquidity as a negative signal, entailing a fall in the market prices. On the other hand, the greater the liquidity, the higher the flexibility of the company in terms of production and sales, which could provide additional income for the business. Consequently, investors could also interpret high liquidity as a positive sign, with a subsequent rise in the market prices. This paper sets out to examine the relations between the above-mentioned factors to find out how investors interpret corporate liquidity and profitability ratios on the Warsaw Stock Exchange.

Keywords: liquidity, profitability, market value

1. Introduction

Working capital management is connected to liquidity and the capital structure. Under the conservative approach, positive working capital is financed by long term capital. On the other hand, negative working capital may indicate an aggressive strategy, in which case fixed assets are financed by short-term liabilities. Zero working capital means that current assets are equal to short-term liabilities. Corporate strategies are connected to long-term decision-making and do not change often, especially that liquidity is influenced by decisions in many areas, not necessarily synchronized within a company. The inventory management department does not necessarily have to cooperate with the personnel responsible for monitoring receivables or payables or for inventory replenishment, and in the end cash levels may be just the result of current business rather than a controlled goal. Such behaviors in company are stable. The less developed financial skills of managers in a business the more often such a pattern can be found in companies.

If a company is liquid, then it is flexible: it can meet its obligations and offer its customers long terms of payment. It is also more competitive in the market and does not squeeze its receivables, payables, or other current assets. However, it faces the problem of financing such a strategy because its long-term capital is higher, and so the cost of invested capital is grater, too. This influences its capital structure and such metrics as economic value added (EVA). Since capital structure decisions based on the cost of capital and market value tradeoff are taken into consideration by CFOs, decisions concerning working capital, especially in developing countries, are not the subject of one person's considerations, but are the result of joint decisions in the field of inventory, receivables, and cash balance. It is very important to emphasize the role of working capital levels and current asset management together with liquidity and profitability in meeting the market needs and avoiding unnecessary costs of capital invested.

Many papers have reported studies on the relationship between liquidity and profitability in markets throughout the world. Eljelly (2004) empirically examined the relation between profitability and liquidity as measured by the current ratio (CR) and the cash conversion cycle (CCC) in Saudi companies. Using correlation and regression analysis, the study found a significant negative relation between a firm's profitability and its liquidity level as measured by the current ratio. This relationship is more evident in firms with high current ratios and longer cash conversion cycles. In the latest study concerning the Polish market, Lyroutdi (2012) presented the results of

neural network analysis showing that the CCC was positively related to the CR and negatively to the quick ratio (QR), indicating that inventories were a crucial factor determining company liquidity.

Information considered by managers in their decision-making processes may also be used by investors analyzing companies for the purpose of purchasing shares. According to Gamba and Triantis (2008), American and European CFOs suggest that the most important driver of firms' capital structure is the desire to attain and preserve financial flexibility, that is, the ability to restructure their financing at low costs. They developed a model that endogenizes dynamic financing, investment, and cash retention policies in order to analyze the effect of financial flexibility on firm value. They shown that the value of financing flexibility depends on the costs of external financing, the level of corporate and personal tax rates which determine the effective cost of holding cash, the firm's growth potential and its maturity, and the reversibility of capital. Faulkender and Wang (2006) report that the marginal value of liquidity is higher for firms with lower liquidity, greater investment opportunities, and higher external financing constraints. According to Dittmar, Mahrt-Smith, and Servaes (2003) agency problems are an important determinant of corporate cash holdings. They found that corporations in countries where shareholders rights are not well protected hold up to twice as much cash as corporations in countries with good shareholder protection. In addition, when shareholder protection is poor, factors that generally drive the need for cash holdings, such as investment opportunities and asymmetric information, become less important. Finally they found that firms hold larger cash balances when access to funds is easier. This result is consistent with the conjecture that investors in countries with poor shareholder protection cannot force managers to disgorge excessive cash balances. Harford (1999), Kalcheva and Lins (2007), Pinkowitz, Stulz, and Williamson (2006), and Mikkelson and Partch (2003), confirmed this statement showing that excess cash can lead to value-decreasing decisions and the market value of cash reserves is lower if firms are poorly governed and shareholders are inadequately protected. Acharya, Almeida, and Campello (2007) propose that cash may be retained when investment opportunities are likely to occur in low cash flow states, which may indicate higher liquidity than necessary. From the investors' point of view, this can be a positive signal. Moreover they show that while cash allows financially constrained firms to hedge future investment against income shortfalls, reducing current debt is a more effective way to boost investment in future high cash flow. Thus, constrained firms prefer higher cash to lower debt if their hedging needs are high, but lower debt to higher cash if their hedging needs are low. Their analysis points to an important hedging motive behind cash and debt management policies. It suggests that cash should not be viewed as negative debt in the presence of financing frictions.

The authors of this paper have studied the Polish market in terms of the liquidity and profitability problem and have presented their results in a number of papers. The recent one presented by Lyrouti and Bolek (2012) is a multivariate liquidity management model analyzing the relationship between liquidity and debt, profitability or firm size. The present paper is a continuation of research into financial models in the Polish market as represented by companies listed on the Warsaw Stock Exchange (WSE). The Polish market is a very young economy and discovering relations between financial indicators may reveal a specific picture of the companies on the early stage of market development. We can also describe relations in such an economy in this phase since many methods were described when western markets had been matured. This knowledge can be used when other economies in the world start changing to forecast their future states.

Analyzing liquidity and profitability, one can argue that managers do not manage liquidity using the dynamic CCC measure. In this paper we go a step further, examining how investors react to data on companies' financial conditions and interpret liquidity and profitability. It should be noted that the Polish economy is sound, having weathered the crisis without any major problems. Some answers to why this is so may also be found in this study.

2. Liquidity and Profitability Factors

The approach to liquidity management is an individual decision connected to the company's strategy. First, this approach is determined by decisions concerning the levels of inventory, receivables, cash, and payables (each of them being subject to management). Since the levels of current assets and liabilities follow from these decisions, the net working capital is the spontaneous result of management decisions. One could argue that in this situation managers make the best decisions, but without any overarching goal. Under the other approach, a certain level of net working capital is adopted in the context of capital structure management and set as a goal the managers should achieve through making adequate decisions. One can also consider the problem of short-term credit as a method of raising cash "on demand" if the desired level of liquidity cannot be achieved. Waldron (2011) asks the following question: "If cash is king, what about its role as a determinant of shareholder value?" Many decision-makers emphasize the importance of cash, but there are proposals to squeeze it (Kaiser and Young,

2009). This squeezing may free up some cash but it can also constrain the company's development. Filbeck and Krueger (2005) found that firms are able to reduce financing costs and/or increase the funds available for expansion by minimizing the amount of funds tied up in current assets. They provided insights into the performance of surveyed firms across key components of working capital management and discovered that significant differences exist between industries in working capital measures across time. Moreover Deloof (2001) investigated the determinants of liquid reserves for large Belgian non-financial firms. The results confirmed the hypothesis that the terms of payment of intragroup claims can be adjusted to the firm's liquidity needs, thereby reducing the need for liquid reserves. Furthermore, the results confirmed the transaction motive for holding liquid reserves, but only partially confirm the precautionary motive. The results indicated that liquid reserves play a significant role in the financing of new investments. The choice between the strategies discussed herein depends on the company's development, and if a given company prioritizes quality, then working capital management will be more appropriate. If the financial goal to decrease the weighted average cost of capital prevails, then it is necessary to squeeze current assets. The most reasonable strategy would be to adopt a tradeoff between the presented approaches to achieve balance.

Traditionally, the main indicators of liquidity are the current ratio (CR), the quick ratio (QR), and the acid test (AT). High levels of these ratios indicate a firm with a good liquidity position, and they can be achieved by either keeping the levels of current assets (CA) high or the levels of current liabilities (CL) low. I indicates inventory and R receivables. Mathematically, these metrics can be expressed as follows:

$$CR = \frac{CA}{CL} \quad (1)$$

$$QR = \frac{CA - I}{CL} \quad (2)$$

$$AR = \frac{CA - I - R}{CL} \quad (3)$$

The cash conversion cycle (CCC) is another liquidity indicator providing dynamic insights. Based on the model developed by Richards-Laughlin (1980), the CCC is defined as the sum of the receivables conversion period (RCP) and the inventory conversion period (ICP) minus the payment deferral period (PDP), that is:

$$CCC = RCP + ICP - PDP \quad (4)$$

where: RCP = receivables conversion period = 360 / accounts receivable turnover

ICP = inventory conversion period = 360 / inventory turnover

PDP = payment deferral period = 360 / accounts payable turnover

hence:

$$CCC = (360 R / \text{sales}) + (360 I / \text{CGS}) - (360 CL / X) \quad (5)$$

where: X = CGS + expenses + interest + labor + advertising + insurance + travel + salaries – depreciation.

Therefore, the lower the cash conversion cycle, the quicker the firm can recover cash from the sales of its products, the more cash it will have, and hence the more liquid it will be. If the cash conversion cycle is high, it takes the company longer to recover cash. Thus, a high cash conversion cycle would indicate a liquidity problem.

The profitability ratios can be presented as follows. The return on assets ratio (ROA) is given by the equation:

$$ROA = \frac{EAT}{TA} \quad (6)$$

where: EAT = earnings after taxes, TA = total assets.

The return on equity ratio (ROE) is given by the equation:

$$ROE = \frac{EAT}{E} \quad (7)$$

where: E = equity.

The concept of economic value added was developed by Stern Stewart & Company, a consulting firm, in the 1990s, and is derived from the concept of residual income as defined in the late 19th century by A. Marshall.

According to Marshall, a company's earnings must be sufficient to cover its operating expenses in addition to the cost of its entire capital, including the cost of equity. Adjustments must be made to obtain a more useful formula of EVA and to better reflect economic reality, including incentive schemes. The adjustments did not appear in Marshall's concept.

The EVA system is based on three interrelated pillars: a valuation of the company, a measurement of value added generated, and the incentive system for the directors and employees. EVA takes into account these three areas. EVA contributes to the growth of wealth for shareholders, because the proper functioning of the economic value added system requires the use of all of these elements. This measure is a comprehensive tool for assessing the profitability of investment for investors because it ensures consistency between monitoring a company's operational performance and its share price in the market. According to Ehrbar (1999), EVA "allows all financial decisions to be modeled, monitored, evaluated, communicated, and compensated in terms of a single measure, and provides common language for employees." The EVA concept makes adjustments in accounting results in individual companies and eliminates accounting disruptions. This causes profit to be treated as an economic category (Johnson and Soenen, 2000) and the resulting level of EVA is reflected in the valuation made by the market even if no such a relation was observed in the Polish market. For this reason, the measurement of a company's performance based on company value is important for the investors and management alike.

There is no single method of calculating the value of the EVA ratio. This is not because the measure is not a standard one, but it requires adjustment to the specific characteristics of a particular company. For example, Ehrbar (1999) points to a distinct methodology for estimating EVA based if external analysis is made by investors. The main problem with calculating EVA is to include all the necessary information. It is not possible to estimate EVA based on partial data, for example, without access to future lease payments, capitalized expenditures on research and development, LIFO inventory valuation, etc.

Generally, EVA is calculated using the formula:

$$EVA = NOPAT - IC \times WACC \quad (8)$$

Where: NOPAT = operating profit before paying interest, net of tax, WACC = weighted average cost of capital, IC = value of capital invested by the owners and creditors.

The developers of the economic value added concept have identified approximately 160 possible adjustments (transformations of the accounting values of various economic categories) to determine the value of capital in terms of EVA. Adjustments may be made depending on the type of company and the type of its operating or financial assets. However, in order not to destroy the simplicity of this concept, the number of adjustments should be kept as low as possible. An excessively complicated measure would not be welcomed by investors because it would prevent them from obtaining a simple indicator of whether their funds are managed effectively or not.

Economic value added is therefore a system which provides the basis both for decision-making within the company by its management and for assessing the company's situation by the investors. This measure may be a criterion for assessing business because:

- 1) it is less susceptible to accounting manipulation than categories based on profit;
- 2) it is a measurable indicator, and so easy to compare, giving investors and boards the opportunity to evaluate and choose between projects being considered;
- 3) a method based on EVA is a tool for the valuation of shares, and therefore it can be used to make decisions by rational investors;
- 4) EVA levels are based on an incentive scheme for managers and employees according to which the primary objective of company management is to increase shareholder value, and thus this method integrates evaluation with periodic results and enables the unification of decision processes (Cwynar, 2002);
- 5) EVA levels can be shaped using a variety of tools – by modifying the capital structure, sales volume, cost reduction, etc. It appears that every individual can make decisions that contribute to the improvement of this indicator.

The factors discussed above represent the main ratios indicating a company's position as assessed by stock exchange participants. One may expect that other factors may also be relevant, but at the beginning of our research we decided to start with the most common indicators.

3. Relationships between Variables

When analyzing how the problem of profitability versus liquidity affects market value decisions it is important to point out that investors can choose between two possible scenarios. The literature discussing the relationship between company liquidity and profitability indicates the nature of this relationship. Although generally higher liquidity ratios of a company entail an increase in its profitability, at some point the relationship reverses and a further increase in liquidity ratios may even lead to bankruptcy. This dependence is presented in Figure 1.

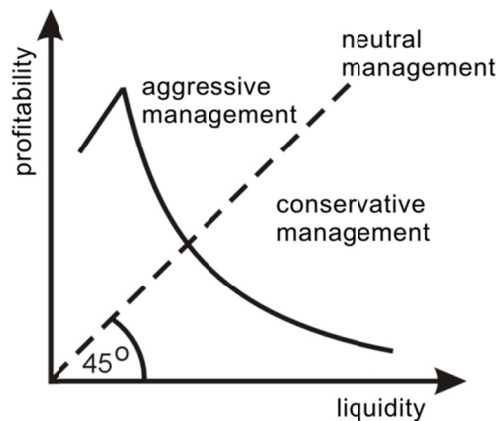


Figure 1. Relationship between liquidity and profitability

Source: Gajdka, J., Walińska, E. (1998). Zarządzanie Finansowe. Teoria i praktyka. Warszawa: FRR., p. 467.

If both liquidity and profitability are growing, then the company is operating on the edge of liquidity. Crossing this break-even point, the managers can choose between an aggressive, neutral or conservative strategy. There are many possible scenarios of investors' decisions connected to the tradeoff between profitability and liquidity. In a sector with higher rates of return relative to risk, greater liquidity may be interpreted as an indicator of the company's good position because of its better ability to enter into new contracts. Profitability may be more important in traditional sectors, where the relations between companies and their subcontractors and customers are settled and stable. In technology- and innovation-driven businesses, such relations are more dynamic and it is better for a company to stay ready for unexpected market situations. Since the Polish market is represented by traditional businesses, one can hypothesize that profitability will be more important for investors than liquidity while evaluating companies.

There is yet another problem connected to information quality. The profitability indicators ROA and ROE, together with the liquidity ratios CR, QR, and AT, can be considered more traditional factors. In developed markets, investors have been using a whole range of various economic categories and indicators for a long time. In the Polish market to date, investors have learned how to interpret traditional indicators and one can expect that they will tend to use them rather than more sophisticated ones in assessing company value. The theory of finance has developed more advanced and dynamic ratios, that is, the above-mentioned CCC and EVA. One can expect the relationship between these ratios and market value to be weaker because, given their lack of knowledge, investors may not be able to use them in assessing companies.

The problem of the cash conversion cycle and economic value added in the context of profitability and liquidity can be explained in the following way. Measuring profitability by EVA and liquidity by the CCC is a new way of dynamic company management that can lead to wider applications of dynamic management in companies. Cooley and Quadrini (2001) shown that financial factors are important in generating the dynamics of companies (growth, job reallocation) by introducing financial-market frictions. They can also affect EVA since this variable is partially connected with market behavior through the cost of capital measured using beta coefficient. Analyzing Polish market the authors did not observe any statistically significant correlation between liquidity as measured by traditional liquidity ratios and by the CCC (Bolek and Wolski, 2011a). Furthermore, it was shown that an increase in the liquidity ratios (a decrease in the CCC) implies higher profitability (Bolek and Wolski, 2011b). These two observations made the authors look for a new and dynamic model of measuring business

effectiveness. According to a study conducted by Bieniasz and Czerwińska-Kayzer (2008), the shorter the cash conversion cycle, the better the metrics of business performance as measured by the current and quick liquidity ratios. Kamath (1989) found that the current and quick ratios were negatively correlated with the CCC, but were not negatively correlated with the profitability measures, while the CCC was. Lyrouti and McCarty (1993) examined the relationship of the current and quick ratios to the cash conversion cycle for small US companies and found that the CCC was negatively correlated with the current ratio, the inventory conversion period and the payables deferral period, but positively related with the quick ratio and the receivables conversion period. On the other hand, the profitability measures ROE or ROA, which are based on accounting figures, do not reflect all the data connected to a company's business. In particular, one should take into consideration know-how, human capital, and the value of trademarks, as these categories are typically not valued or included in balance sheets.

The weighted average cost of capital is a measure of capital used to finance assets in companies. It can be calculated according to the following formula:

$$WACC = \frac{E}{V} Re + \frac{D}{V} Rd (1 - Tc) \quad (9)$$

where: Re – cost of equity, Rd – cost of debt, E – market value of the firm's equity, D – market value of the firm's debt, V = E + D, E/V – percentage of financing that is equity, D/V – percentage of financing that is debt, Tc – corporate tax rate.

The cost of equity can be measured using ROE, but when market assessment of companies is to be considered, it is necessary to use market data and calculate it using the capital asset pricing model according to the following formula:

$$r_a = r_f + \beta_a (r_m - r_f) \quad (10)$$

where: r_a – expected rate of return, r_f – risk-free interest rate, β_a – beta of the security, r_m – expected market return.

The final model should be presented based on the assumption that the capital structure is optimal (Miller and Modigliani, 1961). Thus, EVA is thought to reflect the market cost of equity and should be a better measure than ROA and ROE since investors assess businesses not only by means of accounting data. Going further along these lines, one may expect the market to be efficient, too.

If the cash conversion cycle is a dynamic way of measuring liquidity and provides managers with clear information about receivables, inventory, and payables turnover, it may be considered as a better measure of liquidity (and also efficiency, if one takes into account the number of cycles in a year). As it was suggested, the economic value added system is based on three interrelated pillars: a valuation of the company, a measurement of the value-added generated, and an incentive system for directors and employees. This system can be combined with the CCC to develop a more advanced system taking into consideration not only production, but also receivables, inventory and payables management.

Economic value added is the difference between net operating profit and the product of the capital invested in company and the weighted average cost of capital. The cash conversion cycle is the number of days in which cash from liabilities, inventory, and receivables returns to the company, thus forming a profit. It follows from the above that the larger the net operating profit, the greater the EVA, and, consequently, the lower the CCC the better the company metrics – cash returns to the company faster in terms of investment in working capital and more cycles can be completed in a year. In addition, EVA depends on the size of the capital invested – the larger the capital invested in an operation of a given size, the smaller the EVA. Depending on the company's strategy of financing its current assets, some of them could be financed with long-term capital (under a conservative strategy), and then the CCC should be relatively high because the level of inventories and receivables would be high and financed not only with short-term liabilities, but also equity. The relationship between EVA and CCC should be strong under the conservative strategy, while under the aggressive strategy, with assets being financed with liabilities, such a relationship should be weaker because long-term capital would not be involved in the financing of current assets. The relationship between EVA and the CCC is based on net operating profit, which should show a negative correlation with the CCC (the higher the NOPAT, the lower the CCC). Thus, one can expect that shorter cash conversion cycles should imply higher EVA levels. Taking into account the functions of liquidity and profitability, it may be assumed that beyond a certain minimum liquidity, the effect will be reversed and a decrease in the CCC will be accompanied by a fall in EVA.

Market value (V) is expressed as the number of shares outstanding times their price. Company valuation may be based on fundamental or technical analysis. But if the price is settled after an IPO, one can expect the company's value to be affected by factors according to the efficient market theory. These factors may reflect liquidity and profitability in a traditional or dynamic way.

Taking into account this information, one's expectations can be adjusted to market behavior.

4. Testable Hypotheses

The authors intend to verify the following hypotheses.

According to the first hypothesis, investors consider higher profitability ratios as an indication of good management. In this case, the static liquidity ratios should fall.

If this is true, we expect (r indicates the change):

$$r_V > 0 \text{ and } r_{ROA}, r_{ROE} > 0, r_{CR}, r_{QR}, r_{AT} < 0.$$

According to the second hypothesis, investors consider reserves in the levels of current assets as an important factor indicating readiness for additional contracts. In this case, value rises with increasing liquidity ratios and decreasing profitability indicators (ROA and ROE).

If this is true, we expect:

$$r_V > 0 \text{ and } r_{ROA}, r_{ROE} < 0, r_{CR}, r_{QR}, r_{AT} > 0.$$

The third hypothesis is connected to the expected relationship between the CCC and EVA and their influence on companies' market value depending on whether investors prefer profitability or liquidity. Both measures are joined in one possible criterion of preference, since investors do not necessarily make optimal choices.

If this is true, we expect:

$$r_V > 0 \text{ and } r_{CCC} < 0, r_{EVA} > 0.$$

5. Data and Methodology

The study used a Notoria database supplemented by data on the capitalization of companies obtained from the Warsaw Stock Exchange. In our database, we considered the years 2000–2009. The inclusion of individual companies in our analysis was conditional on whether all the relevant indicators were available for them, the indicators being: economic value added (EVA), cash conversion cycle (CCC), current ratio (CR), quick ratio (QR), increased liquidity ratio (AT), and capitalization. All the data altogether gave a total of 696 observations.

For all time series, data were analyzed for correlation using Pearson's correlation coefficient. All results were statistically evaluated using the t -test. The test adopted a strict confidence level of 95% in both directions. Additionally, analysis of the following indicators was performed to determine the best function describing the dependence. The analysis results are presented in Table 1.

Table 1. Pearson's correlation analysis

	EVA	ROE	ROA	CR	QR	AT	CCC	Market value
EVA	1	x	x	-.059	-.040	-.031	-.081**	.362***
ROE	x	1	.885***	.159***	.154***	.094**	.137***	.144***
ROA	x	.885***	1	.223***	.214***	.141***	.119***	.162***
CR	-.059	.159***	.223***	1	x	X	x	-.051
QR	-.040	.154***	.214***	x	1	X	x	-.054
AT	-.031	.094**	.141***	x	x	1	x	.024
CCC	-.081**	.137***	.119***	x	x	X	1	-.071*
Market value	.362***	.144***	.162***	-.051	-.054	.024	-.071*	1

* Correlation is significant at 0.1 (in both directions)

** Correlation is significant at 0.05 (in both directions)

*** Correlation is significant at 0.01 (in both directions)

It is worth noting that many of the relationships are statistically significant at the highly restrictive level of 0.01. For example, this is true of the relationship between the liquidity indicators and EVA and the market value of the company. This indicates a strong relationship between market value and profitability. The relationship was always positive, meaning that an increase in profitability concurred with an increase in the value of the company. Interestingly, such a relationship was not found in the case of liquidity. Market value was generally negatively correlated with the indicators of liquidity, but with two exceptions at a statistically insignificant level. An increasing AT ratio was positively correlated with value, meaning that investors reacted positively to higher levels of this indicator, but this relationship was not statistically significant, which makes this conclusion quite limited. The second exception is connected to the CCC, which was negatively correlated with market value at a statistically significant, but very liberal, confidence level (0.1). This result is very intuitive, however, and despite its low certainty, the authors find it interesting.

The first hypothesis has been confirmed, but it should be added that the assumption that AT falls with increasing V is not true. This may be due to investors positively responding to higher cash balances in companies. Cash can be used to take advantage of unexpected market opportunities and does not necessarily affect the total level of current assets, as inventories and receivables can be squeezed to free up cash. Unfortunately, the AT case is not statistically significant, so such interpretation does not have a very firm footing.

The second hypothesis has been rejected, but not in the case of AT, described above, which can be deemed an opposite situation.

The third hypothesis has been confirmed as the greater the market value, the lower the CCC and the greater the EVA.

6. Conclusions

Given the study results, it appears that investors in the Polish market consider profitability to be more important than liquidity in valuing companies on the Warsaw Stock Exchange, the most developed exchange in the region. Arguably, the positive correlation of AT, indicating a higher level of liquidity, with market value shows that investors prefer companies to maintain high levels of cash. Companies in investors eyes should be profitable and liquid on the level of cash to meet the opportunities on the market. It can also indicate the importance of competitive behaviors of Polish market confirming the direction of development of Polish business. It is also important to realize that the new measures CCC and EVA meet the assumptions and expectations set forth in this paper. The Polish market behaves in a rational way, which also shows the state of the economy to be good. Even if the market economy is very young managers use the appropriate knowledge and adopt it to specific situation avoiding failures.

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