

A study on liquidity and its determinants in Vietnamese firms

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Abstract: The research is conducted to synthesize the theoretical framework of liquidity and its determinants. Then, based on information gathered from audited financial statements and different reports of listed steel firms on Vietnam Stock Exchange, we found that GDP growth rate and inflation rate have no impact on Quick ratio; Return on assets (ROA) has a positive impact but Return on Equity (ROE) has a negative relation. Based on the findings, some recommendations are given for improving the liquidity ratio of listed steel firms.

Keywords: Liquidity, determinants, steel firms, Vietnam Stock Exchange

I. Introduction

Steel firms ordinarily have a huge inventory which is normally long-term and converting these liabilities into cash is difficult. Liquidity risk emerges from the function of firms in the maturity change of long-term liabilities into short-term and long-term assets. Tobias and Hyun (2010) expressed that liquidity of a firm relates to the capacity to satisfy short-term commitments (unexpected and expected) when they come due. For that reason, liquidity is a noteworthy point for firms themselves and the cohesion of financial system. For steel manufacturing firms, holding sufficient liquidity is vital for preventing liquidity risk. In the perspective on administrative specialists and monetarists, ensuring firms have enough liquid assets is vital to the financial stability.

In Vietnam, the steel business framework previously confronted with liquidity problem in period 2008- 2011, with exceptionally high loans to deposit ratios (LDR), range between 96% and 107% over the period. Especially, 2011 was considered by many steel enterprises to be a more difficult year than others. For that reason, most firms in the industry are modest when setting profit plans. A number of firms invest in multiple fields in the industry had to stop new investment projects, or reduce the production sector, decrease investors outside the industry. It is easily recognized the liquidity problem of several firms at that period. Despite the fact that liquidity issues have been solved from 2013, it might have returned to threaten the steel organizations.

Controlling firms' liquidity is a very important assignment and research about determinant of liquidity is fundamental. At the same time, earlier studies on the liquidity of listed firms on the Vietnam Stock Exchange have not been examined much. Hence, the implementation of general research on liquidity is necessary at this moment. Due to the subject's current nature and practicality, we have decided to choose the topic: "A study on liquidity and its determinants in Vietnam". The main targets of this research is identifying the determinants of steel firms' liquidity and analyze factors that are likely to affect the liquidity of 25 steel firms listed on the Vietnam stock market; utilizing these determinants to create the proper model for the case of Vietnam and giving policy recommendations for steel firms' liquidity.

II. Theoretical framework of liquidity and its determinants

2.1. Size of firms

In corporate finance, firm size is considered as a fundamental feature which directly has huge impact on targeted revenue. The firm size is identified through indicators such as turnover, capital source, asset level and number of employees. In the research scope, the author measures the influence of firm size on revenue target. Firm size is calculated as the logarithm of total sales. In some previous studies, it was found out that there was a positive effect between liquidity and firm size. In contrast, other studies have demonstrated an inverse relationship between liquidity

and firm size. Consequently, opinions have appeared in two-ways about the relationship between solvency and firm size. The reason of these contrary results might due to the different in measuring the firm size.

2.2. Return

Profitability is a measurement of money efficiency which becomes an essential element but not totally used to maintain a financial balance. The evaluations of profitability must be built by a reference period. From economic perspective, profitability is applied by using physical, human and financial means as a basis for generating profits. Under the firm level, profitability is the consequence of using a set of physical and financial assets which express the capital that the enterprise is holding.

Proxies for profitability are return on assets (ROA), return on sales (ROS) and return on equity (ROE). In which:

$$\text{Return on assets (ROA)} = \text{Net income/Total average assets}$$

Return on Assets is a financial ratio using to measure profitability on each asset of the business. This ratio is calculated by dividing the net income (or profit after tax) of the enterprise in Income Statement by the average total assets in the same period. Data on net profit or pre-tax profit are taken from the income statement, average asset value is taken from the balance sheet. In particular, the net profit is obtained from the Income Statement, meanwhile, average asset is taken from the Balance Sheet.

In case ROA ratio is greater than 0, it means that the firm is profitable. The higher the rate is, the more effective the firm is. In contrast, if the rate is less than 0, the firm is at a loss. The profit or loss level is estimated as a proportion of the average value of the total assets. The rate illustrates the effectiveness in managing and utilizing assets to generate profit for business.

$$\text{Return on equity (ROE)} = \text{Profit after tax/Equity}$$

Return on equity is a financial ratio calculated by dividing net income by shareholder's equity. The profit in this ratio is the net income for shareholders, taken from the Income Statement based on a certain reporting period. If the rate is positive, it means that the firm is profitable; conversely, if the value is negative, the firm is loss.

The higher the ROE ratio, the more efficient the capital is used by shareholders, which proves that the firm harmoniously balances between shareholder capital and borrowed capital so that exploit its competitive advantage in capital mobilization process and scale up. Therefore, the higher ROE ratio, the more attractive the stocks are to investors. Besides, return on equity is normally compared to return on assets (ROA). If the return on equity is greater than return on assets, the business's financial leverage has a positive effect which means that the enterprise has succeeded in raising shareholders' capital. The profit from shareholders' capital is at a higher rate than the rate of interest that the firm has to pay shareholders.

$$\text{Return on Sales (ROS)} = \text{Profit after tax/Net revenue}$$

Return on sales indicates the relationship between firm's net profit after tax and net sales during the period. It is computed by taking profit or after-tax profit for a period divided by sales. Unit is calculated in percentage (%) and the data of net profit and revenue are derived from Income statement.

This rate illustrates how much profit is accounted for revenue. The ratio has a positive value which means that the company is profitable. ROS is also one of the determinants that reflects management abilities and minimize expense of business. Under the condition that the firm manage expenses well, the ratio will be raised. Moreover, this rate depends considerably on technically economic characteristics of the industry as well as the competitive strategy of the business. Since each industry has its own unique feature, when monitoring the profitability of a company, this ratio is compared to average rate of the whole industry that company enters.

2.3. Structure of assets

Asset structure (AS) is intended to determine the aspects of the quality structure of the associate company, the explanation for the capital in firms. Firms need asset structure to serve the management resources, choose capital mobilization in production and remain short-run and long money balances during the competition in the economy.

By assessing the characteristics of the asset structure, asset structure helps to find an effective allocation for current and future assets in manufacturing and other activities. Allocation of capital strongly affects the potency of the firm and

helps owners find a way to reduce the wasted and ineffective capital.

Items within the structure of assets of firms such as cash and cash equivalents account for the way a lot of the total assets of the businesses; monetary investments accounted for many the total assets in all activities; what proportion of assets accounts, inventory accounts for total capital. By using quotas between short-run assets and total assets, the author determines the quality structure of assets

$$\text{Assets structure} = \text{Total short-term assets}/\text{Total assets}$$

2.4. Ratio of debt

The debt scenario of firms is reflected by debt ratio, which provides enough vital material for any inquisitive investors and analysts to pursue their research.

$$\text{Debt ratio} = \text{Total liabilities}/\text{Total assets}$$

The higher financial autonomy firms lose a higher debt ratio magnifier. By losing payment ability, businesses face with the bankruptcy when the percentage of short-term debt accounts for the total liabilities. Small firms with high debt ratio cannot attract investors in the market so that the liquidity will be reduced. Creditors always want to make a contract with firms that have a higher ability to pay their debts and a low debt ratio. On the contrary, the high debt ratio is preferred by shareholders because it is thought to rise the profitability of shareholders.

The debt ratio of any firms is not remaining for a long time and the value of this measure will be changed. For that reason, it is vital to compare with the average ratio in the specific industry to figure out the level of debt ratio in a company.

To make effective financial plans for increasing liquidity, declining short-term debt obligations; it is significant for managers to determine suitable debt ratios for the financial position and operations of businesses.

2.5. Duration of firm

Operation time is supposed to have an impression on the firms' financial condition. However, the relation between the age and the financial condition of firms has not been analyzed clearly. Therefore, one of the new contributions in this research is the impact of the firm duration on its liquidity.

When the firms operate for an extended time, it will have more expertise, occupies, stable clients, stable sales revenue, that resulting in quick payment ability and increasing liquidity. On the contrary, years of operation and a firm's liquidity has a positive relationship.

2.6. Growth of GDP

Gross domestic product (Gross Domestic Products: GDP) is the financial estimation of all the final products and services produced, created within an economy in a specific time (normally a fiscal year). The economic growth rate is determined by the contrast between the current economic size compared to the previous period's economic scale divided by the previous economic scale. Economic growth is expressed in units of %.

$$\text{Economic growth (y)} = (\text{dY} \times 100\%)/\text{Y}$$

Where: Y is scale of economy; dY is Growth

Therefore, once the economy tends to prosper, value growth throughout the years will stabilize and can totally impact the needs of citizens, businesses as well as the state. Because the demand for merchandise will rise, creators can extend their scale to satisfy market demand. Thereby, businesses can must return up with business ways, applicable policies to be able to meet the demand for product consumption, however at the identical time additionally ensure that businesses operate well. With associate degree growing quantity of raw materials, businesses should meet the economic condition in order that they will have enough production materials. If they meet and cash in of economic opportunities, organizations can develop consistent with their requirements.

2.7. Inflation

Inflation is a rise within the general worth of products and services over time; and therefore the loss of a currency. As the cost of goods and administrations will boost, the getting power of the currency decreases. At that point, customers

have the identical quantity of cash however get less merchandise than before. In an economy, inflation may be a loss of market price or a decrease within the getting power of the currency. Compared to alternative economies, inflation is that the devaluation of the domestic currency against other currencies. Inflation may additionally flow from to the very fact that the government doesn't manage the amount of current cash, or as a result of the government issues more cash to offset the deficit, raising the quantity of cash current in society. At the same time, the quantity of social which merchandise created does not increase, resulting in excess cash. Once excess cash can encourage customers to extend getting power, therefore costs escalate, typically resulting in hyperinflation. Inflation can additionally flow from to the impact of external aspects, thanks to the inflow of foreign cash resulting in excess money, or the value of sure essential commodities within the world, like costs. The rise in crude, resulting in countries with oil imports can increase electricity costs, freight charges conjointly increase.

Inflation has both positive and negative effects on the economic growth. Nobel laureate economist Mundell said: "Moderate inflation will make savers replace lending for some of the holdings as a mean to finance future spending. That alternative could make the actual market clearing interest rate decrease. Lower real interest rates may result in more borrowing for financial investment." Additionally, Nobel laureate Tobin pointed out that such inflation would be able to make alternative investments in physical capital (factories, inventories, warehouses) for the cash balance. That substitute means the choice to make investments with a lower rate of return than actual return (this rate of return is lower because investments with higher rate of return have been made before). These two related effects are called the Mundell-Tobin effect. When the inflation rate is moderate, it can help lubricate the commodity market, stimulate consumption and reduce unemployment in society. However, high or unpredictable inflation rates are considered harmful to the economy. When high inflation rate makes material prices fluctuate constantly, it causes artificial stability of the production process. In addition, high inflation accelerates the process of speculation, leading to scarcity of goods and also makes credit, trade and banking relations narrow. As for the banking system, due to the decrease in the amount of deposits, it is impossible to meet the demand of borrowers as well as the depreciation of the currency quickly.

With high inflation, getting power is decentralized from mounted nominal financial gain. Distribution of this getting power will take place between international commercialism partners. Wherever mounted exchange rates are practiced, higher inflation in an economy than elsewhere can cause exports of the primary economy to become dearer and have an effect on the visible balance. Inflation might also have a negative impact on trade from an enlarged instability in currency exchange thanks to unpredictability which will bring a foul impact to Vietnam's export firms generally and within the steel business particularly. The devaluation of the currency disables business accounting.

III. Result and discussion

3.1. Overview of Steel Industry in Vietnam

Steel is a significant input for many industries so the design and shape of steel depend on the industry that utilizes it. There is two main product line in Vietnam's steel: long steel and flat steel. In 2016, 60% is the amount of long steel for the construction industry; galvanized steel products and steel pipes account for 40%. With the rise of the construction of Vietnam's urban infrastructure, this percentage of long steel in the output is predicted to increase in the future.

The steel industry in Vietnam has a young manufacturing technology, especially in the process of developing against the world when the industry has rolled out before the industrial training. Vietnam Steel goes against the world because of constraints in the development policy of the Government so investments are small. Also, unbalanced growth is witnessed in this industry. Although the production output of domestic firms is more than demand, Vietnam still imports steel from other countries. Because of the following reasons:

First, the low competitiveness of some small domestic firms. Second, the imbalance in diverse product segments. Third, regulatory policies. The steel industry development plan with mechanical engineering industry is not compatible with each other. Fourth, state incentives and preferential investment programs for steel products for the manufacturing industry are not as appealing as policies to promote investment in building and real estate.

However, nearly half of the manufacturing lines are outdated that consume a lot of energy and generate pollution to the ecosystem. Most factories have not been revamped for nearly two decades, and do not focus on synchronization of imported materials. 100,000 tons/year is the number of average rolled steels capacity of a factory in Vietnam. The competitiveness of Vietnam's steel is low due to the technology and production scale of Vietnam are modest and so much fuel and energy loss. Besides 30% of steel factories are small-scale and use outdated technology, there is 40% use technology at an average level. Vietnam's steel industry's backwardness manifests itself in blast furnace technology that

is not productive and mainly derived from China, limited capacity (far below planned), and fragmented production cycle. This also has a high index of energy usage and poor technological efficiency in economic terms. There is a gap in steel production technology and the problem of consuming resources. The increase in construction made a steel demand increased at the end of this year.

Policies of Vietnam's steel industry concentrated on VNSTEEL which was shaped to be a Vietnamese POSCO during two recent decades. Thai Nguyen Iron and Steel joint stock Corporation Firm (TISCO) was founded in 1959 as a leading company of VNSTEEL. The highest incentives which were in the order of priority are state firms; foreign-invested firms, and domestic private firms. However, policy instability causes businesses uncertain. Due to the cross-subsidy mechanism of the Government, domestic electricity costs are cheaper than the international electricity industry. The electricity market is forecasted to gradually phase out cross-subsidization mechanisms across industries and shift to price subsidies through the market. Firms will have struggles in producing EAF kilns because of the upcoming prices in the future which is predicted to increase by 10-20% in the next year.

Vietnam has low investment costs into the technology chain that lead to low production technology and the weak competitiveness of domestic firms. However, with efforts to reform investment and the business environment, Vietnam has ratified 10 bilateral and multilateral FTAs with regional and international partners. It is included ASEAN Free Trade Area (AFTA), ASEAN +1 FTAs (China, Japan, India, Australia, New Zealand, 4 bilateral FTAs between Vietnam and Japan (VJEPA), Korea (KVFTA), and Chile (VCFTA) with the Eurasian Economic Union (EAEUFTA). When Vietnam concluded FTA negotiations with the EU, with ASEAN signing FTAs with Hong Kong in November 2017; there has been strong growth, contributing to socio-economic development, broaden markets in a range of sectors such as manufacturing, retail, service sectors, including the steel industry-one of the sectors that have a significant influence on Vietnam's economy.

Consequently, it could be said that Vietnam steel firms can contribute to the cycle of industrialization and modernization of the country when they manage money, liquidity and other financial indicators well. To achieve this, firms should have right measures to ensure liquidity, accountability and raise a great amount of capital from investors.

3.2. Quick Ratio of Listed Steel Firms

Quick ratios (QR) are determined basing on the data of audited financial statements of listed steel firms are shown in Table 1, below:

Table 1: Quick Ratios of Listed Steel Firms through Years

QR	2014		2015		2016		2017	
	No. of firms	Rate (%)	No. of firms	Rate (%)	No. of firms	Rate (%)	No. of firms	Rate (%)
QR < 0.58	17	68	15	60	13	52	12	48
0.58 < QR < 1	6	24	7	28	6	24	9	36
QR > 1	2	8	3	12	6	24	4	16
Total	25	100	25	100	25	100	25	100

Quick ratios are also graphed in Figure 1 as below:

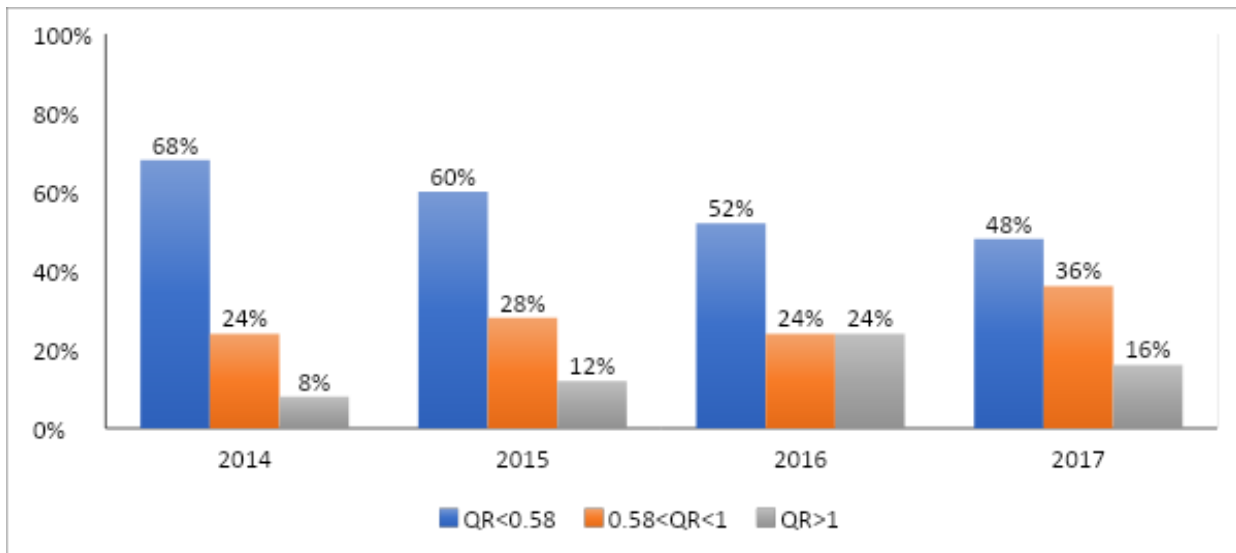


Figure 1: Quick ratios through time series

Table 1 shows that the average of quick ratio of joint stock firms in the steel industry is 0.58 which implies that for each one current liability of the steel business, it will be ensured to pay by 0.58 current assets (excluding inventories).

In general, some firms with high liquidity capacity (above 1) are very positive signal. On the other hand, it should be noticed that the formula for calculating quick liquidity sometimes inadvertently eliminates the firm's non-cash payment capacity in paying debts to maturity. That means not considering the possibility of firms using a high amount of merchandise that the market needs to sell quickly; as well as excluding the receivables that when required, the unit can agree to offset the debts payable to creditors. Consequently, it is a mistake when the amount of the enterprise's money can be small, the short-term investment of the enterprise does not have but the number of items and finished products in stock can be sold at any time. Besides, the receivables can be repaid promptly for high payables, but assesses the quick ratio of small-scale firms. Moreover, current liabilities may be large but does not need to be paid immediately, the quick ratio of the business can also be considered large. Short-term debt has not yet come to maturity but it requires firms to take into account the ability to repay debt shortly while long-term debt and other debt must be repaid or overdue, regardless of whether it will be unreasonable. That is also the reason why many large-scale, well-established businesses in the market, fall into the QR < 0.56 group, this is also the group that accounts for the majority of the three comparisons.

In general, because of some special character of steel industry, firms with low quick ratios are medium and large firms - approximately or more prominent than the industry average, long-term operating time, stable financial situation, and high quantity in inventory in the asset structure. Therefore, the profitability or financial efficiency ratios are still high, but a guarantee of quick debt repayment is still questionable due to high quantity in inventory. Conversely, firms with high quick ratios because of small in inventory, are regularly small-scale firms with short operating times so the financial situation is volatile, less delicate to changes in the economic condition.

3.3. Research Results

Table 2 shows that Prob (p-value) of four factors is less than the 5% significance level, that are: Asset structure (AS) with Prob = 0.000; Debt ratio (DR) with Prob = 0.0565; SIZE with Prob = 0.0028, AGE with Prob = 0.0341. This means that the above variables are significant for the quick ratio (QR) model at the significance level of 5%, or that AS, SIZE, DR and AGE affect QR.

Table 2: Factors Influencing Liquidity Ratios of Steel Firms

Model		ROA	ROS	ROE	AS	DR	SIZE	AGE	GDP	I
QR	B _i	0.1675	0.0106	-0.024	1.015	-0.1681	-0.1394	0.0218	0.0608	0.018
	Prob	0.3905	0.4919	0.722	0.000	0.0565	0.0028	0.0341	0.5944	0.481
	B ₀	0.227014								

Thereby, we build a model equation of determinants affecting Quick Ratio (QR) as below:

$$QR = 0.227014 + 1.015 * AS - 0.1681 * DR - 0.1394 * SIZE + 0.0218 * AGE + e$$

Through the QR model equation, AGE and AS have the same directional effect. On the other hand, SIZE and DR have the negative effect to QR. From the results of linear regression analysis through the models with one dependent variables, quick ratio (QR) as proxy of liquidity. Some conclusions about the impact levels of determinants on the liquidity of listed steel firms on Vietnam Stock Exchange as below:

Firm Size (SIZE): Size has an opposite impact on the quick ratio (QR). In the content of the research topic, "firm size" is measured by the total revenue, when sales increase means that goods in the market are quickly circulated, the market demand for products is large. In addition, when the scale (SIZE) increases, the business will affirm its position in the market, gain the reputation of investors, creditors; therefore, there will be more incentives when borrowing. However, with the special characteristic of steel industry which is high in inventory, it can have some negative affect on the above variable. This finding has the same results with Ferreira and Vilela (2004) when it is assumed that the liquidity ratio will be decreased when the scale of business increases.

Return on Assets (ROA) has no impact on quick ratio (QR). This finding is the same with the Isshaq and Bokpin (2009) study in Ghana. This study suggests that there is a positive relationship between profitability and liquidity; but it is contrary to studies conducted by Bruinshoofd and Kool (2004), Nguyen et al. (2014). ROA that has a positive impact on liquidity is perfectly reasonable. During the research period, the business situation of the steel industry was quite prosperous, profits and total assets were at a high level.

Asset structure (AS) has the positive impact on quick ratio (QR). The structure of assets is measured by the rate of current assets on total assets. Therefore, when current assets increase, quick ratio of firms also increases, because these debts are guaranteed by the mobile assets. In the research phase of the topic, the period of the economy has just gone through crisis and is gradually recovering. Therefore, this affects most sectors in the Vietnamese economy in particular and worldwide in general. Since then, leading to achieved business efficiency and revenue, the average income of the industry is relatively good. By ensuring payment of short-term debts, firms not only improve their financial reputation but also maintain good liquidity. This finding has the same results with the study of Chen and Mahajan (2010).

Debt ratio (DR) is the determinant which influences profoundly on quick ratio (QR). This links with the studies of Ferreira and Vilela (2004) and Gill and Mathur (2011) which have shown a negative correlation between liquidity and debt ratio. To be more precise, the theory is that since the debt ratio increases, it means that the more businesses borrow. Hence, it faces gradual loss of financial autonomy, from which the ability to pay short-term debt is reduced significantly. When they are unable to guarantee the payment of debts, firms will lose their credibility with suppliers and customers. In contrast, when firms maintain a moderate debt ratio, they can both take advantage of loans and ensure liquidity to build credibility in the market, attract investors and lending institutions.

Year of operations (AGE) has a positive impact on the quick ratio (QR). The longer the firms, the more business they have. Therefore, more customers and suppliers trust on their business model. Since then, it is easier to "occupy" the capital of suppliers to serve their production and business activities. In contrast, firms that have just entered the industry will not have a large customer base. At the same time, creditors and suppliers are not ensured, offering immediate payment terms or slow payment policies. Therefore, the firm's operating time (AGE) has a positive impact on the liquidity of the business.

The other four determinants are GDP growth, inflation (I), return on sales (ROS), return on equity (ROE) which do not impact on liquidity of 25 steels firms, unlike the research results of with the studies of Bruinshoofd and Kool (2004) in

Netherlands, Isshaq and Bokpin (2009) in Ghana at el. (2011) in Canada, Thai et al. (2018).

IV. Conclusion and recommendations

The liquidity plays a pivotal role in reflecting financial situation of an enterprise. The higher liquidity of business, the more positive financial situation. Liquidity is influenced by several different factors, requiring financial managers to meticulously clarify the causes and properly implement solutions to enhance liquidity of enterprises.

This study has initially generalized, synthesized and systematized the theoretical issues of factors affecting liquidity of businesses in general, followed by using accounting information, indicators of financial targets from financial statements of steel firms in order to build regression models. This study used the least squares method (OLS) and several testing methods to figure out the influencing determinants and their degree of influences on those factors. Through the results of analyzing quick ratio adjustment model, we see that four variables of ROE, ROS, GDP growth, and I do not have impact on the liquidity. Asset structure (AS) and AGE are two factors influencing quick ratio model positively. In contrast, Debt ratio and SIZE are components affecting quick ratio (QR) model negatively.

Based on the aforementioned analysis results accompanying with economic practices, the study has summarized useful recommendations for both state agencies and enterprises to enhance business liquidity. In particular, for state agencies, macro stability creates a favorable environment for businesses which ensures the success and survival of firms. From listed firms perspective, the enterprises should maintain a reasonable business scale, simultaneously expand the market and boost the product's quality. Furthermore, technological modernization is considered as a crucial factor due to the increasing competitiveness of each industry in these cutting-edge technology areas. In terms of financial aspect, the improvement of debt usage and capital structure are extremely important to maintain the liquidity for business. Enterprises also need to pay attention to build up the efficiency of production and business as it has two-way impact on liquidity. In order to enhance the efficiency of production and business, firms can: strictly manage capital, have a reasonable new investment plan, grasp the needs of customers, upgrade the promotion of new products to build the reputation of that products to the consumers; maintain production of orders, old items have been confirmed quality and position; looking for new partners, new customers; improve the aptitudes of laborers.

Hence, this research has solved the research objectives, clearly pointed out the influencing factors and the impact of those on the liquidity of operating firms. The recommendations proposed in the thesis bring variously precise and constructive suggestions for business managers as well as financial managers in implementing the above solutions.

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