

Stock Buyback: Toxic Cure for the Company to Get out the Dilemma

Zhen Li and Xiaoyang Li

Abstract—Buyback behavior is now flourishing in China's A-share market. In order to investigate whether the influence of buyback behavior can help the companies to improve its corporate performance, we examine the performance and debt-paying ability of the companies after launching the buyback action. The resource-based theory is used following the common assumption that limited resources of the company in the short run. 119 company's financial information from 2006 to 2014 are collected from SZSE (Shenzhen Stock Exchange), SSE (Shanghai Stock Exchange) and easteconomy.com. Then it is possible to test the correlation using OLS. After the regression analysis on the data, we come to the conclusion that stock buyback is negative to the companies' performance and will impose a negative impact on the debt-paying ability.

Index Terms—A-share market, debt-paying ability, short-term performance, stock buyback.

I. INTRODUCTION

With rapid development of capital market, IPO companies are willing to take actions to improve their performance and market expectations. Chen et al. (2013) suggest that free cash, misleading information and signaling are three key determinants to firm's buyback behavior. [1]

The origin of the stock repurchases dated back to 1950s in America. However, Chinese listed companies in A-share market were not allowed to begin stock repurchase until 2005. In 2005, Handan iron and steel co. became the first company to buyback stocks. However, unlike companies in America, Handan iron and steel co. did not perform well after buyback and delisted in 2008. But this did not interrupt the enthusiasm for companies to buy back stocks. More and more companies began to choose stock repurchase as their company strategies. In 2018, 785 listed companies in A-share market made repurchase proposal, with the amount reaching more than 50 billion yuan. Until October 24th 2019, more than 900 listed companies have taken repurchases with the unprecedented 107 billion yuan in the year.

Up to January 1st 2019, the policy Implementation rules for repurchase of shares by listed companies on the Shanghai stock exchange was carried out by China Securities Regulatory Commission (CSRC) to help support listed companies to actively implement share repurchase. Through loosening the conditions for companies to repurchase, broadening the sources of repurchase funds, and appropriately simplifying the implementation procedures, it is reasonable to imagine more and more companies would be

willing to take stock repurchase in the future.

Prior research has mainly focused on influential factors that motivate buyback behaviors but paid little attention on consequences of stock repurchases for IPO firms. Scholars commonly believe that stock buyback is an active response to the undervalued share price. Through stock buyback, the share price could go back to where they should be. However, some companies in A-share market did not perform as well as they were supposed to after buyback. What's worse, firms easily get stuck into the debt problems. For example, the first buyback company in China was even delisted.

Therefore, the impacts of buyback behaviors on firm performance are still unknown. In addition, there is no research investigating the effects of buyback behavior on debt paying ability to our knowledge. Thus, this article is motivated by two research questions: (1) how does buyback behavior influence firm performance and debt-paying ability? (2) how long does the influence last?

Invoking research-based theory, scarce and valuable resources are key elements to firm's performance. It is known that company have limited resources. If they choose to buy back the stock, it is unavoidable that they have to reduce the money used in expansion or R&D. According to the RBT, it is unscientific for the company to have a promising prospect after buyback because the money is not used in areas that can improve their performance. If the performance and debt-paying ability can increase, it must be the company's reason in itself. Therefore, we assume that stock repurchase is negatively associated with firm performance and debt-paying ability.

To demonstrate the hypotheses, we investigated 119 companies in A-share market. The samples we use reflect the popularity of buyback year by year as is shown in Fig. 1. Then we use regression analysis to get the relationship between stock buyback and performance and debt-paying ability to determine the effects of buyback amount.

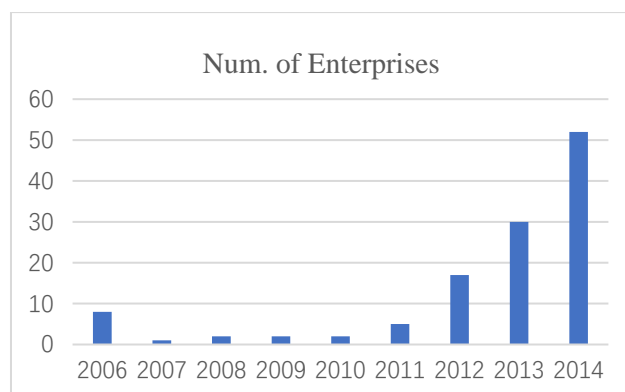


Fig. 1. Number of enterprises that buy back stock.

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Zhen Li is with Changsha University of Science and Technology, China (e-mail: danielleon123@163.com).

Xiaoyang Li is with Nanyang Technological University, Singapore (e-mail: lxymichael9494@gmail.com).

II. LITERATURE REVIEW

A. Buyback Behavior

It is commonly recognized that stock buyback is a business behavior to deal with problems when new companies come into IPO. Buyback behavior is defined as a decision that is made by the company to buy back its own shares from the marketplace. In addition, buyback behavior is regarded as a solution that can help promote the stock price and smooth the financial risk. Farrell (2013) and Matsumoto (2002) show that there is a greater frequency of positive discretionary accruals for firms meeting or beating analysts' forecasts than for firms falling short of consensus forecasts. [2] Not only the misleading signal but also the withdraw of the hot money will lead to the sharp price drop regardless of the good performance of the company or not. Such behaviors will lead to undervaluation, and undervaluation is probably a bad signal to the shareholders, but an opportunity for the companies to buy back the stock.

It is suggested that IPO firms typically tend to have a serious information asymmetry problem (Chen et al, 2012). The public may not be as aware of the true price of the stock as the board of directors. So, during the market downturn, the investors tend to undervalue the stock. When the manager considers their stock price undervalued, they would like to repurchase the stock in order to release a signal of undervaluation. Then the stock price will be promoted. And the stock repurchased can be used to fulfill the employee option or pass a right issue when the price is over-estimated.

Repurchase can be taken as a payout initiation by IPO firms. In a highly uncertain and evolving competitive environment, the inherent flexibility of repurchases relative to the rigidity of dividends is likely to favor the adoption of repurchases as the payout initiation mechanism (Baharat et al, 2009). [3] Grullon and Michaely (2002) point out that during the 1985–2000 period, a majority of firms-initiated cash payouts through repurchases rather than dividends. [4] Repurchases have been widely considered a method of cash payouts according to the life cycle theory that dividends are typically paid by mature, profitable, established firms with low growth prospects while earnings retention is preferred by young, while high growth firms with an abundance of investment opportunities and limited resources (DeAngelo et al., 2006). [5]

B. Short-Term Performance

Short-term performance is company's financial benefits gained from the business operation in the short run. Compared with long-term performance, it reflects more about the current running of the company.

Short-term performance, as an important financial index, has been investigated for a while. Previous studies have posited several factors that influence firm's short-term performance, including external investment, cooperation, competition intensity and so on (Cui, Griffith et al. 2005, Allen and Gale 2000). [6] Collectively, it is believed that short-term performance is significantly determined by the market environment since external investment, cooperation and competition intensity are all market factors from the contingent perspective. Bai & Chang (2015) suggest that fierce marketing environment significantly weakens the positive impact of corporate social responsibility on firm's

short-term performance. [7] Therefore, it is difficult for a company to have a good short-term performance when the external market environment is terrible. For example, in 2020 financial crisis, many companies may have sharp decreased revenue in the first quarter. The financial report they present may strongly influence the market confidence. Not only the suppliers may consider its ability to endure the financial crisis, but also the bank will consider its credit and perhaps give him less loan which the company is emergently in need of.

Prior research has proved that company's short-term performance affects investors' decision. If firms' short-term performance can meet the expectation of investors, capital and investment will flow into the company. As a stimulus, good short-term performance can attract fund company and investment bank to reappraise the latest share price to a higher level. The increased share price will boost the reputations of the management team and grant investors with confidence thus raise the reputation of the company which may provide assurance to the customers and supplies. So short-term performance is demonstrated to have impacts on the company's operation.

C. Debt-Paying Ability

Debt paying ability refers to company's ability to pay back the debt. Satriyo et al. (2017) suggests that debt paying ability is the extent to which the capital owners cover the entire debt (both current liabilities and long-term debt) to external parties. [8]

The financial literature explores that several determinants have consistent effects on firm's debt paying ability. The fluctuation in operating profits is one factor that is used to measure bankruptcy risk (Lin et al. 2010) and bankruptcy risk is negatively related to debt paying ability. [9] Another determinant of debt paying ability is the effectiveness level of tangible fixed assets (Booth et al. 2001). [10] According to the evidence, efficient tangible fixed assets can lead to improved debt paying ability because of the maturity of debt structure. In addition, external market environment also plays an important role in firm's debt-paying ability.

Companies with liquidity problems are very dangerous to investors and the directors. Pai (2017) suggests that a profitable business may fail if it does not have adequate cashflow to meet its liabilities. [11] Lack of cash or liquid assets will deprive the company of the credit they are given by the bank, supplier and the public. Meanwhile, this will also cause the refusal to future loan and higher price quoted by the supplier. Some companies may choose to take a loan to expand their business. According to life-time theory, companies at maturity stage will expand production and add to advertising cost to increase their market share. It can lead to scale of economies to earn excess profit but also can lead to risks that by purchasing new equipment and advertising, and the enterprise will face a lot more cost when the equipment depreciates and so on.

III. HYPOTHESIS DEVELOPMENT

Resource-based theory, widely used in the strategic management, emphasizes value maximization of a firm through pooling and utilizing valuable resources. According to the theory, firms are viewed as attempting to find the

optimal valuable resources and enlarge the resources base. Contrary to transaction-cost theory, resource-based theory focuses on resource acquisition and integration. Generally speaking, breadth of resources and depth of resources are two perspectives of resources, which are the key determinants of firm performance and competitive advantages.

Resource-based theory, like the resources it describes in firms, is a path dependent phenomenon. Its evolution depended on specific individuals at particular points in time making idiosyncratic decisions (Barney). [12] It is stated by Liu and You (2020) that an enterprise is a “collection of resources,” which determines the speed, mode, and boundaries of its growth. Therefore, the resources are usually scarce, imperfectly imitable, and lacking in direct substitutes [13].

The scarcity of the resources requires the company to balance the utilization of the limited resources. The utilization of the resources in this area will inevitably harm the other areas which otherwise can use the resources. When the company chooses to repurchase stocks, this company will inevitably reduce the investment in R&D and market expansion because the retained cash flow is used to buy back stocks. Also, their debt-paying ability is highly possibly to be weakened because the reduction in working capital. Therefore, we can draw the following two hypotheses:

H1: *Buyback is negatively associated with firm's performance*

H2: *Buyback is negatively associated with firm's debt-paying ability*

IV. DATA AND METHODOLOGY

A. Data Source

To test hypotheses, this study collected data from multiple sources using multiple methods. Before collecting data, we identified 119 companies from A-share market in China which had conducted buyback behaviors after IPO. Since listed companies in A-share market were not allowed to employ stock repurchase until 2005, we pooled the data on all buyback behaviors in each focal firm's strategic portfolio in a given year, producing firm-year observations for 119 companies from 2005 to 2014.

The data for buyback behavior come from Shanghai stock exchange, Shenzhen stock exchange and Easteconomy.com. The companies which announce the act to buy back stocks are recorded on the sheets. We have excluded the one-yuan repo and have manually deleted the ST companies (companies with special treatment) and Delisted companies.

In terms of the total assets, current assets, liability and stocks, the data are obtained from the balance sheet disclosed in Shanghai stock exchange and Shenzhen stock exchange. The data for equity multiplier, age and ROA are obtained from the easteconomics.com. After cleaning the missing cases, we constrained the data with 95% confidence interval and standardized the variables.

There are two reasons why we stop collecting data after 2015.1.1. First, we hope to have a four-year record to regress in order to have an objective data. (some companies in China delayed to disclose their statements of financial performance due to the covid-19) Second, there exists 2015-2016 stock

crash as well as China-United States trade war which took place after 2018.7.6. By not investigating buyback data after 2015, we can eliminate these influences.

B. Variables

The instrument for buyback scale is buyback amount. The amount of buyback can accurately account for the repurchase behaviors. We accumulate the buyback amount disclosed each time to get the final buyback amount. If one buyback action is announced to be stopped by the board of directors and another buyback action is started afterwards, we will take it as another buyback action.

In some occasions, additional stocks may be issued when the buyback behavior is undergoing. Then the repurchase ratio may not stable in a certain period of time. So, buyback amount is preferred to represent the buyback scale.

Firm performance is measured with returns on equity (ROE), which is calculated:

$$ROE = \text{Net Profits} / \text{Net Assets}$$

ROE is a measure of how much net profit can be generated net per unit of assets. The higher the ratio is, the better the utilization of the company's assets is, which indicates that the company is doing a good job in increasing profits and making use of the assets. However, this ratio may be influenced by some factors such as depreciation. From the formula, we can get that ROE is negatively related to the net assets while depreciation is negatively related to net assets, which makes depreciation is positively related to ROE. If a company purchases new facilities this year, then the ROE will get down because depreciation will not be calculated in the first year.

Two variables are used to measure debt-paying ability in our regression analysis. Quick ratio is used to reflect the short-term debt-paying ability, which is calculated:

$$\text{Quick ratio} = (\text{current assets} - \text{stocks}) / \text{current liabilities}$$

While solvency ratio is used to predict the long-term debt-paying ability which is computed:

$$\text{Solvency ratio} = \text{total liability} / \text{total assets} * 100\%$$

The lower the quick ratio, the more adverse the company is to pay off the debts in the short term. This situation may occur when company is facing the liquidity problem in the short run. However, when the company is going to expand the business or to purchase another company, the drop in quick ratio is reasonable then.

Solvency ratio is used to measure the ability of enterprises to conduct business activities with the funds provided by creditors, and it is also used to reflect the safety degree of creditors in issuing loans. Usually the high asset-liability ratio indicates that the capital source of the enterprise is more from debt and less from owner. Also, the higher asset-liability ratio, the higher financial risk and more insufficient cash flow.

Collectively, quick ratio and solvency ratio could comprehensively capture the construct of debt-paying ability and reflect the short-term and long-term ability to pay off the debts for firms.

To make the outcome more objective, control variables are added into the function to decrease their effects on our outcome. Three control variables have been adopted by us to

get the objective outcome.

Company's assets can influence the outcome. Companies with large assets are less likely to face the liquidity problem compared with those with few assets. Also, according to Profit of Scale theory, large companies tend to earn more profits because they can occupy the market to realize economies of scale. Company's assets need to be considered in regression.

Companies with a longer history tends to be more profitable compared with companies with a shorter history. If a company has a longer history, it may accumulate a lot of management skills and have a relatively larger market share. So, it is necessary to eliminate the effects of the company's age.

According to Dupont analysis, ROE is positively related to the equity multiplier. Also, it has been discovered that equity multiplier has a positive relationship with solvency ratio. So, we have to control the equity multiplier to minimize its effects on the company's performance and debt-paying ability.

C. Research Models

OLS is employed to conduct research analysis in this study because OLS method can find the best matching function of the variables by minimizing the squares of errors. We specify the linear regression model:

$$ROE = a * BA + b * CAG + c * CAS + d * CEM + e \quad (1)$$

$$R_s = a * BA + b * CAG + c \quad (2)$$

$$R_Q = a * BA + b * CAG + c \quad (3)$$

Where R_s represents solvency ratio, R_Q represents quick ratio, BA is the buyback amount of the stocks, CAG is the age, CAS is the total assets, CEM is the equity multiplier. Age, assets and equity multiplier are controlled in the formula of ROE because they are considered to have influence on the performance of the company.

D. Results

Table I presents the results of regression analysis estimating the impacts of buyback on firm performance. As indicated, H1, which proposes that buyback is negatively associated with firm performance, is supported ($\beta: -1.2477$; $p < 0.01$) in the first three years. In addition, it can be concluded that the relationship between buyback amount and ROE is negatively related in the three years after buyback with reaching the peak in the second year and going downward from the third year.

TABLE I: REGRESSION RESULTS TABLE
DEPENDENT VARIABLE = ROE

	Year1	Year2	Year3	Year4
BA	-1.2477**	-1.7594**	-1.4834**	-0.4149
CAG	0.0407	0.0319	0.0309	0.0668
CEQ	0.0137	-0.5273	-1.6785	-2.0764
CAS	0.0007	0.0009	0.0011	0.0009
R ²	0.0271	0.0516	0.0477	0.0411
Adj R ²	0.0022	0.272	0.0231	0.0166

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table II presents the results of regression analysis estimating the impacts of buyback on solvency ratio. As indicated, H2, which proposes that buyback is positively

associated with debt-paying ability, is supported ($\beta: 0.0407 > 0$; $p < 0.01$) in the four years we investigated. In addition, it can be concluded that the relationship between buyback amount and solvency ratio is positively related in the three years after buyback with reaching the peak in the first year and going downward from the second year.

TABLE II: REGRESSION RESULTS TABLE
DEPENDENT VARIABLE = SOLVENCY RATIO

	Year1	Year2	Year3	Year4
BA	2.4260**	1.9139**	2.1229**	0.3648
CAG	-0.0951	-0.1301	-0.0841	-0.0500
CEQ	23.0446	23.1758	20.6883	22.0966
CAS	-0.0045	-0.0032	-0.0025	-0.0032
R ²	0.8349	0.8450	0.7891	0.7774
Adj R ²	0.8306	0.8411	0.7837	0.7716

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

TABLE III: REGRESSION RESULTS TABLE
DEPENDENT VARIABLE = QUICK RATIO

	Year1	Year2	Year3	Year4
BA	-0.3826**	-0.3570**	-0.3488**	-0.3147**
CAG	-0.0023	0.00145	-0.0029	-0.0035
R ²	0.0348	0.0503	0.0529	0.048
Adj R ²	0.0226	0.0383	0.0408	0.0359

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table III presents the results of regression analysis estimating the impacts of buyback on quick ratio. As indicated, H3, which proposes that buyback is negatively associated with quick ratio, is supported ($\beta: -0.3826 < 0$; $p < 0.01$) in the four years we investigated. In addition, it can be concluded that the relationship between buyback amount and quick ratio is negatively related in the three years after buyback with reaching the off-peak in the first year and going downward from the second year.

V. DISCUSSION

A. Performance

The regression results that we carry out is consistent with all three hypotheses. From Table I, we can find out that company's performance will decline after the buyback behavior. According to Chen et al (2013), they also conclude that IPO announcing repurchase firms suffer greater declines in operating performance. In their studies, stock buyback amount has a negative relationship with both ROA and EPS, which proves that buyback behavior is negative in increasing the firm performance in US stock market.

After splitting the formula of ROE, we can find that ROE is determined by both net profits and net assets. In our regression analysis, we have controlled the control variable net assets. However, the coefficient of buyback amount is still negative, which indicates that buyback amount itself is negative to the firm performance. Also, we can see from the outcome that the negative effects are greatest in the second year after buyback. The outcome is consistent with the misleading theory which suggests that those companies which need to conceal their bad performance needs to buy back their stocks in order to promote their stock prices. By doing so, they will not be blamed by the shareholders so not to be voted out by the investors.

B. Debt-Paying Ability

According to the Table II, the regression results prove that companies' debt-paying ability will be weakened after buyback behavior. The solvency ratio can reflect the company's objectives they are going to reach in the long run. Usually, companies choose to buy back stocks because they hope to maintain their position in the industry rather than enlarging the market share. If they wish to expand their market share or develop new technologies, they may choose to increase their issues in stocks to raise capital rather than stock buyback. Therefore, in the third year, the influence of stock buyback will be faded out and in the fourth year the influence of stock buyback will have no effect on long-term debt-paying ability at all.

So, companies buying back stocks will inevitably influence their debt-paying ability in the first two years. Just as we have investigated in the quick ratio which reflects the firm's short-term debt-paying ability, the quick ratio appears to be most negatively related to buyback amount in the first year, and the effect of buyback amount on quick ratio will fade in the next three years which shows that the buyback behavior will influence the short-term debt-paying but in the long run will not cause a continuous liquidity problems.

VI. CONCLUSION

This study demonstrates two hypotheses that stock repurchase is negatively associated with firm performance and debt paying ability, which is contrary to the existing conclusions that stock buyback is beneficiary to the company's performance. Our sample includes 119 IPO firms and OLS results prove that buyback behavior generally has adverse impacts on the listed company's performance and can weaken the company's debt-paying ability in the years after buyback. Companies will suffer such phenomenon for around three years and the effects will be weakened year by year. If a company is equipped with the ability to deal with the negative effects, buyback option is indeed a good choice because stock buyback has many advantages either.

For investors, buyback behavior is not always the good way to find the profitable company in the future. CSCR has lowered the threshold for companies to buy back stocks since 2019.1.1. For the market, CSCR should also inform investors that buyback behavior is unnecessarily the good news because buyback behavior sometimes can be the trick for the directors to conceal their poor performance or so.

contribution and limitation

The primary goal of the article is to inform both the investors and the firms' directors of the impacts of buyback behaviors on the corporate performance and debt-paying ability. With the growing popularity of buyback behaviors in China, some articles investigate the corporate governance in short term. In contrast, this article provides a brief view into the long-term performance by introducing the company's debt paying ability.

We use control variables approach to reduce the effects of total assets, quick ratio, equity multiplier and ages on the outcomes we get. Once we remove these, the OLS regressions will not give qualitatively unequivocal results. Especially by introducing the equity multiplier, we can make

out the relationship between the percentage of buyback and the debt paying ability.

The article can help those companies with poor performance to decide whether they should buy back stocks improve their corporate performance. In addition, the essay provides investors guidance to predict the future performance of the buyback companies.

However, the sample size used in this article is relatively small compared with the total sample size in China. In order to examine the long-term impacts of stock repurchase on performance or debt-paying ability of the firms, we need to have relative data 5 years after the repurchase. So, we are forced to stop the data collection in 2014.

The data we gather may be influenced by the financial crisis. In the 2015 stock crash, Shanghai securities composite index in 2015 almost dropped by 49.05% which imposes great influence on the performance of companies we investigated. The terrible external market environment leads to the poor performance of the companies which will have some effects on the outcome we get.

Finally, we still need to consider the inverse effects of ROA and debt paying ability on stock repurchase. ROA and debt-paying ability can influence the buyback amount of the company. We still need to explore the inverse effects of them.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS

Zhen Li is responsible for the literature review. Li Zhen collected the data and analyzed the data. Xiaoyang Li supervised the procedure and helped with data processing. Zhen Li came up with the hypothesis and Xiaoyang Li suggested the theory. All the authors had approved the final version.

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Zhen Li was born in Taizhou Jiangsu China on Apr. 19, 1999. He is now an undergraduate in Changsha University of Science and Technology majoring in international trade. His major field of study is in stock investment and crowdsourcing.

He took an internship in Oceanwide Holdings Co., Ltd in 2020 as a financial assistant. He is a hard-working student at school. Over the three years at university, He achieved the first-class scholarship in the second school year and second-class scholarship in the first school year.



Xiaoyang Li, Frank was born in China on Sept. 4, 1994. He is now a PhD student in Nanyang Technological University majoring in management information systems. His major field of study is in network analysis, technological Innovation and entrepreneurship.

He took several international conferences such as AOM, IS and so on. He is a hard-working student at school. Over the three years at university, He achieved the presidential scholarship and achieved great academic and research performance.