

Does Stock Repurchase Enhance Price Stability? —A Study from the Perspective of Corporate Life Cycle

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Abstract. In the backdrop of intensified capital market volatility, stock repurchases have gained significant attention as a crucial strategy for companies to stabilize their stock prices. However, the effectiveness of these repurchases may vary depending on the stage of the company's lifecycle. This essay centers on the effects of stock repurchases on stock price stability, using Chinese A-share listed companies from 2010 to 2022 as the research sample. It delves into the heterogeneity of this impact from the perspective of the firm's life cycle. A two-way fixed effects model is used in the investigation. Initially, the complete sample is subjected to a regression analysis to examine the overall relationship between stock repurchases and stock price stability. Subsequently, the sample is categorized into three groups: growth phase, mature phase, and decline phase, for separate testing. This approach aims to investigate the varying impacts of stock repurchases on stock price stability across different stages of the company's lifecycle. The results show that stock repurchases can significantly enhance stock price stability, and this effect is most pronounced in the mature stage of the enterprise, while it is not significant in the growth and decline stages. In addition, factors such as enterprise size and asset-liability structure also have a systematic impact on stock price volatility. This study not only enriches the research results in the field of stock repurchases and provides a new perspective for understanding the market effects of repurchase behavior, but also offers a theoretical foundation and practical guidance for regulatory authorities to enhance the repurchase system and enterprises to formulate differentiated repurchase strategies.

Keywords: Stock repurchase, stock price stability, corporate life cycle.

1. Introduction

In the last few years, stock repurchases have become a key capital operation for listed corporations and investors. They are used to stabilize stock prices, send positive signals, and boost investor confidence. However, most research focuses on repurchase motivations or short-term reactions, lacking discussion on long-term price stabilization effects, especially from an enterprise development perspective. Enterprises differ in financial traits, transparency, market expectations, and investor structures across lifecycle stages, likely causing varied impacts on stock price stability.

The research on the relationship between stock repurchases and stock prices centers on signal transmission and market liquidity. When a company's stock price is below its intrinsic value, a buyback sends a positive signal, attracting investors and easing the downward trend [1]. The enterprise life cycle includes four stages: embryonic, growth, maturity, and decline [2]. As most listed companies have passed the embryonic stage, this article will not elaborate on it. By repurchasing shares, Hongdou Corporation signals undervaluation, boosting investor confidence. For mature enterprises, repurchases hold strategic significance. Haier Smart Home maintained annualized stock price volatility below 18% through continuous repurchases, demonstrating their stabilizing effect [3]. During its mixed-ownership reform, Gree Electric reduced its stock's beta coefficient relative to the industry index from 1.2 to 0.9, enhancing resistance to market fluctuations [4]. This stability stems from mature companies' robust cash flow. Guangbo shares saw a 23% increase in stock price volatility post-repurchase due to weak business transformation support. However, Mengwang Technology increased its new energy revenue from 12% to 31%, showing that success in repurchases during a recession hinge on strategic alignment [5].

Existing literature has examined corporate stock price stability from the perspective of stock repurchases; however, it lacks exploration of how the corporate life cycle moderates the impact of

repurchases on stock price stability. This study addresses this research gap [6]. This paper employs a two-way fixed effects model to examine the heterogeneity and concludes that mature companies' stock repurchases have a significant positive impact on stabilizing stock prices. This finding holds theoretical and practical significance. In terms of theory, it broadens the perspective of existing literature. In practical terms, it provides theoretical support for companies when making repurchase decisions.

2. Research Hypothesis

According to the signal transmission theory, when a company deems its stock price undervalued, repurchasing shares signals this to the market, enhancing investor confidence, reducing panic selling, and suppressing abnormal stock price fluctuations [7]. Stock repurchases significantly lower the danger of price collapse, especially in companies with comprehensive disclosure of information [8]. From a strategic perspective, the effectiveness of buybacks relates to a company's life cycle stage. Mature firms, with stable cash flow, find their buyback intentions more readily accepted by the market. Growth-stage companies, despite significant capital needs, can still convey management's optimism and stabilize sentiment with a reasonable buyback plan. Therefore, there is the hypothesis H1:

H1: Stock repurchases are positively correlated with stock price stability.

Although growth-stage enterprises face high investment demand and financing constraints, reasonable buybacks can still convey confidence in future profitability to the market [4], alleviating uncertainty from business expansion and supporting stock price stability. Mature enterprises, with stable cash flow and clear strategies, have buybacks more readily recognized by the market. Enterprises with higher information transparency are more likely to be accepted by investors through buyback signals [9]. Mature firms often repurchase to optimize capital structure and reward shareholders, stabilizing stock prices. However, for firms in recession, buybacks may not significantly stabilize prices [10]. When governance issues like share pledges exist, repurchases may be seen as short-term "market value management" exacerbating investor concerns and failing to support the stock price. Based on this, there is the hypothesis H2:

H2: The positive correlation between stock repurchases and stock price stability is strongest during the mature stage, and is not significant during the growth and decline stages.

3. Research Design

3.1. Sample Data and Data Sources

This paper takes listed companies in Shanghai and Shenzhen A-share markets from 2010 to 2022 as the initial research sample. Firstly, we exclude the samples of financial industry companies, as the capital structure and regulatory environment of this industry are highly specific and may interfere with the universality of empirical results. Secondly, ST and *ST companies were excluded to avoid the impact of abnormal financial conditions on stock price volatility and repurchase behavior. Thirdly, companies with serious missing financial data and stock price data were deleted.

In terms of data sources, both corporate financial data and stock price data are sourced from the RESSET database, while information related to stock repurchases is sourced from the stock repurchase module in the CSMAR database.

3.2. Variable Definition

As shown in Table 1, the explanatory variable stock repurchase intensity is calculated by dividing the number of stocks repurchases in the current year by the company's entire share capital at the start of the year.

For the dependent variable (stock price stability), this study measures stock price stability by stock price volatility. Consistent with traditional financial theory—where scholars typically measure stock price volatility using return variance—this study uses the standard deviation of daily stock returns

within a quarter as the primary proxy for stock price volatility. Additionally, it employs stock price amplitude as a secondary proxy for stock price stability. The calculation formula is:

$$\text{Amplitude} = \frac{\text{price_high}_{i,t} - \text{Price_low}_{i,t}}{\text{Price_close}_{i,t-1}}$$

For the moderating variable of enterprise lifecycle, to avoid inconsistencies and repeated jumps in the division of enterprise lifecycle across different years, this paper divides the lifecycle based on the positive and negative net cash flow during the period. Control variables include company size (Size), debt-to-asset ratio (Lev), profitability (Roa), growth potential (Growth), cash flow (Cashflow). Table 1 provides the explicit definitions for the specific variables.

Table 1. Variable definition

Variable Type	Variable Symbol	Variable Name	Variable Definition Description
Explained Variable	Var	Stock Price Volatility	Calculate the standard deviation of daily stock returns within a quarter every quarter to measure stock price volatility. A higher value indicates greater instability in stock prices
Explanatory Variable	Rep	Stock Repurchase Intensity	Number of stocks repurchased in the current year ÷ Entire number of stocks at the beginning of the year
Moderator Variable	Lifecycle	Corporate Life Cycle	It can be divided into the growth stage, the maturity stage, and the decline stage
Control Variable	Size	Company Size	Natural logarithm of the total assets of the enterprise
	Lev	Debt-to-asset Ratio	Total liabilities of the enterprise at the end of the period ÷ Total assets at the end of the period
	ROA	Profitability	Net profit ÷ Average total assets
	Growth	Growth Potential	(Operating income in current period - Operating income in previous period) ÷ Operating income in previous period
	Cashflow	Cash Flow	Net cash flow from operating activities ÷ Total assets

3.3. Build A Model

To test the effect of stock, repurchase intensity on share price volatility, this paper constructs the following panel fixed-effects model (1):

$$\text{Var}_{it} = \alpha_0 + \alpha_1 \text{Rep}_{it} + \alpha_2 \text{Size}_{it} + \alpha_3 \text{Lev}_{it} + \alpha_4 \text{ROA}_{it} + \alpha_5 \text{Growth}_{it} + \alpha_6 \text{Cashflow}_{it} + \mu_i + \lambda_t + \varepsilon_{it} \quad (1)$$

Where Var_{it} represent the stock price volatility of enterprise i in period t , measured by the standard deviation of quarterly daily returns, serves as the core dependent variable: Rep_{it} is the core explanatory variable in this paper, representing the intensity of stock repurchases; Size_{it} is the company size; Lev_{it} is the debt-to-asset ratio; ROA_{it} is the return on equity; Growth_{it} is the revenue growth rate; Cashflow_{it} is the proportional relationship between net cash flow from operating activities and total assets. Also, μ_i is the individual fixed effect, used to control for unobservable characteristics that do not change over time across different enterprises, λ_t is the time fixed effect, used to control the common impact of macroeconomic environment and institutional changes on each period, ε_{it} is the stochastic disturbance term.

In the mechanism analysis, to investigate the moderating effect of the enterprise lifecycle, this paper introduces the lifecycle variable and its interaction term with buyback intensity based on the aforementioned benchmark model, expanding the model (2):

$$\text{Var}_{it} = \beta_0 + \beta_1 \text{Rep}_{it} + \beta_2 \text{Lifecycle}_{it} + \beta_3 (\text{Rep}_{it} \times \text{Lifecycle}_{it}) + \sum_k \gamma_k \text{Control}_{it} + \mu_i + \lambda_t + \varepsilon_{it} \quad (2)$$

Among which the Lifecycle_{it} is used to depict the life cycle stage of the enterprise, the significance and direction of the interaction coefficient β_3 are used to test the moderating effect of the life cycle between stock repurchases and stock price volatility. Through this model setting, this article

can not only identify the direct effect of stock repurchases on stock price stability, but also reveal the differentiated impact of the development stage of the enterprise in this mechanism.

4. Empirical Results and Analysis

4.1. Descriptive Statistics of Variables

Table 2 shows basic statistics—sample size, mean, standard deviation, minimum, and maximum values—for each variable. The sample size is balanced, reflecting the research subjects’ characteristics well. Data on the explained variable (stock price volatility) reveal significant differences in stock stability across firms. Extreme values for the independent variable (stock repurchase intensity) indicate some firms engaged in high-intensity repurchases. For control variables, the wide range in firm size reflects substantial asset scale differences. Some firms have high financial leverage based on asset-liability ratios. Profitability extremes show serious losses or extraordinary profits. Corporate growth is generally positive, but some firms have experienced negative growth. Cash flow is positive overall but varies widely.

Table 2. Descriptive statistics of the variable

Variable	Obs	Mean	Std. Dev.	Min	Max
Var	39076	0.834	0.494	0.003	8.378
Rep	39076	0.025	0.135	-0.079	9.334
Size	39076	22.161	1.333	15.577	28.636
Lev	39076	0.416	0.211	0.007	1.957
ROA	39076	0.042	0.077	-1.859	1.285
Growth	39076	0.143	0.259	-0.286	0.772
Cashflow	39076	0.045	0.076	-0.744	0.876

4.2. Correlation Analysis

This article conducted a Pearson correlation coefficient test on the main variables: first, a notable inverse correlation exists between the two indicators of firm’s stock price volatility and stock repurchase intensity, which is consistent with expectations, and the measurement of the indicators has good consistency. Secondly, the correlation coefficients between variables are relatively small, indicating a limited degree of mutual influence. Performing multiple linear regression on these variables can provide an accurate analysis of the impact of independent variables on dependent variables. After each regression, a VIF inflation factor test was conducted, and the resulting coefficients were all less than or equal to 10, indicating that there was no severe multicollinearity issue. Thirdly, considering that the Pearson correlation coefficient is a partial correlation coefficient, the relationship between the volatility of stock prices and the intensity of share repurchases is also affected by other variables. Therefore, further multiple regression tests need to be conducted based on the control variables.

4.3. Benchmark Regression Analysis

Table 3 reports the benchmark regression results. Overall, the estimation results of the three models show high consistency. The coefficient of the core independent variable (stock repurchase intensity) is negative across all models and significant at the 1% level, demonstrating that stock repurchases significantly reduce stock price volatility and improve stock price stability. This result aligns with the theoretical expectation that stock repurchases act as a “market stabilizer”. That is, through share repurchases, companies can not only signal to the market that their value is undervalued, but also enhance investor confidence, alleviate irrational market fluctuations, and stabilize stock price movements.

Table 3. Benchmark regression analysis

Numble	(1) Var	(2) Var
Rep	-0.0768***	-0.1067***
	(0.0179)	(0.0161)
Size	-0.0934***	-0.0992***
	(0.0022)	(0.0052)
Lev	0.0551***	0.1608***
	(0.0147)	(0.0212)
ROA	0.1777***	0.2660***
	(0.0389)	(0.0380)
Growth	0.0980**	0.0171*
	(0.0099)	(0.0089)
Cashflow	-0.1316**	0.0324
	(0.0348)	(0.0333)
_cons	2.8672***	2.9493***
	(0.0445)	(0.1122)
N	39076	38649
Individual Fixed	No	Yes
Time Fixed	No	Yes
R2	0.0630	0.4693
F	437.93	74.92

4.4. Robustness Test

Table 4 presents the endogeneity robustness test results using lag variables to verify whether endogeneity affects the impact of share repurchase intensity on stock price volatility. Models (1) and (2) incorporate the first-order (lRep) and second-order (l2Rep) lag terms of repurchase intensity to address potential endogeneity from unobserved factors influencing both repurchase behavior and stock price volatility. The results show lRep is significantly positive in model (1) with a coefficient of 0.022 (5% level), and l2Rep is significantly positive in model (2) with a coefficient of 0.026 (10% level), indicating a positive correlation between lagged repurchases and current volatility. However, when current repurchase intensity (Model 3) is reintroduced, its coefficient remains -0.107 (1% level), consistent with the benchmark regression, confirming that current repurchase intensity significantly reduces stock price volatility and verifying the robustness of the findings.

Table 4. Robustness test

Numble	(1) Var	(2) Var	(3) Var
lRep	0.022**		
	(2.048)		
l2Rep		0.026*	
		(1.922)	
Rep			-0.107***
			(-6.635)
_cons	1.933***	1.956***	2.914***
	(26.108)	(22.762)	(26.953)
N	33735	29194	39076
Controls Variable	Yes	Yes	Yes
Individual Fixed	Yes	Yes	Yes
Time Fixed	Yes	Yes	Yes
R2	0.330	0.330	0.169
F	845.636	774.945	385.391

5. Mechanism Analysis

First, the corporate cycle mechanism analysis. Table 5 shows results from examining how a company's development stage affects the impact of stock repurchases on stock price volatility. After introducing the corporate life cycle variable and its interaction with repurchase intensity (Rep \times Lifecycle), the Rep coefficient is -0.147 (significantly negative), larger in absolute value than the baseline (-0.107). This suggests repurchases more effectively reduce volatility when controlling for the life cycle, confirming their role in market stability. The lifecycle coefficient is -0.023 (1% level), indicating mature firms have lower volatility due to stable operations, investments, and better disclosure, reducing market uncertainty.

Secondly, heterogeneity analysis of business cycles. Columns 3-5 of Table 5 show heterogeneity test results across enterprise lifecycle stages to reveal differences in how share repurchases affect stock price volatility. The results show significant stage-based differences. For mature firms, the Rep coefficient is -0.081 (1% level), indicating repurchases significantly reduce volatility and stabilize markets. In growth and decline stages, Rep coefficients are -0.022 and -0.030, respectively, both insignificant, suggesting buybacks do not improve price stability in these stages. This aligns with the mechanism analysis, further confirming the lifecycle's moderating role in the relationship between share repurchases and stock price fluctuations.

Table 5. Mechanism analysis

Numble	(1) Var	(2) Var	(3) Var	(4) Var	(5) Var
Rep	-0.147***	-0.107***	-0.022	-0.081***	-0.030
	(-4.964)	(-6.635)	(-0.207)	(-4.242)	(-0.945)
Lifecycle	-0.023***				
	(-12.461)				
Rep_Lifecycle	0.020*				
	(1.911)				
_cons	3.184***	2.914***	3.179***	2.974***	2.514***
	(28.733)	(26.953)	(7.992)	(20.634)	(11.012)
N	38828	39076	4984	26360	7484
Controls Variable	Yes	Yes	Yes	Yes	Yes
Individual Fixed	Yes	Yes	Yes	Yes	Yes
Time Fixed	Yes	Yes	Yes	Yes	Yes
R2	0.173	0.169	0.200	0.169	0.265
F	353.632	385.391	36.658	244.903	90.133

6. Conclusion

This study systematically examines the effect of stock repurchases on stock price stability, and further analyzes the differences in this impact at different stages based on the perspective of the enterprise lifecycle. The results show that stock repurchases can significantly enhance stock price stability, and this effect varies significantly depending on the stage of the company's lifecycle. Specifically, the implementation of buybacks by mature enterprises has the most significant promoting effect on stabilizing stock prices, while there is no significant impact on growth and decline period enterprises. In addition, factors such as enterprise size, asset liability structure, profitability, and growth can also have a systematic impact on stock price fluctuations.

The findings of this study provide practical references for regulatory authorities to optimize repurchase policies, for firms to design targeted repurchase plans, and for investors to rationally interpret repurchase activities. Future research could be expanded in three directions: first, refining the corporate life cycle classification by incorporating industry heterogeneity; second, investigating the nonlinear relationship between repurchase frequency, repurchase ratio, and stock price stability; third, comparing the moderating effect of the corporate life cycle on repurchase efficiency across different market conditions (e.g., bull markets vs. bear markets).

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