

The Impact of Monetary Policy Changes on the Performance of Real Estate Firms

-Based on the Research of Real Estate Enterprises Listed on Shanghai and Shenzhen A-share Market

Xiang CHENG

School of economics, Sichuan University
Chengdu, China
chengxiang_scu@163.com

Abstract—The real estate industry plays a significant role in promoting the national economy, and significantly impacts the market economy of China. This paper takes Shanghai and Shenzhen A-share listed real estate enterprises from 2014 to 2017 as samples to study the influence that monetary policy's effect on enterprise performance. Empirical results show the following results: (1) Interest rate liberalization policy can markedly improve the financial and market performance of real estate enterprises. (2) Interest rate liberalization has different effects on enterprises with different developmental history. For listed state-owned real estate enterprises, interest rate liberalization can improve their financial performance, but has little effect on the improvement of their market performance; for listed non-state-owned real estate enterprises, interest rate liberalization can significantly upgrade their market performance but reduce their financial performance remarkably.

Keywords—Interest rate liberalization; Enterprise performance; Policy effect; Real estate firms

I. INTRODUCTION

In line with the report of the 19th National Congress of the CPC, effort should be made to ensure the good use of both the government and the market to enable the decisive role of the market in resources allocation and a better government role. With a pattern of organic integration, complementarity, coordination and mutual promotion between the market and the government, the sustainable and healthy economic and social development will be promoted, which is the basic theoretical thinking on the government-market relationship. The role of government and market in resources allocation and economic and social development is like two wheels of a car, and neither can be neglected. According to international experience, constant and rapid economic growth and social progress demand an effective government as well as a market mechanism to allocate resources.

Since the emergence of markets, enterprises, and modern nation-states, governments, markets, and enterprises have become the three most basic institutional and organizational factors of the social economic system. Their interrelationships have become the main criterion for distinguishing different

economic systems and a reflection of different economic efficiency. Mercantilism, free capitalism and monopoly capitalism that west market economies experienced, to some extent, are the changes of the interrelationship of government, market and enterprises corresponding to the expansion of the economic system and the evolution of external environment.

Against the current economic backdrop, the relationship between macroeconomic policy and enterprise performance is the focal point of scholars. The real estate industry can greatly advance the national economy and impact the operation of market economy in China. The listed real estate companies represent the advanced level of the real estate industry, government's main tool to regulate the real estate market is the monetary policy. The study of monetary policy influence on the listed real estate companies is representative and it improves the theory of business operation. The theoretical significance of this study is that it clarifies the influence mechanism of monetary policy on the performance of listed real estate companies, verifies the monetary policy influence on listed real estate companies, and optimizes the theories of macroeconomic policy influence on enterprise performance.

II. LITERATURE REVIEW

The real estate industry starts early and develops relatively mature in foreign countries, some scholars analyze the real estate issues with conduction mechanism of monetary policy. For example, Bernanke and Gertler (1995) [1] found that as a major influence factor of the real estate industry, long-term interest rate conducts a less impressive impact on the real estate investment than short-term interest rate. Kling and McCue (1991) [2] believed that the fluctuation of the monetary supply and the interest rate changes had an impact on the real estate industry, yet the impact was not obvious, and further exploration is needed for detailed impact. Bernanke (1999) [3] came up with the balance sheet theory, thinking that the change of assets and liabilities of real estate companies will affect the subsequent investment choices of real estate companies, leading to the fluctuation of the real estate price and other assets, and ultimately affecting their value as collateral. The change of collateral value will impact commercial bank credit and ultimately influence the output of

the real output estate industry. Goodhart (2001) [4] verified that the U.S. monetary policy responding to fluctuations in asset prices can achieve the ultimate goal formulated by the monetary authority. Giuliadori (2005) [5] conducted an empirical test on the Tobin's q effect over the influence of real estate price on real estate investment and found that the rise of real estate price has a significant promotion effect on real estate investment.

Relevant domestic researches on the transmission mechanism of monetary policy in the real estate industry are conducted mainly from the perspective of interest rates and real estate price. Wang et al. (2011) [6] analyzed the impact of monetary policy on the macro-market economy and pointed out that real estate price was the main channel through which economic output was affected by monetary policy. The impact of monetary policy on economic operation is mainly through real estate price, and 50 percent of the transmission function of the monetary policy is conducted by the real estate price changes, while the influence of other factors is not obvious. Liu et al. (2006) [7] believed that the impact of China's monetary policy on the real estate industry was achieved through real estate investment. The fluctuation in monetary policy will change the flow of real estate funds and the investment into real estate development. Investment changes will inevitably lead to changes in the output of the real estate industry. Huang et al. (2010) [8] found that the transmission of monetary policy in the market economy was mainly achieved through real estate price. The cash balance is the intermediate variable of real estate price in the transmission mechanism of national economy, and it has a greater impact on the transmission mechanism of real estate price and is the key for real estate price to influence the macroeconomic market economy. Zhou et al. (2011) [9] believed that the impact of interest rates on real estate price is mainly achieved through income. Variation of interest rates will affect people's income. Changes in income will shift demands. Increase in consumers income will generate demands in the real estate market. Income is the intermediary of interest rates and real estate price, and interest rates affect real estate price through income.

The research of Huang et al. (2013) [10] shows that the impact of monetary policy has a positive impact on the performance of real estate companies in the short term, and the impact effect of quantitative tools of monetary policy is stronger than that of price-based tools of monetary policy. Monetary policy variables centered on broad money supply and interest rates have a lagged effect on business performance. Hu et al. (2016) [11] found that financial flexibility has a significant positive effect on enterprise performance. Contrary to monetary policy easing, monetary policy tightening has a huge impact on enterprise performance in a negative manner, and enterprises with high financial flexibility can weaken the negative impact by monetary policy tightening. Qi et al. (2017) [12] studied the impact of different monetary policy tools on enterprise finance and performance from the perspective of microeconomic and found that different monetary policy tools have different effects on enterprise financing and performance while methods like market-based reform of interest rates can improve the micro-effect of the monetary policy. The research of Xu et al. (2017) [13] proves an inverted U-shaped curve

relationship between the matching degree of investment horizon and financing maturity and enterprise performance. When the matching degree of investment horizon and financing maturity is at a low level, tightened monetary policies will strengthen the positive correlation between the matching degree and enterprise performance. When the matching degree is at a rather high level, tightened monetary policies will enhance the negative correlation between the matching degree and enterprise performance.

III. EMPIRICAL ANALYSIS

Based on the announcement of the People's Bank of China to cut interest rates and deposit reserve ratios, and to liberalize deposit rate ceiling for monetary policy practice, this paper analyzes the impact of the implementation of this monetary policy on the real estate industry. And furtherly verify the impact of monetary policy on state-owned real estate enterprises and non-state-owned enterprises respectively.

A. Data Acquisition and Processing

This paper selects Shanghai and Shenzhen A-share listed real estate companies from 2014 to 2017 published by CSMAR as samples and selects samples according to following principles: (1) Remove ST* and PT companies because the abnormal financial data of these companies will skew the research results; (2) Remove sample companies without access to their complete financial information. After the above process, 854 samples are ultimately collected. This paper mainly uses Excel 2016 and Stata 11.0 to process and analyze sample data.

B. Variable Selection

Explained variable: enterprise performance is the explained variable in this paper. There are two ways to measure enterprise performance academically, namely, event study methodology and financial index method. Since event study methodology is not applicable due to institutional defects of China's capital market (Zhang et al., 2015[14]; Ge et al., 2015[15]), this paper utilizes financial index method to evaluate M&A performance. This paper uses EPS (Niu, Zhang, 2013[16]; Xie, Zheng, 2009[17]; Yang, 2013[18]) and Tobin-q (Q) (Zhang et al., 2005[19]; Li, Ye, 2007[20]; Xin, 2013[21]) to measure the performance of samples from both financial and market perspectives. EPS equals to the current net profit of the enterprises divided by the number of ordinary shares actually issued during the current period, which reflects the after-tax profit created per share, the higher the ratio, the more profit it creates. Q refers to the ratio of the market value of the enterprise to the book value, which reflects the market's evaluation of the enterprise value. The higher the index value, the higher the market evaluation.

Explanatory variable: This paper defines policy effect as the explanatory variable, recorded as P. This variable is binary, which is 0 before the monetary policy announcement and 1 after the monetary policy announcement.

Control variables: In order to control other factors affecting EPS and Q, this paper sets the following control variables: ① Ownership Concentration, OC. Measurement of ownership concentration is the proportion of the actual controller's

shareholding. ②the Proportion of Independent Directors, PID. It is generally acknowledged that independent directors can offer more objective opinions, which will promote the supervision of strategic decisions and improve M&A performance. The proportion of independent directors is defined as the variable to control the effect, represented by the proportion of independent directors in the board of directors at the end of the year prior to the merger. ③Debt Asset Ratio, DAR. Represents the liability degree of the company before the acquisition, measured by the asset-liability ratio of listed companies in the previous year to control the effect of financing structure on business performance of the company. ④ Selling Expenses, S. This indicator indicates the c

development capability of development, equals the ratio of the selling expenses of current period this year minus the selling expenses of the same period last year to the selling expenses of the same period last year. ⑤Working Capital Turnover Rate, R. This indicator means the operational capability of the company, equals the ratio of operating income to operating funds. ⑥Enterprise Size, SIZE. Enterprise size is one of indicators of the financial status of listed companies, relative researchers have found that the enterprise scale will affect the short-term performance. ⑦Company Type, CT. This indicator is divided mainly according to whether the company is state-owned or not, if yes, marked as 1, otherwise marked as 0.

TABLE I STATISTICAL DESCRIPTION OF VARIABLES

Variables		Mean	Std	Min	Max	Obs
EPS	overall	0.253	0.401	-1.330	2.670	N = 830
	between		0.313	-0.311	1.824	n = 120
	within		0.261	-0.890	1.861	T-bar=6.917
Q	overall	1.185	2.009	0.091	23.324	N = 781
	between		1.654	0.148	10.570	n = 120
	within		1.297	-8.792	14.930	T-bar=6.508
P	overall	0.571	0.495	0	1	N = 854
	between		0	0.571	0.571	n = 122
	within		0.495	0	1	T = 7
CT	overall	0.336	0.473	0	1	N = 854
	between		0.474	0	1	n = 122
	within		0	0.336	0.336	T = 7
OC	overall	40.437	16.859	7.120	89.410	N = 808
	between		16.161	7.120	80.650	n = 119
	within		4.992	12.028	69.541	T-bar=6.790
DDR	overall	0.379	0.055	0.300	0.600	N = 831
	between		0.045	0.327	0.522	n = 120
	within		0.031	0.243	0.558	T-bar=6.925
DAR	overall	0.656	0.179	0.042	1.154	N = 830
	between		0.162	0.147	1.027	n = 120
	within		0.078	0.148	1.144	T-bar=6.917
S	overall	0.535	3.430	-1	44.718	N = 811
	between		2.420	-1	25.582	n = 118
	within		2.421	-25.076	28.688	T-bar=6.873
R	overall	0.369	3.751	-34.288	85.152	N = 830
	between		1.358	-6.983	10.403	n = 120
	within		3.496	-26.935	75.118	T-bar=6.917
SIZE	overall	14.169	1.433	9.992	18.347	N = 830
	between		1.336	10.491	17.981	n = 120
	within		0.571	10.746	17.172	T-bar=6.917
id	overall	61.5	35.238	1	122	N = 854
	between		35.362	1	122	n = 122
	within		0	61.500	61.500	T-bar=7

C. Modeling

Based on selected samples, the multiple regression model constructed in this paper is as follows:

$$Q_i = \alpha_0 + \alpha_1 \cdot P_i + \sum \beta_i \cdot controls + \varepsilon_i \quad (1)$$

$$EPS_i = \alpha_0 + \alpha_1 \cdot P_t + \sum \beta_i \cdot controls + \varepsilon_i \quad (2)$$

$$Q_i = \alpha_0 + \alpha_1 \cdot P_t + \sum \beta_i \cdot controls + \varepsilon_i (CTcontrol) \quad (3)$$

$$EPS_i = \alpha_0 + \alpha_1 \cdot P_t + \sum \beta_i \cdot controls + \varepsilon_i (CTcontrol) \quad (4)$$

D. Empirical Results

According to sample selection principles, sample is the hybrid of time series and cross-section data that belongs to a parallel panel sample. Therefore, a panel regression model can be used to synthesize sample information and reduce the impact of multicollinearity. Fixed effect model should be adopted when diagnosing models with Hausman Test. Empirical results demonstrate that, interest rate liberalization and the real estate industry performance are positively correlated for both model 1 and model 2, indicating that interest rate liberalization can promote the development of the real estate industry from both perspectives of financial indicators and market indicators. Model 3 and model 4 are the sample analysis of policy implementation effect on state-owned enterprises and non-state-owned enterprises. In the market, the policy implementation can significantly improve the performance of non-state-owned enterprises and generates higher market recognition. But for state-owned real

estate enterprises, the effect is not that obvious. The first possible explanation is that for market investors, state-owned enterprises are always favored by policies, and occasional policy shocks impose no significant impact on their performance. Financially, the implementation of monetary policy can markedly upgrade the financial performance of state-owned enterprises, but the information is not well-received in the market. In comparison, for non-state-owned enterprises, the implementation of monetary policy deteriorates the financial performance of the company while increasing its market acceptance. The second possible explanation is that with the interest rate liberalization, the financing costs of non-state-owned enterprises are higher than those of state-owned enterprises. Therefore, the financial performance advancement is not as obvious as that of state-owned enterprises, and the non-state-owned enterprises even suffer from negative effects. Nonetheless, the entire industry can exactly be further developed with interest rate liberalization and the development of non-state-owned enterprises is less constrained and more efficient than state-owned enterprises, which can also explain the higher market acceptance of the non-state-owned enterprises.

TABLE II RESULTS OF MODEL REGRESSION ANALYSIS

Variables	Model 1	Model 2	Model 3		Model 4	
	q	EPS	q		EPS	
			CT=1	CT=0	CT=1	CT=0
P	0.538*** (3.76)	0.068** (2.00)	0.002 (0.04)	0.280** (2.17)	0.146*** (3.86)	-0.090** (-2.63)
OC	0.006 (0.87)	0.005*** (2.36)	0.024* (1.85)	0.007 (0.87)	0.005 (1.16)	0.005** (2.15)
DDR	2.287 (1.29)	0.354 (1.31)	1.318 (1.30)	3.112 (1.12)	0.379 (1.04)	0.381 (0.97)
DAR	-4.598*** (-3.15)	-0.527*** (-4.76)	-2.647*** (-3.63)	-0.213*** (-2.71)	-0.408*** (-3.11)	-0.594*** (-3.73)
S	-0.059*** (-3.44)	0.002 (0.61)	-0.104 (-0.81)	-0.059*** (-3.75)	-0.014 (-1.05)	0.003 (0.81)
R	-0.002 (-0.65)	0.007*** (4.18)	0.026 (1.20)	-0.003 (-1.11)	0.013 (1.09)	0.007*** (3.90)
SIZE	-0.203*** (-2.14)	0.042 (1.63)	-0.051 (-0.39)	-0.213* (-1.97)	0.016 (0.47)	0.051 (1.44)
Year	Yes	Yes	Yes	Yes	Yes	Yes
CT	Uncontrol	Uncontrol	Control		Control	
R ²	0.251	0.088	0.076	0.283	0.067	0.096

Note: ***, **, * means significance under 1%, 5%, 10% respectively.

IV. CONCLUSION

This paper selects the real estate companies listed on the Shanghai-Shenzhen A-share market from 2014-2017 as samples to study the policy effect on enterprise performance. This paper uses EPS and Q to measure the business performance of real estate companies from both financial and market perspectives. The following conclusions are drawn through empirical study and analysis: (1) The interest rate liberalization policy can significantly improve the financial performance and market performance of the real estate

industry. (2) Interest rate liberalization policy impacts enterprises with different backgrounds in different ways. For state-owned listed real estate enterprises, interest rate liberalization can greatly improve their financial performance, while market performance improvement is inconspicuous; for listed non-state-owned real estate enterprises, interest rate liberalization policy can lead to obvious financial performance decline while remarkably optimize the market performance of the company.

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