The impact of refinancing on long-run performance: Evidence from Chinese public utility listed companies

LIANG Junqi[1,a]
[a]18811311646@163.com
*LIANG Junqi

Keywords: Public Utility Listed Company; Refinancing; Long-Run Performance; Capital Structure

Abstract. Many issues have emerged currently regarding refinancing as a main financing source of Chinese listed companies, and the proper use of refinancing by public utility listed companies concerns the sound development of public utilities sectors and the smooth progress of related infrastructure in China. This paper sought to optimize the capital structure from an incremental perspective by measuring the impact of refinancing on the long-run performance of the company. More specifically, this study incorporated three refinancing vehicles (i.e. second equity offerings (SEOs), issuing ordinary bonds and issuing convertible bonds) with 110 companies listed on A-share stock market. By vertically comparing the performance of the company before and after refinancing and horizontally comparing the performance of the company with the average level of the industry, this study found that the companies using equity refinancing mode (i.e. SEOs and issuing convertible bonds) performed significantly worse after refinancing, and the companies issuing ordinary bonds significantly outperformed their peers although their performance indicators changed little. These findings are similar to those of research on Chinese stock market as a whole.

1. Introduction

With the rapid development of urbanization in the Chinese context, the increasing public utility investment induces fiscal problems of local government. To solve this problem, it would be beneficial to raise funds from the public through Initial Public Offerings (IPOs). However, it is quite common that financing channel is insufficient, the management prefers equity financing and the target investment asset is uncertain. Therefore, the main contribution of this study providing a comprehensive and extensive understanding of impact of various refinancing channels on the long-run performance of the company. Due to the lack of uniform identification standard of public utility listed company on existing research, this study performed a more comprehensive and systematic classification of public utility companies based on the definition of public utility and the general industry classification criteria, and identified 110 companies listed on A-share stock market. Most current researches mainly concentrated on the equity refinancing, while this study also incorporated the debt refinancing, and identified three main refinancing modes (i.e. second equity offerings (SEOs), issuing ordinary bonds and issuing convertible bonds) and their respective characteristics.

The remainder of this paper is organized as follows. Section 2 reviews the existing studies on the association of refinancing and long-run performance of the company. Section 3 illustrates the standard of selecting samples and the indicator that measures the long-run performance. Section 4 gives a brief description of the corresponding indicator and show empirical results. Section 5 provides conclusions and implications of this study.

2. Literature review

A majority of studies have paid scholarly attention to the impact of refinancing on the long-run performance based on the traditional corporate finance theory. Jensen and Meckling (1976) present that the management is responsible for operation and us at an information advantage and the shareholder is at an information disadvantage. Therefore, it would be helpful to make the management hold company stocks to converge management and shareholders' interests and reduce agency costs. Based on this assumption, the management's shareholding ratio declines and its willingness to abuse

funds increases when the company issues new shares, which will result in a worse performance of the company. Further, Jensen (1986) emphasizes free cash flow as a signal to judge the company value. The management has an intention to maximize their own interests by abusing free cash flow at the expense of shareholders' interests, which is generally shown as overinvestment and empire-building. Wang and Thornhill (2010) find that the relationship between the performance and convertible bonds shows a U shape curve while the relationship between the performance and debt financing shows a converted U shape curve. Warr et al. (2012) illustrates that capital structure could be optimized and the performance becomes better when the capital structure approaches the optimization capital structure. Steier (2003) draws the conclusion that the performance of the company becomes better with the increase of its shareholding and shareholders' wealth by analyzing the data of 435 companies in European stock market. Frank and Goyal (2003) show the positive relationship between the financial leverage and the corporate performance.

The explanation of this problem has also been shed light on from the perspective of behavior corporate finance theory. Loughran and Ritter (1997) propose Opportunity Window based on the assumption of irrationality of the marker and irrationality of the management, and they think that the management will seize the opportunity to issue new shares in the opportunity window when the investors are overly optimistic and the company's value is overvalued, which is accompanies with a worse performance after issuing new shares. Heaton (2002) and Hackbarth (2002) present that overly optimistic managers tend to invest in high-risk projects and damage the long-term interests of the company from the perspective of irrationality of the management.

Moreover, some studies discuss how to measure the performance of the company more accurately from the perspective of indicator and econometric method. Loughran and Ritter (1995) take Buy-and-Hold returns as a proxy, and examine the performance of the US market after the company's public issuance in 1970-1990. Barber and Lyon (1996) investigate the effect of selection of company performance indicators, the construction of the control group and the selection of statistical methods on conclusions from the perspective of statistics, and draw a conclusion that the effectiveness of the nonparametric Wilcoxon signed rank test is generally considered to be higher than that of the conventional t test.

According to the studies mentioned above, it can clearly show that the impact of equity financing on corporate performance has been well studied. However, the gap within these studies is that most of these studies have not considered the impact of debt financing on corporate performance. Therefore, this study will conduct an comprehensive understanding how the three refinancing vehicles will influence the long-run performance.

3. Methodology

Based on the definition of public utility and the general industry classification criteria, this study selects nine secondary industries (i.e., railway, bus, highway, airport, port, electricity, water, gas and environmental protection), 134 companies are enrolled in the sample. And by discarding 14 companies which are listed in the small and medium board or growth enterprise market and 10 companies whose main business income is not from the public utility service, 110 companies are enrolled in the final sample.

The indicator that measures the long-run performance is another important issue that worth addressing. Considering that listed companies can whitewash business performance by adjusting non-recurring profits and losses to improve return on equity (ROE) easily, this study chooses Average return on equity (AROE) after deducting non-recurring gains and losses as the indicator that measures the long-run performance. Moreover, this study investigates the impact of refinancing on the corporate long-term performance by comparing the performance indicators of listed companies before and after refinancing, which is denoted as ΔAROE. Further, by adopting the performance indicators of listed companies minus the average level of industry corresponding indicators, the impact of macroeconomic environment is eliminated to make measurement more accurate. Wilcoxon signed rank test is employed to examine its effect.

4. Empirically analysis

The descriptive statistics of ΔAROE before and after SEOs, issuing ordinary bonds and issuing convertible bonds is shown as Table 1, Table 2 and Table 3, where T denotes the year of refinancing. And Table 4, Table 5 and Table 6 show the result of symbolic rank test of AROE and ΔAROE before and after SEOs, issuing ordinary bonds and issuing convertible bonds, where D_i (T+1) and D_i (T+2) denotes the difference of the pairing AROE in year T+1 and year T-1, and year T+2 and year T-2, respectively. Likewise, industry-adjusted pairing difference of pairing ΔAROE is denoted as ΔD_i (T+1) and ΔD_i (T+2), respectively.

Table 1 and Table 4 predict that poor performance of public utility listed companies after public issuance still exists even after adjustments by the industry, and the performance of listed companies before SEOs is significantly better than the average level of the corresponding industry. However, the corporate performance returns to the average level after SEOs. On the contrary, Table 2 shows an opposite relationship. The performance becomes better after issuing ordinary bonds. Table 3 shows a U sharp relationship between the performance and issuing convertible bonds. The performance continues to decline until the year of refinancing, and becomes better after that, which is similar to the phenomenon of issuing convertible bonds. But the difference is that ΔAROE is not significant higher than the average level of the industry after issuing convertible bonds. According to Table 6, the performance continues to decline significantly in the first year after the issuance of convertible bonds compared to the two years prior to the issuance of convertible bonds.

In conclusion, the performance after debt refinancing is relatively better than that equity refinancing, which indicates that equity refinancing once again reduces the asset-liability ratio of listed companies, which cannot optimize the company's capital structure and reasonably use the tax shield effect.

Table 1 descriptive statistics of ΔAROE before and after SEOs

ΔAROE（%）	T-2	T-1	T	T+1	T+2
Median	5.79	6.23	3.14	2.74	2.42
Mean	5.42	6.98	3.79	3.29	2.45
Maximum	20.44	22.28	13.96	12.30	9.31
Minimum	-1.33	-2.35	-12.64	-12.86	-5.74
Standard Deviation	5.92	6.55	6.84	6.99	4.79
P-value	0.010***	0.005***	0.034**	0.117	0.169

Table 2 descriptive statistics of ΔAROE before and after issuing ordinary bonds

ΔAROE（%）	T-2	T-1	T	T+1	T+2
Median	1.72	1.05	1.31	5.26	4.63
Mean	3.02	2.11	2.51	2.95	3.66
Maximum	10.18	8.37	9.64	9.92	9.98
Minimum	-3.44	-3.27	-3.01	-8.84	-3.22
Standard Deviation	4.79	3.64	3.88	6.27	4.76
P-value	0.139	0.086*	0.059*	0.169	0.069*

Table 3 descriptive statistics of ΔAROE before and after issuing convertible bonds

Δ AROE（%）	T-2	T-1	T	T+1	T+2
Median	4.14	2.04	0.75	1.32	3.34
Mean	4.46	3.31	2.30	2.34	0.29
Maximum	12.12	12.52	12.80	6.48	7.62
Minimum	-1.83	-0.50	-1.97	-1.73	-25.36
Standard Deviation	3.62	4.32	4.64	2.93	9.48
P-value	0.007***	0.066*	0.333	0.047**	0.169

Table 4 symbolic rank test of AROE and ΔAROE before and after SEOs

Paring	Positive rank sum	Negative rank sum	Z statistics	P-value
D_i（T+1）	0	78	-3.059	0.002***
D_i（T+2）	0	66	-2.934	0.003***
Δ D_i（T+1）	6	72	-2.589	0.010***
Δ D_i（T+2）	10	56	-2.041	0.041**

Table 5 symbolic rank test of AROE and ΔAROE before and after issuing ordinary bonds

Paring	Positive rank sum	Negative rank sum	Z statistics	P-value
D_i（T+1）	19	36	-0.866	0.386
D_i（T+2）	15	21	-0.420	0.674
Δ D_i（T+1）	35	20	-0.764	0.445
Δ D_i（T+2）	23	13	-0.484	0.484

Table 6 symbolic rank test of AROE and ΔAROE before and after issuing convertible bonds

Paring	Positive rank sum	Negative rank sum	Z statistics	P-value
D_i（T+1）	9	46	-1.866	0.059*
D_i（T+2）	9	46	1.866	0.059*
Δ D_i（T+1）	9	46	1.866	0.059*
Δ D_i（T+2）	15	40	-1.274	0.203

5. Conclusion

By vertically comparing the performance of the company before and after refinancing and horizontally comparing the performance of the company with the average level of the industry, this study found that the companies using equity refinancing mode (i.e. SEOs and issuing convertible bonds) performed significantly worse after refinancing, and the companies issuing ordinary bonds significantly outperformed their peers although their performance indicators changed little. These findings are similar to those of research on Chinese stock market as a whole.

The implication of this study is that providing a relatively low financial leverage of Chinese public utility listed companies, increasing the debt-to equity ratio appropriately would improve the operational performance and gain a better result than equity refinancing would. When making

refinancing decisions, public utility listed companies should consider issuing bonds first, then taking SEOs and resorting to convertible bond finally.

Reference

[1] Barber, B. M., & Lyon, J. D. (1996). Detecting abnormal operating performance: The empirical power and specification of test statistics. *Journal of financial Economics*, *41*(3), 359-399.

[2] Frank, M. Z., & Goyal, V. K. (2003). Testing the pecking order theory of capital structure. *Journal of financial economics*, *67*(2), 217-248.

[3] Hackbarth, D. (2002, December). Managerial optimism, overconfidence, and capital structure decisions. In *European Finance Association Annual Meeting,(Aug, 2004), Maasticht, The Netherlands*.

[4] Heaton, J. B. (2002). Managerial optimism and corporate finance. *Financial management*, 33-45.

[5] Jensen, M. C. (1986). Agency costs of free cash flow, corporate finance, and takeovers. *The American economic review*, *76*(2), 323-329.

[6] Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of financial economics*, *3*(4), 305-360.

[7] Loughran, T., & Ritter, J. R. (1995). The new issues puzzle. *The Journal of finance*, *50*(1), 23-51.

[8] Loughran, T., & Ritter, J. R. (1997). The operating performance of firms conducting seasoned equity offerings. *The journal of finance*, *52*(5), 1823-1850.

[9] Steier, L. (2003). Variants of agency contracts in family-financed ventures as a continuum of familial altruistic and market rationalities. *Journal of Business Venturing*, *18*(5), 597-618.

[10] Wang, T., & Thornhill, S. (2010). R&D investment and financing choices: A comprehensive perspective. *Research Policy*, *39*(9), 1148-1159.

[11] Warr, R. S., Elliott, W. B., Koëter-Kant, J., & Öztekin, Ö. (2012). Equity mispricing and leverage adjustment costs. *Journal of Financial and Quantitative Analysis*, *47*(3), 589-616.