Research on the Impact of Interest Rate Liberalization on Profitability of the Security Industry

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Abstract

As the process of the interest rate liberalization deepens continuously and the level of the interest rate liberalization improves constantly, every aspect of the financial system is affected. The thesis mainly analyzes how the profitability of the security industry is affected, how this kind of impact is transmitted and what kind of self-targeted revolution and financial innovation should be made by the security industry to tackle the adverse impact. After the empirical analysis and the robustness test of the financial data in 18 listed securities companies in Wind Database from 2007 to 2018, the author concludes that: (1) The impact of the interest rate liberalization on the profitability indicator ROA of securities companies presents a positive U shape. (2) There is no significant difference in the impact of interest rate liberalization on the profitability indicator of different securities companies.

Keywords: security industry, interest rate liberalization, profitability

1. Introduction

The reform of the interest rate liberalization is not only an important constituent part to establish the socialist market economy system, but also the important manifestation of the domestic economic development and the achievements of the structural reform. As the process of the interest rate liberalization deepens continuously and the level of the interest rate liberalization improves constantly, every aspect of the financial system is affected. Under such background, the problems on how the profitability of the security industry is affected, how this kind of impact is transmitted and what kind of self-targeted revolution and financial innovation should be made by the security industry to tackle the adverse impact, need to be researched further. Based on the literature review made by the academic circle, the thesis mainly discusses issues such as the comprehensive analysis, empirical analysis and stability test of the impact of the interest rate liberalization on the profitability of the security industry.

1.1 Current Situation of Interest Rate Liberalization in China

As the reform of the economic system is pushed forward continuously, the interest rate liberalization has a profound effect on both the financial market and the financial industry, which is of great significance to improve the socialist market economy system and deepen the financial reform further in China. In accordance with The Third Plenary Session of the 14th Central Committee of the Communist Party of China in 1993, The People's Bank of China should implement the monetary policy by means of the marketization and take the capital supply and demand of the market into full consideration in order to adjust the benchmark interest rate timely and give a certain degree of freedom to the commercial banks with regard to the deposit and loan interest rate. In December 1993, the *Decision on the Reform of Financial System* issued by the State Council indicated that the system of the market interest rate should be formed gradually on the basis of the central bank rate. Together with the *Decision* made in The Third Plenary Session of the 14th Central Committee of the Communist Party of China constitutes the basic assumption on the reform of the domestic interest rate liberalization and forms the design framework of interest rate liberalization reform. After The Third Plenary Session of the 16th Central Committee of the Communist Party of China, the general thought and implementation approach of the interest rate liberalization reform has been clarified. That is to say, the interest rate liberalization of foreign currency goes ahead first and then the interest rate liberalization of the domestic currency follows; After the interest rate liberalization of the loan is finished, the interest rate of the deposit should be loosened later; After the long-term and large amount is finished, the short-term and small amount should be released later; The market-oriented

interest rate mechanism which can accurately reflect the capital supply and demand in the market should be gradually cultivated. Critical periods of the interest rate liberalization process are as follows.

● From 1996 to 1998, the interbank offered rate was loosened officially. The interbank bond repurchase rate, the price of transaction in cash, the discount rate and rediscount rate of commercial banks were loosened. The national debt and the policy-based financial bond were issued by tender. These measures are groundbreaking for the reform of the interest rate liberalization in China, which means that the money market rate and mid-and-long-term interest rate liberalization entered a new stage in China. It is of great significance.

● From 2003 to 2004, after the interest rate floor of petty deposit in foreign currency was lifted, the interest-rate ceiling of loans in financial institutions except the credit corroborative in both urban and rural areas was lifted. At the same time, the deposit interest rate was allowed to lower. The cancellation of the unilateral control on the interest rate floor and ceiling of deposits and loans is definitely the preparation and tries for the complete cancellation of the control next.

● In 2007, Shanghai Interbank Offered Rate (Shibor) was officially issued. It was developed mainly as the benchmark interest rate in the monetary market. It indicates that the market benchmark interest rate system in the reform of the interest rate liberalization in China was improved gradually and the mechanism construction was also improved.

● From 2012 to 2013, after the loan interest rate control floor was liberalized for successive twice, all interest rate controls including the loan ceiling control in the rural credit cooperative were completely lifted. During the corresponding period, the bill discount rate was also liberalized. The pricing self-discipline mechanism of the market interest rate was established later, which provided rules for the market competitive order and the market regulation development to follow. It was a big step for the reform of the interest rate liberalization in China.

● From 2014 to 2015, the floating range of the deposit interest rate was adjusted for several successive times. The interest-rate ceiling was adjusted from 1.1 times the benchmark interest rate to 1.2 times, then to 1.3 times and 1.5 times. Finally, the interest-rate ceiling of deposits in financial institutions was cancelled in October 2015. It indicates that the interest rate liberalization in China has been realized at the institutional level. However, with regard to the actual capital market and price, the real interest rate liberalization still has a long way to go.

● In 2019, the issue of the 30th order of The People's Bank of China accelerated the reform of benchmark interest rate in the loan market. The reform of the interest rate liberalization in China has been deepened further.

1.2 Literature Review

The academic circle has carried out the in-depth research on the impact of interest rate liberalization on profitability of the security industry from different prospective in many aspects. The previous research on the impact of interest rate liberalization on profitability of the security industry can be classified into two aspects such as the research on the relationship between the interest rate change and the stock market fluctuation, and the research on the impact of the interest rate liberalization on the security industry.

1.2.1 Relationship between the Interest Rate Change and the Stock Market Fluctuation

In accordance with the basic pricing principle of the financial capital, the stock price should be the present value of each dividend under the condition of the sustainable operation of the enterprise. Under the assumption of efficient markets, the decline of the interest rate will make more capital flow into the stock market. As a result, the enterprise will have more funds to invest. Otherwise, it will be bad for the development of the company. However, the impact of the stock price and the interest rate is also related to the period. The short-term effect shows the adverse movement. However, in the long run, the elements affected are not simple. The relationship between the stock price and the interest rate change is not as simple as the adverse movement (Datao, 2017). In fact, the stock price is affected by not only the interest rate mainly but also the elements such as the expectation and the emergency. Although the correlation between the stock price fluctuation and the interest rate is not strong in the short run, the stock price fluctuation and the interest rate fluctuation show the adverse movement. However, the scholar Shibing (2017) concluded the different result from it by means of the empirical analysis. He agreed that the adjustment of interest rate would affect the stock price. But the positive or the inverse change relations between the two are different from the previous description. It may be resulted from the selection of the data and the variable. Other scholars have researched the linkage effect of capital market and money market. They think that the transmission mechanism of interest rate to capital market has not been fully unblocked yet. The small number of financial products across two markets and the limited capital flowing into two markets lead

to the poor linkage effect (Wei, Zheyu, & Cheng, 2016).

1.2.2 Impact of the Interest Rate Liberalization on the Security Industry

Some researches show that changes in the money supply caused by changes in the stock market can affect the interest rate directly or indirectly (Wentao & Chengjin, 2009). Others think that interest rate fluctuations brought about by interest rate liberalization can affect residents' holding of assets, which can change the capital flow in the security market in turn (Qian & Rong, 2000). Yongquan and Hongbing (2016) think that a healthy interest rate liberalization environment is conducive to the development of the securities market. The regulation effect of interest rate on optimizing the structure of financial resources will stimulate the operation vitality of the securities market and also promote a better reflection of economic conditions in the securities market. In addition, some scholars conclude that the reform of interest rate liberalization stimulates the financial body to participate in the financial innovation actively through researches. With regard to the securities market, securities companies will increase the innovation of investment tools in order to win better returns (Liansan, 2001; Xinjun, 2013).

1.3 Current Business Situation and Characteristics of the Security Company

At the end of 2019, Shanghai composite index closed at 3050, 22.3% higher than that in the end of previous year; Shenzhen composite index closed at 10431, 44.1% higher than that in the end of previous year. The trading volume in the stock market increased significantly. In 2019, a total of RMB 127.4 trillion yuan was traded on the Shanghai and Shenzhen stock exchanges. Daily turnover is RMB 522.2 billion yuan with a year-on-year growth of 40.7%. 131 securities companies achieved an operating income of RMB 261,195 million yuan in the first three quarters. Each main business income is shown respectively as follows: RMB 62.533 billion yuan of net income from securities agency business (including seat leasing), RMB 24.969 billion yuan of net income from securities underwriting and sponsorship business, RMB 6.814 billion yuan of net income from financial advisory business, RMB 2.526 billion yuan of net income from investment consulting, RMB 19.064 billion yuan of net income of asset management business, RMB 87.871 billion yuan of securities investment income (including fair value changes), RMB 34.738 billion yuan of net interest income. RMB 93.105 billion yuan of net profit for the period was achieved. 119 companies made profits. According to the statistics, as of September 30, 2019, 131 securities companies had RMB 7.02 trillion yuan of total assets, RMB 1.99 trillion yuan of net assets, RMB 1.62 trillion yuan of net capital, RMB 1.28 trillion yuan of the balance of customer transaction settlement funds (including credit transaction funds) and RMB 12.71 trillion yuan of total amount of funds entrusted for management.

1.3.1 Income Structure Change Brought about by the Interest Rate Liberalization in the Security Industry

In accordance with the business income structure of the security companies in 2012 and 2019, the proportion of the net income from agency securities business declined to 17BP from 38% in 2012 to 21% in 2019. However, it is still the major income source of the security companies. With regard to the time span, the interest rate liberalization was accelerated in China in 2012. Both the deposit interest rate and the loan interest rate were adjusted for several times till the floor and ceiling of the interest rate were lifted from 2012 to 2015. The proportion of the net income from agency securities business in the security companies reached a peak (44%) in 2015. It can be assumed that the income structure of the securities companies will change in accordance with behaviors of the investors during the interest rate liberalization. The change of the investors' behaviors may reflect the interest rate liberalization process.

The income from the security investment in 2012 was similar to that in 2015. The proportion of the income from the security investment reached 33% in 2019, 11% higher than that in 2012. Besides, in 2019, the proportion of the income from the security investment was 12% higher than that of "income from agency securities business". It exceeded largely the income from agency securities business for the security companies. It can be assumed that more financial products are constantly made due to the internal innovation driving force of financial bodies when the fierce market competitions are caused by the interest rate liberalization. As a result, consumers can choose more freely and more investment channels are available. In order to ensure the profit level of the security company itself, new income source is needed urgently in addition to the original agency income to maintain its market share and competition. The proportion of the investment consulting business and the income from financial advisory business remained nearly the same. The income from underwriting and sponsoring securities fell to 4%.
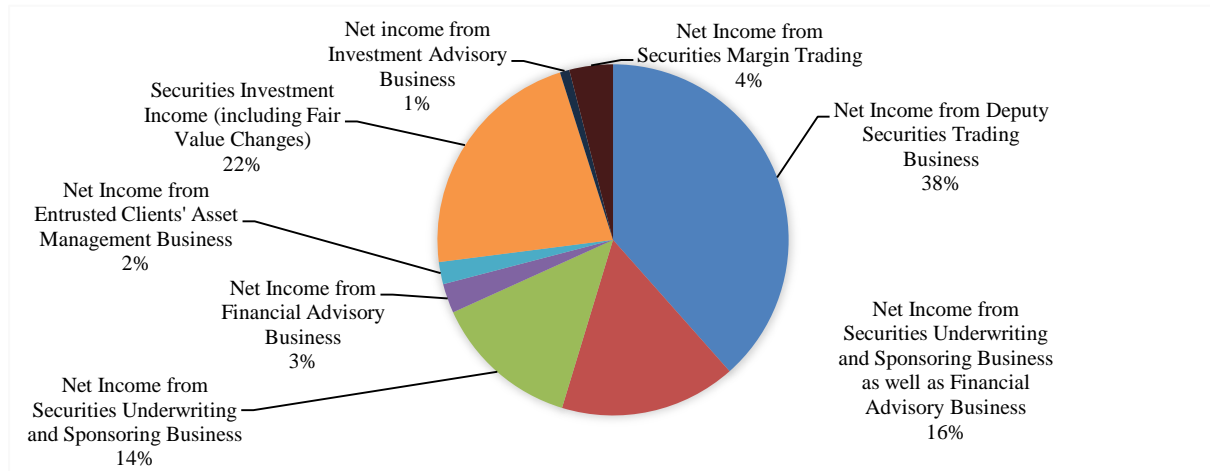
Figure 1. Income structure of security companies in 2012
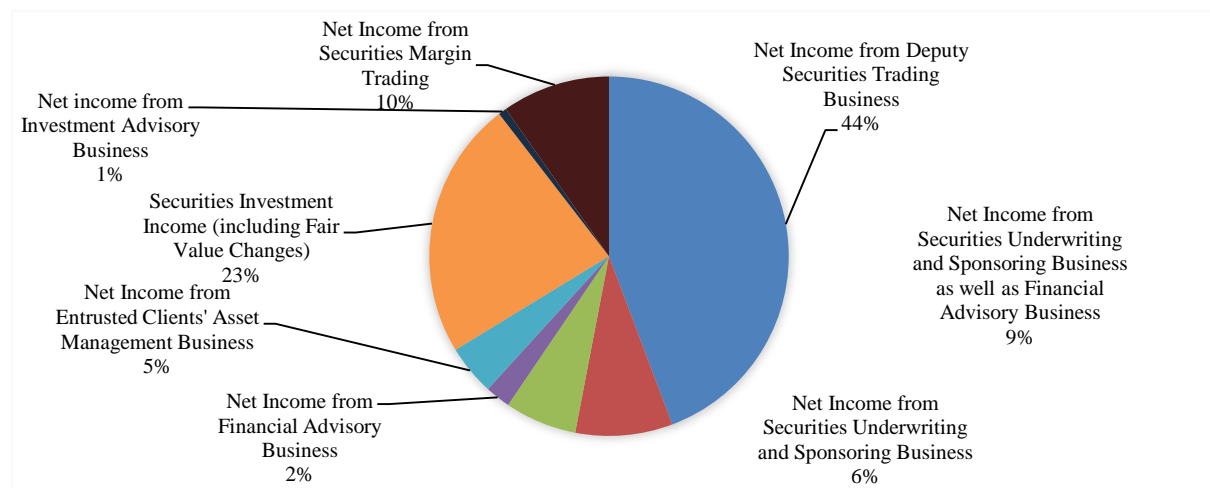
Data Source: Wind Database.

Figure 2. Income structure of security companies in 2015
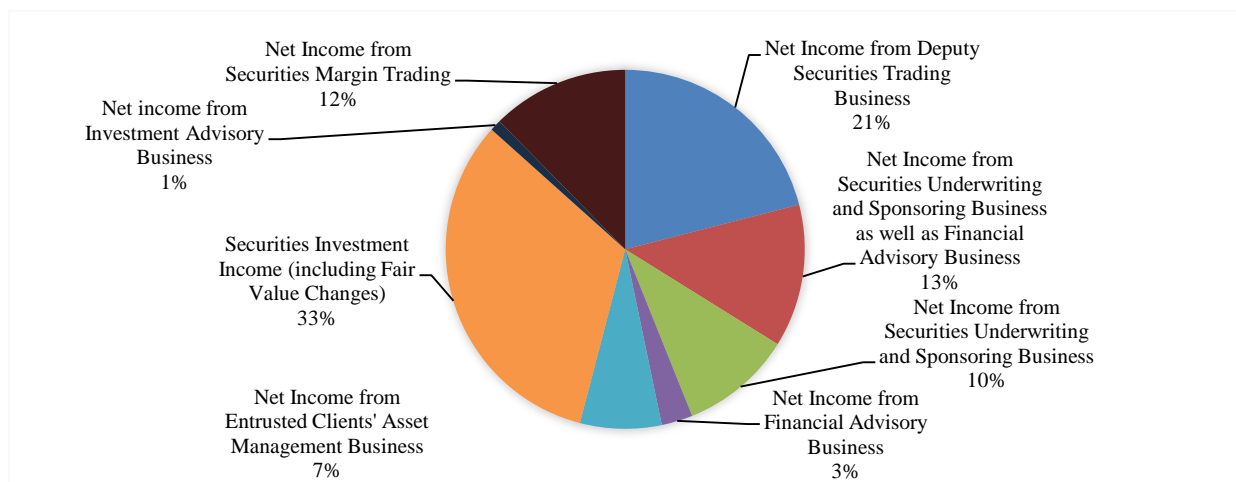
Data Source: Wind Database.

Figure 3. Income structure of security companies in 2019

Data Source: Wind Database.

1.3.2 Reform and Innovative Development Brought about by the Interest Rate Liberalization in the Security Industry

During the interest rate liberalization, both the banking industry and the security industry have to cope with the fierce competition within and across the industries. The more active the financial market is, the stronger the innovative capacity of the financial institutions will be. Such innovation includes the innovation of the financial products, the innovation of the service models, and the innovation of the internal management system, etc. The change of the income structure as mentioned above shows that the increase of the proportion of the investment income indicates the innovation of the service models. The more financial products, the reform of the service models and the improvement of the company competition represent the "hard power" of the enterprise. In addition to the "hard power" of services, more and more financial institutions try their best to improve the "soft power" of their services. For example, they try to establish a closer relationship with customers and maintain their customer resources by means of providing quality services and improving customers' experiences. Besides, some financial institutions hold marketing activities to gain more satisfaction and trust from customers in accordance with their business characteristics.

1.3.3 Healthier Development Brought about by the Interest Rate Liberalization in the Security Industry

With the increasing economic development and the in-depth financial reform, the market plays an obviously "decisive" role in the distribution of the resources. The "market", "competitive" and "true" characteristics brought about by the interest rate liberalization have made important contribution to the opener, fairer and more transparent transaction environment of the financial resources. For the investors in the security industry, the favorable investment environment is the basis to ensure their capital security and the investment interests. It has guaranteed the interest of investors to a larger extent. For the small and medium-sized enterprises, it is easier for them to raise money in the security market than that in the bank. The favorable investment environment will reduce the financing cost of enterprises greatly and help them get a better development. At the same time, the financing areas encouraged by the state mainly are supported in this way.

2. Method

2.1 Structure of the Interest Rate System in China

The current interest rate system in China consists of three parts such as the central bank rate as the fundamental part, the interest rate of financial institutions as the main part and the coexistence of the central bank rate and the interest rate of financial institutions as well as the monetary market rate which include the money market rate and med-and-long-term interest rate.

2.2 Measurement of the Interest Rate Liberalization in China

In order to research the impact of interest rate liberalization on profitability of the security industry better, the paper uses interest rate liberalization index (expressed by IRL) to describe the level of the interest rate liberalization in China. The measurement methods of the interest rate liberalization include: Firstly, the market-oriented interest rate system should be classified and provides the weight assignment to it in accordance with the degree of importance. Secondly, the process of the interest rate liberalization should be quantified in accordance with the classified market-oriented interest rate system in China. The important events in the reform of the interest rate liberalization should be graded and assigned in accordance with the marketization degree rule designated in this thesis. Finally, the index results should be calculated in accordance with the weight assignment and the rating assignment. The measurement methods are shown in Figure 4.
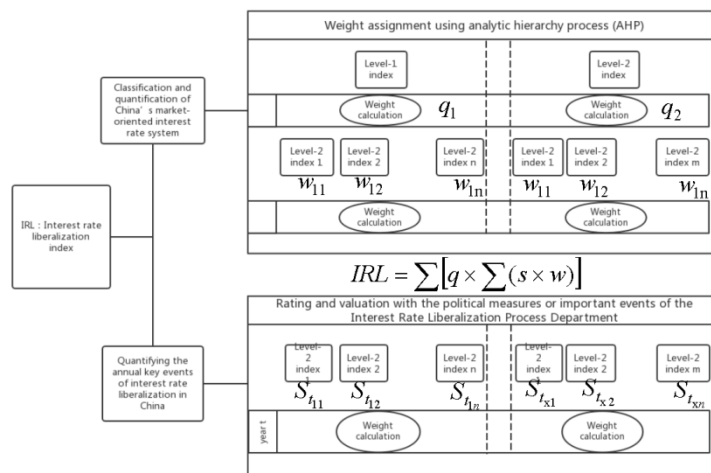
Figure 4. Calculation process diagram of interest rate liberalization measurement system

In accordance with the computational logic in Figure 4, the score result will be multiplied by the weight of each corresponding element at the second level, the result from which will be multiplies by the weight of each corresponding element at the first level. Finally, the interest rate liberalization index which can be used to measure the degree of the interest rate liberalization in each year from 1980 to 2019 will be concluded by adding the former results. The following figure is the trend chart of the interest rate liberalization index (expressed by IRL) in 1980 in China.
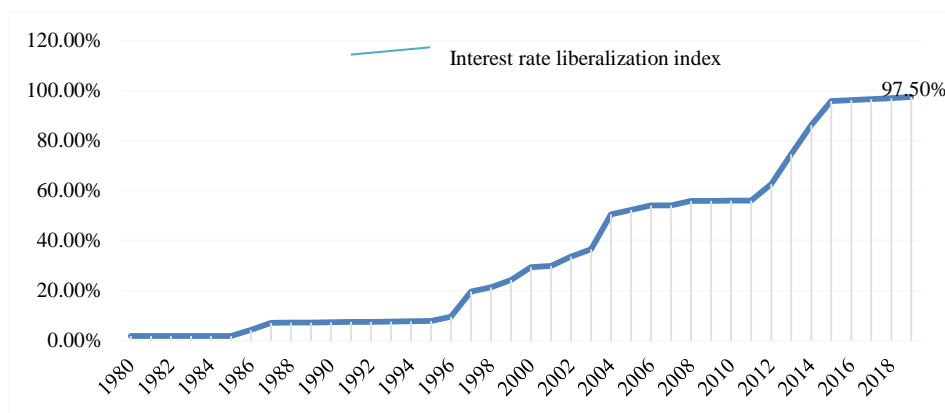

Figure 5. Trend chart of the *Interest Rate Liberalization Index (IRL)* in China

Figure 5 shows that the three periods, from 1996 to 1997, from 2003 to 2004, from 2012 to 2015, marks the aggravation of the interest rate liberalization. It complies with the above-mentioned "critical periods of the interest rate liberalization process".

2.3 Model Building

Because it is difficult to judge whether the impact of the interest rate liberalization on the profitability is linear through the practical experience, the thesis introduces the quadratic term of the interest rate liberalization index. Nonlinear data model established is shown as follows:

$$ROA_{it} = \beta_0 + \beta_1 IRL_{it} + \beta_2 IRL_{it}^2 + \theta X_{it} + \varepsilon_{it} \tag{1}$$

Among them, *i=1, 2, ..., n* represents the sample number of the security companies. *t* stands for the time span. *β, θ* stand for the model parameters to be estimated. *X* represents all control variables. *ε* is the random disturbance term.

2.4 Data Sources

All data used in this thesis are selected from Wind Database. The annual operating data of the listed security

companies from 2007 to 2018 are selected. The number of the sample is 18 security companies, including Citic Securities, Guosen Securities, China Securities, China Merchants Securities, Shenwan Hongyuan Securities, Huatai Securities, Guotai Junan Securities, Haitong Securities, Tianfeng Securities, Industrial Securities, Founder Securities, Shanxi Securities, Everbright Securities, Northeast Securities, Orient Securities, China Galaxy Securities, Sinolink Securities and Zheshang Securities.

With regard to the selection of the main variables, the asset size and the operating income of these 18 samples are different. It not only provides a basis for us to conduct the follow-up robustness tests and investigate the impact of the interest rate liberalization process on the security companies with different volumes, but also provides us the standard of classification for the robustness tests.

When we choose the control variables, we have controlled the net profit (NPR). At the same time, we also take the current situation of the operating income of the domestic security industry into consideration. Some of its incomes come from the commission charges and the commission income during the transactions with the customers, so we have controlled the commission charges and the commission income (NFC). On this basis, we have also controlled the total assets (AST). With regard to the change of the income structure of the security companies, we have also controlled the net investment income (NIP) and the percentage of the net income of commission charges and the commission income (NFCR). Besides, we have also controlled and measured the profitability index of securities industry—the net profit margin (NSI), asset-liability ratio (ALR) and rate of capital turnover (ATR) which are directly related to the return on assets (ROA). Finally, we have controlled the macroscopic variables which are closely related to the security industry, such as the trading amount of shares (TOS) in the current year and the money supply (M2).

With regard to the above control variables, in order to reduce the heteroscedasticity, we have handled the variables except the ratio index logarithmically.

Table 1. Definitions of variables

Variables	Name of Variables	Variable Symbol	Description of Measurement Index	Computing Method
Explained Variable	return on assets	ROA	profitability	net profit / average total assets
Explanatory Variable	interest rate liberalization index	IRL	degree of interest rate liberalization	dummy variable
Control Variables	net profit	NPR	measuring business performance	taking the natural log for net profit
	commission charges and the commission income	NFC	measuring the main revenue of security companies	taking the natural log for commission charges and the commission income
	total assets	AST	measuring the size of a security company	taking the natural log for average total assets
	net investment income	NIP	measuring the income of investment business of security company	taking the natural log for net investment income
	net profit margin	NSI	measuring the level of revenue from sales	Net profit as a percentage of sales
	asset-liability ratio	ALR	measuring the level of corporate debt and risk	total assets / gross liabilities
	rate of capital turnover	ATR	capital flow efficiency	main income of the current period (initial appropriation of funds+ ending appropriation of funds)
	percentage of the net income of commission charges and the commission income	NFCR	measuring changes in business structure	percentage of the net income of commission charges and the commission income in the overall operating income
	trading amount of shares	TOS	measuring the trading condition of the stock market	taking the natural log for trading amount of shares
	money supply	M2	macro economic index	measuring money supply, taking the natural log

3. Results

3.1 Empirical Results and Analysis

During the empirical analysis, the ordinary least square method (OLS) and the fixed effect model are used. The column (1) and column (3) show the estimated results of the impact of the interest rate liberalization on the profitability indicator of the security companies (*ROA*) by using the ordinary least square method (OLS). The robust estimation method (Robust Regression) is also used.

Table 2. Empirical results

Variables	ROA					
	(1) OLS	(2) OLS	(3) OLS	(4) FE	(5) FE	(6) FE
IRL	-0.071***	-0.869***	-0.181***	-0.071***	-0.869***	-0.171***
	(0.006)	(0.087)	(0.048)	(0.006)	(0.087)	(0.052)
IRL^2		0.005***	0.001***		0.005***	0.001***
		(0.001)	(0.000)		(0.001)	(0.000)
ln NPR			-1.132***			-1.143***
			(0.313)			(0.339)
ln NFC			0.360			0.541
			(0.401)			(0.438)
ln AST			0.745***			0.766**
			(0.184)			(0.299)
ln NIP			0.081			0.054
			(0.048)			(0.062)
ln TOS			-0.375**			-0.454**
			(0.160)			(0.200)
NSI			0.137***			0.139***
			(0.016)			(0.019)
ALR			-0.003			-0.005
			(0.004)			(0.007)
ATR			47.098***			46.397***
			(2.535)			(2.575)
$NFCR$			-0.004			-0.007
			(0.010)			(0.011)
ln $M2$			0.270			0.178
			(0.398)			(0.523)
Constant	8.946***	37.429***	-1.564	8.946***	37.429***	-0.056
	(0.525)	(3.362)	(4.336)	(0.414)	(3.283)	(5.186)
Observations	216	216	204	216	216	204
R-squared	0.178	0.239	0.981	0.185	0.249	0.981
Number of company				18	18	18

Note. The bracket stands for the robust standard errors. ***, ** and * show the significance at the significant level of 1%, 5%, 10% respectively.

With regard to the empirical results in Table 2, the column (1) shows the situation under which other variables are not controlled. The influence coefficient of the interest rate liberalization index (IRL) to the profitability of the security companies (ROA) is -0.071. It is significant at the 1% significant level. Based on the column (1), the quadratic term of the interest rate liberalization index (IRL2) is controlled in the column (2), and all coefficients are significant at the 1% level. Based on the column (2), all other variables are controlled in the column (3). It can be discovered that the coefficient directions of both the interest rate liberalization index and its quadratic term remain unchanged, and they are significant at the 1% significant level. It can also be observed that most control variables chosen are significant, and their R value is 0.981, which indicates that the variables chosen are effective. The fixed effect model is used from column (4) to column (6) to carry out the regression of the interest rate liberalization index (IRL) and the profitability indicator of the security companies (ROA). No other variables are controlled in the column (4) and their coefficients are -0.071. And they are significant at the 1%

significant level. The quadratic term of the interest rate liberalization index (IRL2) is controlled in the column (5) and its coefficient direction remains unchanged. Based on the column (5), all variables are controlled in the column (6) and its result is significant at the 1% significant level.

The above analysis shows that the interest rate liberalization index (IRL) and its quadratic term (IRL2) have a positive U-shaped influence on the profitability indicator of the security companies (ROA) and the influence is significant. With regard to other control variables, the net profit (NPR), its asset size (AST), the asset turnover ratio (ATR), net profit margin on sales (NSI) and the transaction amount of stocks (TOS) are significant.

The influence curve of the interest rate liberalization has a positive U shape on the security industry. It may be because there is an anchoring effect of the innovation in the security industry. That is to say, with the in-depth development of the interest rate liberalization, its current profit model and products don't fit the interest rate liberalization well enough. With the improvement of the operation capacities of companies, the interest rate liberalization will promote the security companies to innovate its products and profit models constantly in order to adjust themselves to the negative impact brought about by the interest rate liberalization. As the financial innovation deepens continuously, the profit status of the security industry will be significantly and positively changed after a certain "anchoring point" is broken through. (Empirical analysis results are shown in Table 2. After the tests, the fixed effect model is still superior to the mixed least square method. P value in the F-test is 0.)

3.2 Robustness Test

The preliminary regression shows that the process of interest rate liberalization has a significant impact on the profitability of security companies. The robustness needs to be tested.

The fixed effect model is used in Table 3 to analyze the different samples in order to verify the relationship between them. Specifically, the regression samples are classified into two types. One type is the samples with more than RMB10 billion yuan of the operating income in recent three years, including 8 security companies such as Citic Securities, Guosen Securities, China Securities, China Merchants Securities, Shenwan Hongyuan Securities, Huatai Securities, Guotai Junan Securities, and Haitong Securities. With large scales of operation and the various products of the above security companies, they represent the current situation of the domestic security companies. Besides, the rest 10 security companies whose operating incomes are lower than RMB10 billion yuan are regarded as the other sample to reflect the profitability of security companies in different sizes. Table 3 shows the reaction of the profitability indicator (ROA) of different samples of the security companies to the interest rate liberalization process.

Table 3 shows the reaction of the profitability of 8 larger security companies to the interest rate liberalization process when the fixed effect model is used in the column (1) and column (3). The column (1) shows the situation under which no variables are controlled. The influence coefficient of the interest rate liberalization on the profitability indicator of the security companies (ROA) is -0.071 and it is significant at the 1% significant level. Based on the column (1), the influence of the quadratic term of the interest rate liberalization index on the profitability of the security companies is controlled in the column (2). It can be discovered that the coefficients of both the interest rate liberalization index and its quadratic term are significant at the 1% significant level. Based on the column (2), all variables are controlled in the column (3) and its results remain unchanged greatly. It can be seen that the coefficient directions of both the interest rate liberalization index and its quadratic term have not changed the profitability indicator of the security companies significantly.

The column (4) to the column (6) show the regression result of the security company samples except 8 larger security companies. The column (4) shows the situation under which no variables are controlled. The influence coefficient of the interest rate liberalization index on the profitability indicator of the security companies (ROA) is -0.073 and it is significant at the 1% significant level. Based on the column (4), the quadratic term of the interest rate liberalization index is controlled in the column (5) and its coefficient is -0.943 and it is significant at the 1% significant level. Based on the column (5), all variables are controlled in the column (6). It can be discovered that the direction of the interest rate liberalization index (IRL) and the coefficient of its quadratic term does not changed greatly and it is significant at the 5% significant level.

Table 3. Robustness test

Variables	ROA					
	(1)	(2)	(3)	(4)	(5)	(6)
	FE	FE	FE	FE	FE	FE
IRL	-0.070***	-0.776***	-0.194***	-0.073***	-0.943***	-0.181**
	(0.010)	(0.130)	(0.053)	(0.006)	(0.120)	(0.079)
IRL^2		0.005***	0.001**		0.006***	0.001**
		(0.001)	(0.000)		(0.001)	(0.001)
ln NPR			-2.643*			-1.494***
			(1.177)			(0.422)
ln NFC			2.005			0.758
			(1.363)			(0.612)
ln AST			0.089			0.890**
			(0.378)			(0.392)
ln NIP			-0.070			0.064
			(0.108)			(0.063)
ln TOS			-0.023			-0.539*
			(0.205)			(0.288)
NSI			0.169***			0.160***
			(0.039)			(0.028)
ALR			0.007			-0.013
			(0.009)			(0.010)
ATR			48.740***			44.275***
			(3.036)			(3.514)
$NFCR$			-0.049*			-0.008
			(0.023)			(0.013)
ln $M2$			0.508			-0.407
			(0.551)			(0.835)
Constant	9.040***	34.247***	-3.612	8.870***	39.974***	8.461
	(0.753)	(4.986)	(3.510)	(0.480)	(4.432)	(9.731)
Observations	96	96	94	120	120	110
R-squared	0.234	0.301	0.990	0.160	0.224	0.980
Number of company	8	8	8	10	10	10

Note. The bracket (1) stands for the robust standard errors. ***, ** and * show the significance at the significant level of 1%, 5%, 10% respectively.

The above sample regression analysis shows that the interest rate liberalization index and its quadratic term in both the larger security companies and the rest security companies are significant at the 1% significant level toward the profitability indicator of the security companies (ROA). At the same time, its positive U-shaped influence curve doesn't change, which means the estimated results in the above table are robust.

4. Conclusion

The annual operational indicators of the top 18 listed security companies with regard to the operating income recorded in Wind Database are used in this thesis. Based on the normative description of the interest rate liberalization index (IRL) and the profitability indicator (ROA), the impact of the interest rate liberalization index (IRL) on the profitability indicator of security companies (ROA) is researched empirically. Then the following conclusions are reached.

Firstly, the impact of the interest rate liberalization index and its quadratic term on the profitability indicator of security companies is significant. This kind of significant impact also remains in the robustness test of subsample regression.

Secondly, the impact of the interest rate liberalization index and its quadratic term on the profitability indicator of security companies ROA has a positive U shape. The reason for the positive U-shaped curve needs to be researched more deeply by improving the statistical index, which is the important focus of my next research.

Thirdly, with regard to the subsample regression, the impact of the interest rate liberalization index and its quadratic term on the profitability indicator of security companies has no significant difference. It means that the

product structure and the profit model in the security industry have no big difference regardless of the size of the companies. With the further development of the interest rate liberalization process, different security companies need to look for different development ways and the financial innovation further in order to keep "relatively" competitive.

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