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Financial Forum

Contents

Original Research Article

Tax Cuts and Fee Reductions and Labor Demand of SMEs

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Abstract: Policies to cut taxes and fees are important means to deal with the economic downturn, which strongly support to the development of the majority of small and medium-sized enterprises (SMEs). The current study has no consistent conclusion of whether SMEs expand their labor demand because of this. This paper builds a structural vector autoregressive (VAR) model to analyze the dynamic effects of tax cuts and fee reduction policies on increasing labor demand for SMEs. The empirical results show that tax cuts and fee reductions are important causes of short-term employment fluctuations, but in the long run, it is difficult for taxation policies to have a direct positive effect on employment. Therefore, this article puts forward the idea that different tax incentives can be formulated for small and medium-sized enterprises in the short term according to their life cycles. In the long run, the focus of macro-control needs to be turned to supply management to achieve the goal of stable employment.

Keywords: Tax Reduction and Fee Reduction; Corporate Comprehensive Tax Burden Rate; Structural Vector Autoregressive Model; SMEs

1. Introduction

SMEs account for half of urban employment, but the "small, scattered, chaotic" characteristics of SMEs have prevented them from maintaining stable labor demand when facing economic downturn. There are many policies to promote the development of SMEs, and taxation policies have become an important means of coping with the economic downturn. The efforts to reduce the value-added tax and corporate income tax burden have become stronger. At the same time, the contribution rate of basic pension insurance units for urban employees has been reduced and some special funds have been halved, whose purpose is to deliver the dividends of reform to enterprises and people in a timely manner, and to improve the level of social investment, employment, and social welfare.

Can the policy of tax and fee reductions play a role in promoting SMEs to expand jobs and achieve the government's goal of "stabilizing employment"? The current study has no consistent conclusions. Theoretically, tax cuts and fees will help reduce the cost of capital for enterprises. The scale effect allows enterprises to expand production scale and jobs, while the substitution effect causes enterprises to increase capital investment and reduce jobs. However, most of China's small and medium-sized enterprises are labor-intensive enterprises. When the substitution effect is smaller than the scale effect, a certain tax incentive is given, which has the effect of increasing labor demand[1-4]. In addition, the reduction of social security rates will directly reduce the labor cost of enterprises, and provide the possibility for the safety of the capital chain and the expansion of employment[5]. There is also literature believing that the effect of tax cuts and fee reductions on increasing labor demand is uncertain from an empirical perspective. Chen Yongwei and Xu Donglin (2011)[6] use VAR to prove that the tax relief policy is difficult to induce companies seeking to

"reduce employees and increase efficiency" to increase jobs. Xue Fengzhen (2014)[7] analyzed the impact of corporate income tax burden on employment from 2001 to 2009 in non-listed companies in the industrial industry, and found that with the increase of corporate tax burden, the number of employed people showed an upward trend. This is because most of the small and medium-sized enterprises in China have low production and operation levels, and their tax burdens are not high. Even with greater tax cuts, the marginal benefits of reduced corporate income tax cannot increase labor demand. After the tax burden is increased, the enterprise will maintain the original profit by increasing labor employment and expanding production and operation, thus increasing the demand for labor. The literature at the current stage only elaborates that tax cuts and fee reductions play a positive role in the expansion of jobs for SMEs from the perspective of qualitative analysis, but few literatures have applied data from recent years to obtain support from empirical results.

2. Model building and data processing

This paper adopts the vector autoregressive (VAR) model, which can more clearly explain the short-term response effect of tax and fee reduction policies on employment shocks. This article takes the small and medium-sized board enterprises in Shenzhen Stock Exchange from 2014 to 2018 as the research objects, and randomly samples 303 companies to investigate the impact of the annual corporate comprehensive tax burden rate on the employment of small and medium-sized board enterprises. This article refers to Feng Yanchao[8] and Cui Jiujiu[9] to measure the actual tax burden of a company by using the corporate comprehensive tax burden rate (compre) as an independent variable.

$$\text{corporate comprehensive tax burden rate (compre)} = \frac{\text{Annual paid taxes}}{\text{Annual operating income}} * 100\%$$

This indicator considers not only the income tax preference, but also the impact of VAT as the main tax type in China. The labor demand of an enterprise can be regarded as the total number of active employees. Because the independent variable is selected in the form of time relative number, the dependent variable adopts the relative number of staff growth rate (staff).

The VAR model is constructed according to the selected indicators as follows:

$$\text{staff}_t = A0 + A1\text{compre}_{t-1} + A2\text{compre}_{t-2} + \cdots + Ap\text{compre}_{t-3} + B1\text{staff}_{t-1} + \cdots + Bq\text{staff}_{t-p} + ut$$

3. Empirical results and analysis of the impact of tax and fee reduction on labor demand

Since this paper uses panel data with a small-time span, unit root tests are not performed on the two variables. Judging by the information criteria of AIC, BIC and QIC, this paper determines the VAR lag order as **Table 1**.

Lag	MBIC	MAIC	MQIC
1	-40.25174*	-10.54187*	-22.42784*
2	-12.78286	2.072073	-3.870907

Table 1. Calculated results of lag order. * indicates that under this standard, the corresponding lag order is optimal.

After the VAR model is established, the stability of the model needs to be checked. When the reciprocal of all the characteristic roots is within the unit circle, the VAR model of the effect of tax reduction and fee reduction policies on the labor demand of SMEs is stable. The stability test results show that the reciprocal of the two characteristic roots are 0.541 and 0.021 respectively, and all the points are within the unit circle, so the VAR model is robust and the estimated results obtained are valid.

To explore whether the tax reduction and fee reduction policies affect the labor demand of small and medium-sized board companies, Granger causality test is needed to verify the causal relationship between the two. That is to test whether the comprehensive tax burden rate of enterprises lags by one order to explain the employment growth rate. At a 95% confidence interval, the causality test rejects the assumption that "corporate comprehensive tax burden

rate is not the Granger cause of staff". Explain that changes in taxes and fees are Granger's reasons for changes in labor demand. This proves that China's tax reduction and fee reduction policies have a certain role in promoting the expansion of SMEs employment.

Lag	Granger causality	p-value	Test result
1	The independent variable is the cause of the change of the dependent variable	0.044	Refuse
1	The dependent variable is the cause of the change of the independent variable	0.523	Accept

Table 2. Results of Granger causality test

Next, this paper will study the dynamic effect of the tax reduction and fee reduction policy on the labor demand of SMEs. The following figure shows the dynamic response of labor demand to the tax and shock impact of 1 unit. In the figure, the horizontal axis is the number of lag periods (years) in which the shock occurs, and the vertical axis is the degree of response of the variable. The impact of taxes and fees on a standard unit, such as the implementation of tax reduction and fee reduction policies, will have a positive impact on the demand for small and medium labor, that is promoting employment. And this positive effect peaked in the second period, and then converged to 0. In the short term, the tax policy has a greater impact on employment, but when the forecast period exceeds 5 years, the policy effect is not obvious.
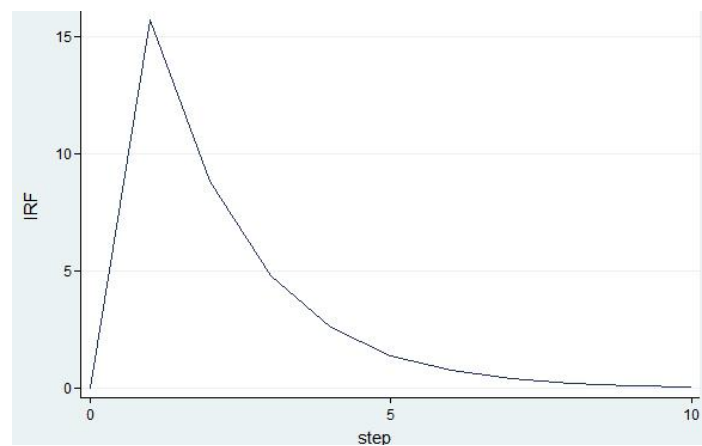
Figure 1. The pulse response graph of the increase in labor demand versus changes in taxes and fees.

Table 3 lists the results of tax and employment variance decomposition. As the forecast period is extended, the impact of labor demand on taxation has gradually increased. This is because employment will bring economic growth, and the expansion of the tax base will increase tax revenue. But this trend is no longer obvious after the fifth period, and the comparison value of the influence of both sides is 96.56% : 3.44%. It shows that the root cause of tax fluctuations lies in the regulation of national tax policies, so it is reasonable to treat tax policies as exogenous variables in this article. On the other hand, tax reduction and fee reduction policies are an important factor leading to fluctuations in labor demand. The impact of tax and fee reduction policies on labor demand has increased year by year. And in the eighth period, its influence reached a peak of 26.60%. It shows that in the short term, labor demand and even employment are significantly affected by tax policies. This result indicates that the preferential tax policies for short-term SMEs are conducive to encouraging enterprises to expand production scale and increase employment. In the long run, the effect of taxation policies is declining. The government should promote economic growth from the perspective of creating a good business environment and cultivating innovative enterprises, and achieve the purpose of expanding employment.

Period	Taxes		Employment	
	Compre	Staff	Compre	Staff
1	97.04	2.96	0	1
2	96.67	3.33	20.11	79.89
3	96.59	3.41	24.81	75.19
4	96.57	3.43	26.09	73.91
5	96.56	3.44	26.45	73.55
6	96.56	3.44	26.56	73.44
7	96.56	3.44	26.59	73.41
8	96.56	3.44	26.60	73.40
9	96.56	3.44	26.60	73.40
10	96.56	3.44	26.60	73.40

Table 3. Variance decomposition of taxes and employment

4. Conclusion

In the critical period of transformation of economic growth mode and acceleration of economic structure adjustment, "stable employment" is placed in a more prominent position as the first of six stables. It guarantees that residents have enough purchasing power and releases economically favorable expectations to society. This paper selects the small and medium-sized board enterprises of Shenzhen Stock Exchange as the research object from 2014 to 2018, and examines the impact of the relationship between tax policies and labor demand of enterprises. Policy thinking and suggestions are as follows:

First, tax and fee reduction policies make the substitution effect of SME capital on labor less than the income effect. In the short term, tax policies significantly affect the labor demand of SMEs. In the long run, although tax cuts and fees can promote SMEs to expand jobs to a certain extent, the correlation between the two is not high. Therefore, tax policy can be used as a tool to stimulate SMEs to achieve stable employment in the short term, while long-term macro-control should focus on supply management.

Second, most of China's small and medium-sized enterprises are labor-intensive enterprises, so supporting them has an important role in driving economic growth and expanding employment. However, it is necessary to formulate scientific tax preferential policies based on the different life cycles of the industry. For small and medium-sized enterprises in the start-up period, tax exemption can be granted to provide more employment opportunities. For enterprises in the growth stage, different preferential policies can be formulated according to the development speed and scale, to further exert the ability to absorb employment. Enterprises in recession period should be given appropriate tax subsidies because of inclusive reduction and exemption policies, which helps to enhance the confidence of enterprises to do business and reduce the proportion of SMEs withdrawing from the market to stabilize employment.

References

1. Liu G. On the effect of tax on employment (in Chinese). Taxation Research 2003; (1): 24-27. doi: CNKI:SUN:SWXH.0.2003-01-005.
2. Deng Y. An economic analysis on impacts of taxation on employment in China. Taxation Research 2006; (12): 14-19.
3. Peng P. Discussion on the supply-side theory of tax reduction to promote employment of small and micro enterprises (in Chinese). China Business & Trade 2014; (29): 195-196. doi: 10.3969/j.issn.1005-5800.2014.29.091.
4. Ni H. Effect analysis of the preferential income tax policy for small enterprises with low profits: Based on the national tax sample in Kunming (in Chinese). Tax and Economic Research 2016; 21(4): 77-86.
5. Bai J. The significance of implementing a larger scale of tax cuts and fee reductions (in Chinese). China State Finance. 2019; (12): 12-15. doi: 10.14115/j.cnki.zgcz.2019.12.003.

6. Chen Y, Xu D. Does tax preference improve employment? An investigation based on corporate income tax. Journal of Zhongnan University of Economics and Law 2011; (2): 29-31.

7. Xue F. Corporate effective tax rate, employment tax credit and employment incentives:an analysis based on corporate income tax. Modern Finance and Economics (Journal of Tianjin University of Finance and Economics) 2014; 34(12): 61-70.

8. Feng Y. A study on the relationship between political connections and tax burden of Chinese private enterprises. Management Review 2012; 24(6): 167-176.

9. Cui J. Review and innovation of the theoretical model of tax burden measurement for enterprises (in Chinese). Friends of Accounting 2017; (2): 75-79. doi: 10.3969/j.issn.1004-5937.2017.02.015

Original Research Article

Present Situation and Countermeasure of Camellia Oleifera Industry in Guizhou Province

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Abstract: Starting from the current situation of the development of camellia oleifera industry in Guizhou Province, China, this paper systematically summarizes the development advantages, and puts forward the countermeasures for further development. Moreover, it points out that camellia oleifera industry must strengthen the propaganda, put the promotion of science and technology in the first place, deal with a series of problems such as variety resources, planting technology, capital investment, low-yield forest transformation, and processing of camellia oleifera, so as to speed up the processing development of camellia oleifera industry in Guizhou Province.

Keywords: Camellia Oleifera Industry; Current Situation; Advantages; Countermeasures

Guizhou Province is located in the southwest of China. Farmers in the mountainous areas have always had the traditional habits of planting and eating camellia oleifera. The local climate and geographical conditions are very suitable for the growth of camellia oleifera. At present, the production of camellia oleifera has become an important content of "Mountain Reconstruction", which is also an important source of income for farmers in Guizhou mountainous areas. So it has become an important project that is valued and supported by governments at all levels. However, due to the lack of investment in capital and technology in the production of camellia oleifera in Guizhou Province in the past, at present tending camellia oleifera forest is usually carried out by farmers spontaneously.

1. Current situation of camellia oleifera industry in Guizhou Province

Guizhou Province is one of the important camellia oleifera producing areas in Southern China. It is of great significance to make full use of the ecological, economic and social benefits of camellia oleifera, accelerate the development of camellia oleifera industry, promote the economic development of mountainous areas in Guizhou Province, promote the income of farmers, maintain the security of national grain and oil, so as to meet the needs of society and the public for good ecological products and natural green products.

1.1 Guizhou Province with a long history of planting camellia oleifera

There is a long history of planting camellia cultivation in Guizhou Province, many counties and cities of which are well-known as the "Hometown of Camellia Oleifera", such as Wangmo, Ceheng, Tianzhu and Yuping. At present, camellia oleifera forest that are over 100 years can be seen everywhere. These camellia oleifera forests are ancestral for the whole family to eat all year round, who inherit a whole set of skills of selecting seed, harvesting and processing. Camellia oleifera in Ceheng, Luojiang, Liping Ouyang and Shuikou is in good condition, which is an important economic source of family income.

1.2 Strict supervision on quality of camellia oleifera seedlings

In order to strengthen the quality management of camellia oleifera seedlings, ensure the supply and the healthy development of camellia oleifera industry in Guizhou Province, according to *Regulation on Quality Management of Camellia Oleifera Seedlings* issued by the State Forestry Administration, combined with the key development plan of camellia oleifera industry in Guizhou Province, on the basis of local application, the first batch of camellia oleifera seedlings in Guizhou Province has been determined through full investigation and research with strict screening and scientific evaluation. There are twelve designated production units and one cutting garden for improved varieties of camellia oleifera. Seven places in Qiandongnan Prefecture are listed as the first batch of the fixed-point production unit of camellia seeding nursery and ear picking nursery. There were more than 7.1 million grafted seedlings only in Tianzhu County in 2009, while counties like Liping, Songtao, Ceheng, and Wangmo have successively built ear picking nurseries.

1.3 Getting attention from governments at all levels

Camellia oleifera is a major characteristic and advantageous resource in the forestry construction of Guizhou Province. But for a long time, there has been the following problems, namely aging, extensive production and management, mixed varieties, low productivity and economic benefits. It is necessary to make full use of the long history and good production foundation of camellia oleifera in Tongren, Qiandongnan and Qianxinan. In 2009, the Provincial Forestry Department issued *The Implementation Opinions of Guizhou Provincial Forestry Department on Accelerating the Development of Camellia Oleifera Industry*, so as to make full use of the characteristic resource advantages of camellia oleifera and promote the rapid development of camellia oleifera industry in Guizhou Province.

1.4 Organizing technology training

The provincial quality management and technology training meeting of camellia oleifera seedlings was held in Tianzhu County. The director of seedling station of Provincial Forestry Department, as well as the relevant leaders of Qiandonnan Forestry Bureau and Tianzhu County attended the meeting for guidance. There were 99 persons that were in charge of forestry seedling and science and technology promotion management departments in nineteen counties (cities) as well as five regions (prefectures and cities) including Qiandongnan, Tongren, Qianxinan, Xingyi and Zunyi. Through technology training, the participants basically mastered the grafting technology of camellia oleifera, which achieved the expected effect of the training meeting and they became the backbone force to promote the development of local camellia oleifera economic industry. By increasing the adjustment of the industrial structure of the camellia oleifera industry, promoting the development of the camellia oleifera industry, it can achieve the forestry efficiency and increase the income of the forest farmers, which can play an exemplary role in the construction of the whole province's camellia oleifera industry.

1.5 Group company participates in the development of camellia oleifera industry

Dingzhong Group and Yahong Technology Co., Ltd. that registered in Guizhou Province have invested a lot of money and actively cooperated with local governments to participate and develop camellia oleifera industry. In Tianzhu, Yuping, Ceheng and other main production areas of camellia oleifera, the first step of industrialization of camellia oleifera has been taken. In addition, camellia oleifera processing enterprises such as Dalong and Malinghe in Guizhou Province are also upgrading the processing technology, so as to expand the domestic market and build the enterprise's image.

2. Countermeasures for the development of camellia oleifera industry in Guizhou Province

The yield of camellia oleifera per unit area in Guizhou Province is low, so far it is still the rudiment of family self-sufficient individual economy. With the continuous improvement of people's living standards, camellia oleifera has

gradually penetrated into families. Camellia oleifera has high edible and medicinal value, which has been recognized and accepted by more and more people. Therefore, it can be predicted that the development prospects of domestic and foreign consumer market are quite bright, with the price of camellia oleifera gradually increasing with the passage of time. From the overall situation of the survey, according to the traditional habit of planting camellia oleifera in Guizhou Province, the existing favorable geographical, soil and climatic conditions have been fully used as the basis for the cultivation of camellia oleifera forest, which provide great conditions for the rapid development of camellia oleifera industry in a short period of time. Its potential huge business opportunities can provide a broad sales space for the forest farmers.

2.1 Planning the layout of camellia oleifera development, promoting the direction of industrialization

Camellia oleifera has strong adaptability, which has no strict requirements on soil, even tolerates barren. It is suitable to grow in acid yellow soil or red soil with pH value of 5-6. It requires an annual average temperature of 14-21 °C, warm and humid climate, an average temperature of more than 0 °C in January, and an annual rainfall of over 1000 mm. Guizhou is suitable for the growth of fir, bamboo, pine, camellia oleifera, tea and other trees. It is a land suitable for cultivation and rich in forests. The local soil is mainly thick and medium red soil, red soil and yellow soil. In 2008, the State Forestry Administration put forward the idea of vigorously developing the production of camellia oleifera. The climate, soil and rainfall in Guizhou Province are all favorable for the growth of camellia oleifera forest. In order to effectively develop and tap the potential of forestry production, as well as to achieve the purpose of making the best use of the land and making the best use of the material, the Guizhou Provincial Committee and the government have established the leading position of the production of camellia oleifera, which fully seized the opportunity, and reasonably formulated the general production of camellia oleifera in Guizhou Province, so as to develop the camellia industry as soon as possible and improve its industrialization level.

2.2 Increasing propaganda of camellia oleifera industry, raising awareness of camellia oleifera industry

In recent years, the comprehensive utilization of camellia oleifera has a long industrial chain, with great potential for industrial development and broad prospects, but its economic and ecological benefits have not been fully recognized and exploited. The present situation of camellia oleifera production in Guizhou Province can be described as "unknown by others". Therefore, to accelerate the rapid development of the camellia oleifera industry, it is of great practical significance to drive the local farmers to prosper, maintain the security of national grain and oil, promote the construction of new socialist countryside, which can fully meet the needs of the society and the public for natural green products.

By 2020, it will basically realize the intensification of operation and management of the whole province's camellia oleifera industry, the base of resource cultivation, the integration of product development and sales, promote the healthy and sustainable development of the camellia oleifera industry, build three to five leading processing enterprises for refining camellia oleifera processing and series product development, and the annual processing capacity of the whole province's camellia oleifera related enterprises will reach more than 150000 tons. It is estimated that 200000 hm^2 of newly-built camellia oleifera forest and 66700 hm^2 of low-yield forest will be completed in the province. The area of camellia oleifera in the whole province has increased from 66700 hm^2 to 266700 hm^2. Through the construction of camellia oleifera base and the transformation of low yield forest, the annual average output of camellia oleifera in the whole province has reached 120000 tons and the annual total output value has reached over 10 billion yuan, and the average output of camellia oleifera can reach over 450 kg/hm^2. Therefore, it is necessary to strengthen the publicity of the development of camellia oleifera production, call on all countries (towns) whose conditions permit to establish camellia oleifera demonstration bases, which should widely publicize the importance of the development of camellia oleifera industry to farmers in mountainous areas, and through demonstration publicity, let farmers realize the

significant benefits of the development of camellia oleifera, so that farmers can actively participate in the development of camellia oleifera industry, and promote the sound and rapid development of camellia oleifera industry.

2.3 Focusing on supporting leading enterprises, achieving professional development

The production of camellia oleifera should build the production base of camellia oleifera and solve the supplying problem of the raw material. In order to realize its large-scale development and intensive management, cooperative organizations should be set up to actively support one or two leading enterprises, which can give full play to the guiding and radiating role of cooperative organizations and processing leading enterprises, so as to promote the development of camellia oleifera industry. It is necessary to guide enterprises to participate in the construction of camellia oleifera raw material forest base, promote the industrialized operation mode of "Enterprise + Base + Farmer". Thus it can promote the organic combination of camellia oleifera production, processing as well as market. In order to lead the development of the whole county's camellia oleifera processing industry in terms of radiation and market development, it is necessary to seriously implement the policies and measures to support the development of leading enterprises, making full use of the forestry loan funds in accordance with the principle of "Supporting the large, the strong and the excellent", focusing on supporting capable and skilled people to establish camellia oleifera processing enterprises, increase policy support, and make them continuously expand production scale and develop a professional camellia oleifera processing leading enterprise. To ensure the supply of camellia oleifera raw materials for leading enterprises, small oil extraction workshops should be shut down in a planned way. It is necessary to guide and encourage the cooperation among the camellia oleifera processing enterprises, and work out the relevant policies to improve the market competitiveness together.

2.4 Vigorously developing base of camellia oleifera forest, accelerating transformation of low yield camellia oleifera forest

The average investment of planting camellia oleifera forest is about 4500 Yuan/hm^2, which is slightly higher than that of commercial timber forest. However, after the planting camellia oleifera, it can blossom and bear fruit in three years or so, and enter the full fruit period in six to seven years, with a life span of over 100 years. Its growth cycle is short and its effect is fast. Moreover, camellia oleifera has a unique advantage due to its low requirements for cultivation technology. The governments at all levels and the competent forestry departments should take the management measures of the combination of the renewal and transformation, the transformation of low-yield forest and the new forest to carry out the production of camellia oleifera, so as to adapt to the current situation and production level of camellia oleifera resources. On the premise of not causing soil erosion, the diseased, old and inferior plants should be rehabilitated and renewed; the existing camellia oleifera forest should be strengthened with young forest tending and mature forest reclamation; the sparse forest land should be replanted; the forest land should be artificially fertilized to prevent diseases and insect pests, so as to improve the planting area and yield of camellia oleifera. To provide farmers with good varieties with high yield, strong resistance to adversity and high oil content, guiding local farmers who are suitable for planting camellia oleifera area to improve the plant density, so as to vigorously plant camellia oleifera, and realize the plant density in 1800-2400 plants/hm^2, so as to improve the output per unit area and strive to meet the needs of production and development.

The new camellia oleifera forest should make full use of the advantages of capital and technology, so as to accelerate the foundation of camellia oleifera production base. In order to attract more social forces to participate in the construction of camellia oleifera forest, the forestry policy of "Who Plants, Who Owns" should be adhered to. According to the principle of "Law, Compensation and Voluntary", it's necessary to make full use of the achievements of forest right system reform, promote the development of camellia oleifera forest to a large scale, encourage and support all kinds of producers and operators who know technology, have economic strength and are good at management to participate in this industry. Governments at all levels and competent forestry departments should also actively build a high-yield base of camellia oleifera forest, strive for funds from superior departments for agricultural

comprehensive development projects, or build a demonstration model forest of camellia oleifera, plan and arrange the construction of high-yield forest, combine the projects of returning farmland to forest, poverty alleviation and comprehensive development in mountainous areas, which can play the role of demonstration model, and stimulate the enthusiasm and initiative of the majority of forest farmers to develop camellia oleifera, thus promoting the production of camellia oleifera industry.

2.5 Building the brand of camellia oleifera of Guizhou Province, promoting the developing strategy of camellia industry

One of the indispensable components to drive the development of an industry is to rely on brand benefits to improve market competitiveness and create famous brands with local characteristics. Guizhou Province must implement the strategy of famous brand development in order to realize the industrialization of camellia oleifera production. To build a famous brand, it must have a period of accumulation. Therefore, it is necessary to prevent the low standard and low level of repeated construction, keep abreast of the standardized construction in the construction of camellia oleifera base, marketing and product development, thus laying the foundation for the development strategy of camellia oleifera brand in the whole province. The competent forestry departments at all levels in the camellia oleifera producing areas should further recognize the important position and role of the camellia oleifera industry in the development of characteristic commercial forest in Guizhou Province. The leading enterprises should improve their product quality, enhance their brand awareness, give full play to their respective advantages in technology, capital and market, and develop their own famous brand characteristic products, so as to firmly grasp the law of market economic development, and conform to the demand of products from market, and strive to make the camellia oleifera industry in Guizhou Province bigger and stronger.

References

1. Tan F, Wu D, Huang H. Camellia oleifera in Guizhou: Production situation and development strategies. Journal of Central South Forestry University of Science and Technology 2011; 31(10): 74-77. doi: 10.3969/j.issn.1673-923X.2011.10.013.
2. Luo Z, Qiu J, Xu J, *et al*. Present situation and countermeasures of the development of camellia oleifera industry in Guizhou Province (in Chinese). Modern Agricultural Technology 2011; (12): 372-374. doi: CNKI:SUN:ANHE.0.2011-12-249.
3. Qiu J, Luo Y, Xu J, *et al*. Strategy and technical approach to realize the oil camellia industrialization in Guizhou Province. Guizhou Forestry Science and Technology 2013; (4): 51-59. doi: CNKI:SUN:GZLY.0.2013-04-012.

Research on Payment Security under the Integration of New Media and E-Commerce

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Abstract: With the popularization and development of the network, e-commerce is gradually integrated into the daily life of people, thus effectively promoting the transformation of the traditional production and living mode in China. As the core content, online payment is the foundation to ensure the smooth development of e-commerce. At the present stage, there are still some deficiencies, which has had a negative impact on the security of China's online payment. This paper analyzes and explores the security problems in the current online payment process of China, and puts forward targeted countermeasures to lay a foundation for the improvement of e-commerce security.

Keywords: Online Payment; E-Commerce; Property Safety; Targeted Countermeasures

In recent years, with the continuous development of network technology, e-commerce has become one of the important contents in people's social life. Relevant research shows that in recent years, with the emergence and vigorous development of well-known e-commerce enterprises such as Taobao, JD and Pinduoduo, e-commerce has achieved a great progress in China. In the process of e-commerce, as one of the bases of trading activities, online payment is the determining factor of the smooth development of e-commerce. Therefore, people pay more and more attention to payment security issues. In order to further ensure the payment security of users, according to the researchers, relevant enterprises and departments should actively explore the payment security issues so as to promote the continuous optimization of online payment security.

1. Status quo of the development of online payment in China

As the core content of e-commerce, online payment has shown strong development potential along with the development of e-commerce. According to incomplete statistics, by 2019, China's online shopping users exceeded 600 million, while the total annual e-commerce transactions reached 34.81 trillion yuan, which indicates that online payment in China has developed rapidly. In the developing process of online payment, payment security has gained more attention from network users with the occurrence of security incidents. Therefore, actively ensuring the security of online payment is of positive value for promoting its healthy development.

2. Security problems of e-commerce in the payment process

2.1 Low network security and various types of network fraud

In the process of online payment, some criminals often counterfeit well-known websites through counterfeiting URL addresses, then induce network users to log in their accounts and passwords in fake websites, thus stealing users'

passwords. At the same time, relevant personnel can detect the terminal payment process of users through tracking software, thus realizing the purpose of stealing users' account number and password and further damaging the security of users' funds in the account.

2.2 Insufficient performance of system security to deal with hackers and virus attacks

Due to the lack of system security performance, malicious attacks by hackers impact greatly on system security. As for the attack mode, attacker mainly control and detect the users' system by writing program codes, thus stealing information. In this process, most hackers realize the mastery of users' information through Trojan implantation in the system, which is relatively hidden and often difficult for users to detect. In addition, some hackers can also release and spread viruses by inserting malicious codes into web pages, thereby causing damage to the system.

2.3 Insufficient information security increasing the security risks in the payment process

In the process of online payment, information security issues have a serious impact on users' payment security. Generally speaking, information security problems mainly include three types, namely information disclosure, impersonation of legitimate users and malicious information tampering. The main content of the information security problem is that criminals can steal the user's information in order to impersonate the user's identity, further causing damage to the user's account. At the same time, the existence of information problems, to a certain extent, leads to a serious impact on users' information security, which is not conducive to the reasonable protection of privacy.

2.4 The lack of supervision system hindering the implementation of network supervision work

From the perspective of supervision, at this stage, China has not yet effectively established and perfected the supervision mechanism on the issue of e-commerce, which is not conducive to the effective protection of the legitimate rights and interests of users. In addition, due to the lack of supervision system, it is often difficult for users to effectively and reasonably protect their rights and interests, restricting the reasonable establishment of users' confidence in online payment, and causing serious impact on the security of online payment.

3. Countermeasures of online payment security issues

3.1 Raise the communication access threshold and strengthen network security management

In order to effectively improve the quality of network security, relevant departments should actively improve the network environment in a reasonable way so as to effectively optimize the network environment and the management effect. In terms of specific measures, on the one hand, enterprises should actively and rationally apply advanced technologies in order to reasonably block viruses. At the same time, in order to effectively monitor malicious websites, relevant departments should actively strengthen the firewall technology in order to successfully avoid the influence of malicious network information. In addition, in order to further realize the effective control of bad websites, relevant departments should actively improve the communication access threshold and strengthen the management ability for website construction, so as to maximize the improvement of network security level.

3.2 Optimize the system performance and improve the attack resistance

Regarding to the issue of system performance, researchers pointed out that enterprises should actively optimize the system performance in order to further enhance the system's ability to resist hacker attacks, thus laying a foundation for the promotion and optimization of payment security products. On this issue, first of all, relevant departments should effectively carry out reasonable optimization of system capabilities in order to enhance their ability to resist different types of viruses and Trojan, and better deal with the threats brought by hacker attacks. On the other hand, relevant departments should treat hackers and other network attackers seriously and effectively carry out ideological education work, so as to help them change their ideas to effectively apply network technology capabilities to contribute to social development, avoid them from continuing to attack network system, and thus reasonably optimize network system

security.

3.3 Implement construction of credit system and reasonably protect information security

In order to effectively guarantee information security, the social credit system should be actively constructed and perfected in China, so as to guarantee e-commerce security. In this process, relevant departments should actively establish and perfect credit records for major dishonest people, so as to strengthen the network management, effectively prevent network technology crimes and lay a good foundation and guarantee for the improvement of China's online payment management level. For example, through constructing information base of dishonest people, in the process of e-commerce, it is beneficial for users and merchants to strengthen prevention awareness of payment risk, thus avoiding the occurrence of payment risks.

3.4 Improve the management system and strengthen network supervision

Regarding to the problem of insufficient supervision for online payment, relevant departments and e-commerce enterprises should actively carry out communication and cooperation, so as to promote the establishment and improvement of e-commerce management laws and regulations, and further standardize e-commerce transactions. Meanwhile, in the daily work, the relevant departments should actively carry out propaganda of security knowledge of e-commerce payment, in order to enhance people's awareness of online payment security, thus laying the foundation and guarantee for strengthening management effect of online payment.

4. Conclusion

In general, with the continuous popularization and development of network technology, e-commerce has become one of the main trends in the current social development. In this process, in order to reasonably ensure the users' capital security, relevant departments and e-commerce enterprises should actively optimize the system security to effectively enhance resistance capability to virus invasion. At the same time, in response to malicious hacker attacks, relevant departments should actively improve relevant laws and regulations, and strengthen the punishment of personnel involved, so as to construct a safe network environment and provide guarantee for the reasonable solution of users' payment security issues. In addition, in order to further improve the security in the payment process, the propaganda and popularization of online payment knowledge should be carried out, thereby promoting and strengthening people's awareness of online payment security, and laying the foundation for the enhancement of payment security.

References

1. Hao L, Ma Y. Analysis of the current situation of electronic payment and information security in cross-border e-commerce in China (in Chinese). China Logistics & Purchasing 2019; (17): 46.
2. Zhang Y. Approaches and measures of transaction security and payment in e-commerce environment: Comments on "Security and Payment of EC" (in Chinese). China Safety Science Journal 2019; 29(4): 190.
3. Zhang H. Liabilities and rules for the damage of electronic payment services in e-commerce transactions (in Chinese). Cognition and Practice 2019; 37(2): 160. doi: CNKI:SUN:ZIYX.0.2019-02-036.
4. Yang L. Liabilities and rules for the damage of electronic payment services in e-commerce transactions. Academic Journal of Zhongzhou 2019; (2): 45-56. doi: 10.3969/j.issn.1003-0751.2019.02.009.
5. Cui D. Discussion on payment security under the integration of new media and e-commerce (in Chinese). Today's Mass Media 2017; 25(6): 18-19. doi: 10.3969/j.issn.1672-8122.2017.06.007
6. Liu L. Analysis and countermeasures of mobile payment security (in Chinese). Internet Application 2018; 20(22): 117. doi: CNKI:SUN:TXWL.0.2018-22-090
7. Chen Y. Issues and solutions of electronic payment security (in Chinese). Modern Economic Information 2018; (20): 306. doi: CNKI:SUN:XDJZ.0.2018-20-247.
8. Liu B. Analysis on the security and trust of Alipay (in Chinese). Modern SOE Research 2018; 146(20): 166. doi: CNKI:SUN:XDGQ.0.2018-20-143.
9. Fang Y. On the problems and solutions of electronic payment (in Chinese). Modern Economic Information 2018; (24): 305. doi: CNKI:SUN:XDJZ.0.2018-16-238.
10. Wang Y, Shen Y, Zhang X. Security issues and countermeasures of mobile payment under the background of

"Internet +" (in Chinese). Public Management 2018; (22): 56-57. doi; CNKI:SUN:GLKW.0.2018-22-019.

11. Jing C. Mobile payment security issues and countermeasures of e-commerce platform in Wuwei City (in Chinese). Computer Products and Circulation 2018; (7): 126. doi: CNKI:SUN:WXXJ.0.2018-07-118.

12. Wang L. Discussion on the security of NFC mobile payment (in Chinese). Knowledge Economy 2018; 464(11): 39-40. doi: 10.3969/j.issn.1007-3825.2018.11.023

The Impact of Financial Liberalization on Economic Development: A Comparison Between China and Japan

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Abstract: According to the theory of financial liberalization, effective financial reform and moderate regulation of financial market can promote economic development. Taking China and Japan as examples, this paper analyzes some problems in the current financial liberalization reform of the two countries. Simulation scenarios about financial reform are then applied to China and Japan using the GTAP computable general equilibrium model of the global economy. The simulation results show that reducing investment barriers and improving the efficiency of capital use in the industrial sector can effectively promote the economic growth of China and Japan above levels that would otherwise be achieved. Improving the efficiency of the financial sector service delivery would have an additional positive impact on the economies of both countries, albeit small compared to measures that promote gains across all sectors.

Keywords: Financial Liberalization; Economic Growth

1. Introduction

Economists have attributed the slow development of developing countries to the lack of capital for a long time. They believed that if developing countries want to achieve economic development, they will either need to increase their savings or introduce foreign capital to speed up capital formation. In the Harrod-Doma model, capital accumulation is regarded as a determinant of economic growth[14]. According to the new economic growth theory, capital's impetus to the economy is realized in the short term through demand for capital goods and the addition of capital capacity, while technological progress, efficient institutional change and human capital accumulation are the driving forces of ongoing economic growth. McKinnon (1973) and Shaw (1973), respectively, established a set of theories about "financial repression" and "financial deepening". These theories analyzed the slow development of developing countries from the perspective of capital efficiency. They conjectured that the financial restraint policy in developing countries has distorted capital markets, resulting in inefficient use of capital and thus impeding their economic growth. Financial deepening can increase both the deposit and lending interest rates, encourage people to save, promote the flow of funds to efficient investment, and then improve the efficiency of capital used[11].

In the second half of the 20th century, many countries carried out financial market reforms and deregulated financial markets. The reforms in these countries provided empirical experience for the theory of financial liberalization. Financial liberalization reforms in some countries have promoted rapid economic development, such as Korea in the 1960s, Federal Republic of Germany and Japan in the 1970s[11]. However, financial liberalization in some countries has led to economic instability[13], such as the economic crises in Latin American countries in 1990s (Yang, 2007). The above examples show that financial liberalization is a double-edged sword for the economy. The analysis of financial li-

beralization and economic development should be based on specific national conditions.

The research subjects of this paper are China and Japan. China is an upper middle-income country, while Japan is a high-income country. The system and development degree of these two countries are very different. As a developed country, Japan's financial market is mature. Therefore, Japan's experience of financial liberalization reform could be of great significance to China in its further economic develops and integrates with the global economy.

2. Literature review

Goldsmith (1969) compared the financial historical data of 35 countries in the world over the past century using a stock and flow index to measure the financial structure and development level of a country. For the first time, quantitative research and comparative study were conducted on the differences of financial development among different countries, revealing the role of financial deepening in promoting economic development[2].

In 1973, McKinnon and Shaw respectively analyzed the financial situation of developing countries from different angles and reached the same conclusion: financial liberalization can contribute to economic growth.

McKinnon emphasized the role of positive real deposit interest rate in capital raising. In developing countries, only positive real deposit interest rates can stimulate the growth of savings, provide finance for real investment and promote economic growth. Empirical support for his policy recommendations comes mainly from Taiwan's financial reform in the early 1950s and South Korea's financial reform practice in the mid-1960s[11](p105-116).

Shaw paid more attention to the financing function of financial institutions and emphasizes the role of external financing in capital formation. He argued that raising deposit rates would increase the amount of money flowing to financial institutions, which was a prerequisite for increasing the supply of credit funds and investment. Shaw's theoretical contribution to financial liberalization focused on the role of financial intermediaries in economic development[12].

Although the basic analysis between the two authors is different, the results are very similar, that is, the increase of real deposit interest rate promotes savings growth and contribute to economic growth through higher savings and investment.

3. Broad framework

The economic effects of financial liberalization can be summarized through three core factors: savings, investment, and the real output, which interact with each other and form the basis of achieving economic benefits through financial liberalization (**Figure 1**).
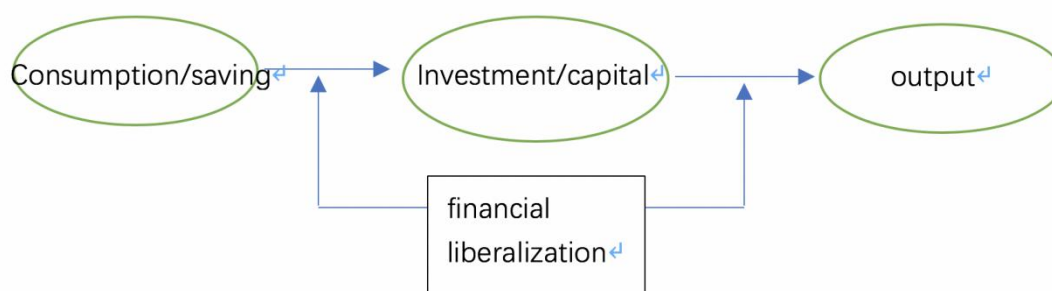
Figure 1. The influence path of financial liberalization on economy.

3.1 Barriers to foreign capital investment

Reducing investment barriers can promote economic growth. In an open economic system, the opening of capital account is an important part of liberalized financial system. Interest rate spread between different countries and exchange rates between different currencies are directly related to the flow of international capital. Foreign capital can augment domestic savings and contribute to the investment. Implementing financial liberalization, abolishing exchange

rate control policy and promoting the free flow of international capital can effectively solve the problem of insufficient domestic savings, and help make foreign exchange capital play an active role in the domestic economy (as a simplified model, this paper does not consider the cost of capital flow among countries.).

Higher deposit interest rate can attract foreign capital (**Figure 2**). The price of capital can be measured by the real interest borrowing rate. It is assumed that there are only two countries in this open economy model. One country has a low real interest rate, like Japan. The other one has a high real interest rate, like China. If there is real interest spread between the two countries (**Figure 2**), investors from low-deposit interest country will invest in the country with a higher deposit rate. This is a simple model of international capital flow. Borrowers will then have access to more finance at and lower borrowing rate (**Figure 2**, right panel)
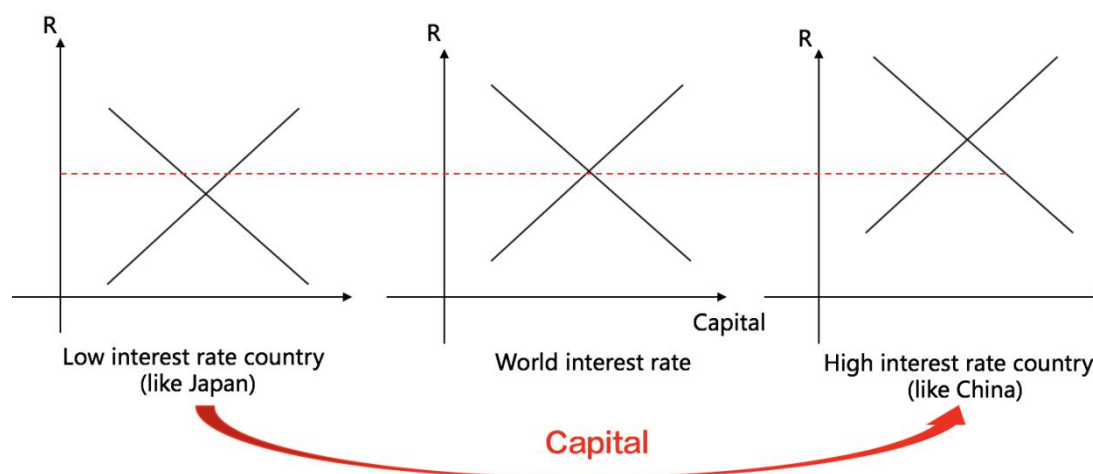
Figure 2. The influence path of financial liberalization on economy[6].

In case of idealization, without considering the transactions costs of capital flows, capital can flow freely in the global capital market, and the return on capital is the same in all countries in the world under equilibrium. However, the existence of investment barriers between countries impedes capital flows, reducing the efficiency of capital use.

Barriers to investment may be of variety of forms, like foreign exchange control and restrictions on remittance of investment income. Although the underpinnings of each type of barrier differ, the ultimate effect of any barrier to investment is to raise the price of an effective unit of capital used in production.

Higher priced capital reduces the competitiveness of capital-using activities and lowers potential output. Reducing barriers to investment can therefore provide an incentive to increase investment activity as the cost of supplying a unit of effective capital is reduced.

After new foreign capital (**Figure 3**, Line CL) flows into domestic capital market, the availability of capital increases and the marginal products of capital will decline, reducing the cost of investment. At the same time, excessive capital inflows will depreciate domestic currency (**Figure 3**, from point D to K) and facilitate exports, thus promoting the growth of GDP.

Figure 3. The influence of new foreign capital inflow[8].

3.2 Savings-to-investment transformation efficiency

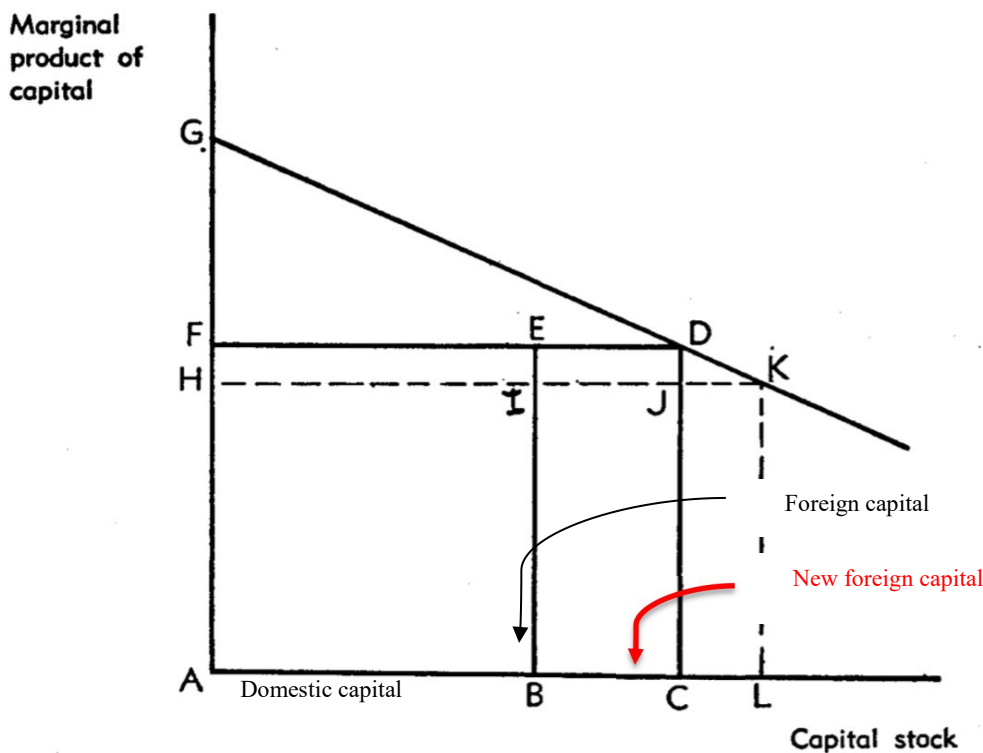In the process of transforming savings into investment, financial liberalization can also affect the real economy through the transformation efficiency of savings. Financial frictions refer to the factors that increase transaction costs due to the imperfection of market information structure driving a wedge between lending and borrowing rates. There is transaction cost in the process of transforming savings into investment[4], so investment is less than savings. Under the condition of financial restraint, the allocation of capital does not operate according to the regulation function of the market. The distortion caused by market failure may lead to a large amount of capital being left idle, unable to form effective capital circulation, and also bring much pressure on banks since the banks need to pay the depositors interest. Therefore, improving the efficiency of the financial system is also an important element of financial liberalization reform.

As shown in **Figure 4**, demand line implies investment side, like the growing firms which require investment funds. On the other side, supply side implies saving that banks and other financial institutions obtain from the public. They cross at a point which implies the real interest rate of this capital market if it is Pareto efficiency. In the process of indirect financing, financial institutions play the role of intermediary. Financial institutions get income through the spread between saving rate and loan rate. This income can be seen as a dead weight loss of depositors and lenders. If the efficiency of financial institutions can be improved, the interest rate difference between deposits and loans will be reduced, the dead weight loss of depositors and lenders will be reduced, and the welfare will be increased.
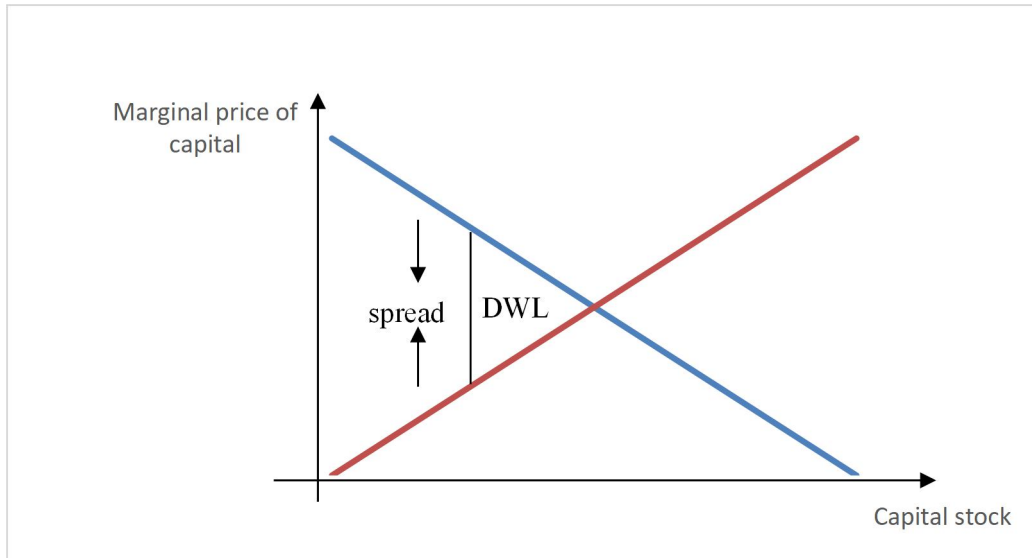
Figure 4. The dead weight loss between depositors and lenders.

3.3 Investment efficiency

Because of the different specific conditions, enterprises will inevitably have different efficiency in specific production technology and operation transformation, which will lead to different rate of return. In the capital market with financial repression, the newly developed high-profit enterprises may not get the capital they need but can only obtain it through informal channels (such as shadow banks) with higher cost, that is larger spreads between borrowing and lending rates. And inefficient state-owned enterprises can get subsidized loans at preferential prices on output, subsidies on inputs, or preferential access to scarce finance. This disguised subsidy for inefficient enterprises reduces the efficiency of capital allocation and impedes the effective operation of markets. However, a liberalized market can help eliminate such negative impacts. In the absence of government subsidies, inefficient enterprises cannot adapt to market operation, and eventually are squeezed out of the market system[11](p24).

4. Analysis of China and Japan

4.1 Brief description

As a large, developing country, China has many investment opportunities. The funds used for investment come from high domestic savings rate on the one hand, and foreign investment on the other. Real interest rate is an indicator of the cost of capital used for investment. According to the World Bank data, China's real interest rate was above 3% from 2012 to 2016, which is at a high level in the world (**Figure 5**). The United States is chosen as the baseline. It can be found that the real interest rate of China is about 1 percentage point higher than that of the United States from 2012 to 2016. China's real interest rates are much higher than Japan's and in 2014 and 2015 the gap is about 5 percentage points. China's higher real interest rate means that the cost of capital used for investment is higher in domestic financial market, and it can attract foreign capital through high return on capital.
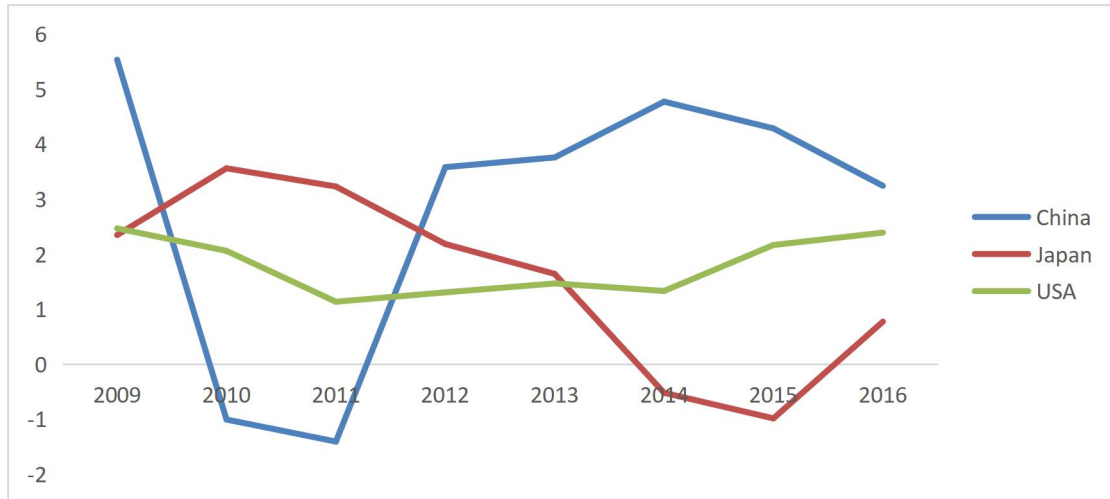
Figure 5. Real interest rate in China Japan and U.S from 2009 to 2016. (Data source: World bank <https://data.worldbank.org/indicator/FR.INR.RINR>).

At present, China's financial market efficiency is lower than that of developed countries. This paper uses deposit and lending rate wedge as an indicator of financial market productive efficiency. In **Figure 6, C**anada is chosen as the benchmark because data from the United States were not available. From 2009 to 2014, the annual interest rate gap between deposit and loan in China is about 0.5 percentage points higher than that in Canada, which tends to narrow gradually in the following years. Japan's deposit and loan interest rate gap, which is about 1%, is much lower than that of China and Canada, and shows a decreasing trend between 2009 and 2017. This suggests that Japan's financial market service provision is relatively more productive than the benchmark.
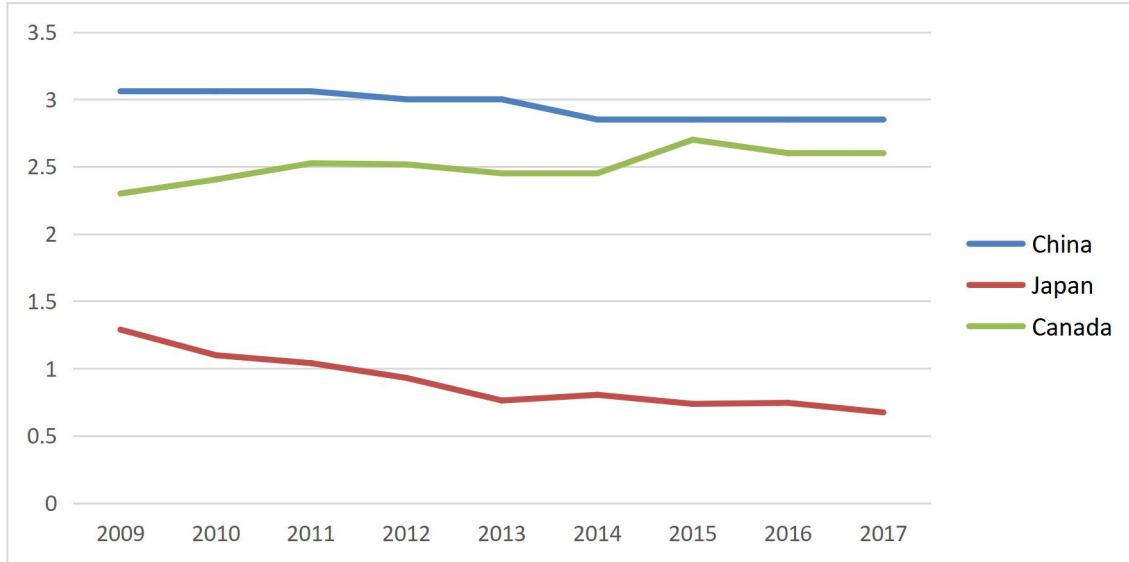
Figure 6. Deposit and lending rate wedge in China, Japan and Canada from 2009 to 2017. (Data source: World bank <https://data.worldbank.org/indicator/FR.INR.LNDP>).

In recent years, the Japanese government has used the policy of quantitative easing to stimulate the economy, but the policy has limited effect. One reason for Japan's lack of momentum in economic growth is its inefficient use of capital, which can be seen from an index called "Ease of doing business" (**Figure 7**). Compared with other developed countries, Japan's index is much higher. The higher value means that it is not easy to do business in Japan. As a developing country, China has a slightly higher index than Japan.
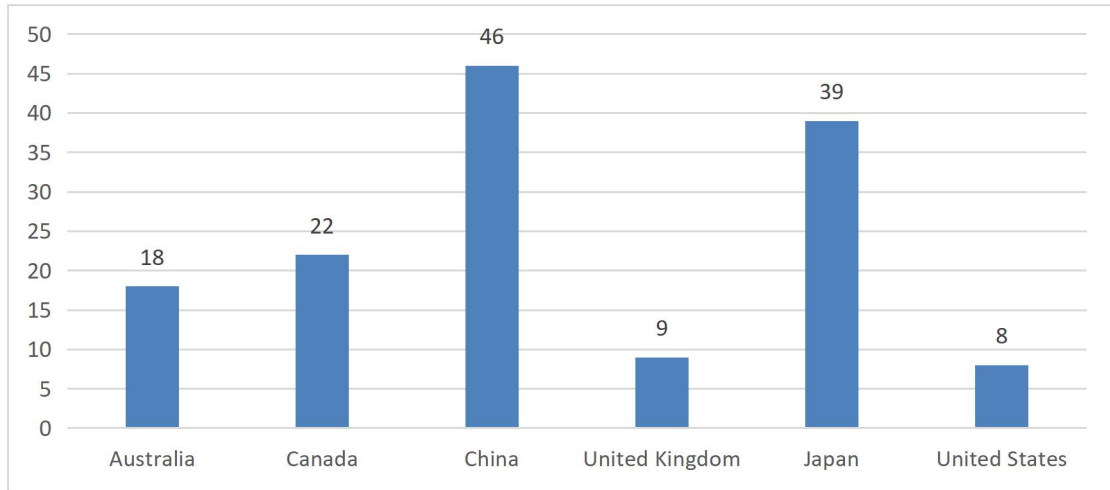
Figure 7. Ease of doing business index in 6 countries in 2018 (1=most business-friendly regulations). (Data Source: World bank <https://data.worldbank.org/indicator/IC.BUS.EASE.XQ>).

Though the efficiency of capital use cannot be directly measured, it can be indirectly estimated by using labor productivity. As shown in **Figure 8, C**hina's labor productivity is far lower than that of Japan and the United States, and there is a gap between Japan and the United States, which means suggests that China and Japan have the potential to improve the efficiency of capital use across the economy. One policy means of achieving this is through effective reform that improves the efficiency of the allocation of real capital.
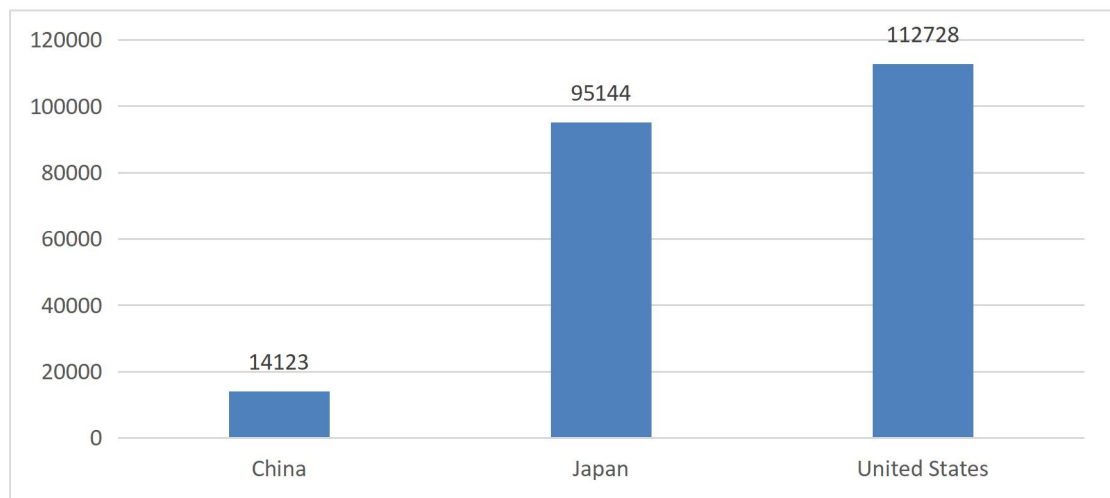
Figure 8. Labour productivity of China Japan and U.S. in 2018 (output per worker (constant 2010 US $)). (Data source: International Labour Organization <https://www.ilo.org/ilostat-files/Documents/description_PRODY_EN.pdf>)

4.2 Simulation scenario

Through the analysis for China and Japan, the potential financial market liberalization reforms for the two countries have been identified .

4.2.1 Required rate of return (modelling investment barrier)

China's high expected return on capital can attract foreign investment. If the investment barriers are reduced, the investment risk of foreign capital will be reduced. According to the formula of the capital asset pricing model (Equation 1), the required rate of return of foreign capital will also decrease[5]. Therefore, the reduction of investment barriers in capital market reform can be reflected in the reduction of required rate of return.

$$ER_i = R_f + \beta_i (ER_m - R_f) \tag{1}$$

where ER_i is expected return of investment, R_f is risk-free rate, β_i is beta of the investment (it is a coefficient measuring risk), ER_m is expected return of market, $(ER_m - R_f)$ is Market risk premium.

In GTAP model, the projected (percentage) change in the rate at which capital is available is determined by shock, rorc(r), which means rate of return on capital. With f_rorc exogenous and shocked (and rorc_r exogenous) by equation:

$$rorc(r) = rorc\_ + f\_rorc(r) \tag{2}$$

The projected change in the rate at which capital is available is determined. By equation RORCURRENT:

$$rorc(r) = GRNETRATIO(r) * [rental(r) - pcgds(r)] \tag{3}$$

where GRNETRATIO(r) is the ratio of gross to net (after depreciation) returns to capital in region r, rental(r) is the percentage change in the capital rental rate of return in region r, which depends on the factor income paid to capital, pcgds(r) is the price of investment goods in region r[10](p55).

In the GTAP model, a change in the rate at which capital is available is equilibrated with the change in the rate at which it is used. Assuming that GRNETRATIO(r) and pcgds(r) are both fixed, a decrease of rorc(r) will result in the decrease of rental(r) through an increase in capital employed and a lowering of the rental price. This relation defines the longer-run focus of this study.

4.2.2 Improvement in productivity of financial service provision and capital used in all industries

Financial market reform could also affect the productivity of financial service provision and the productivity of capital used in production. From the analysis of China and Japan, it can be found that the two countries have the potential to improve the efficiency in financial service provision and industrial capital use through Japan's financial sector is highly efficient. The table below summarizes the GTAP variables that could be considered as part of a modelling scenario and the description of the codes and the intuition of each shock.

Productivity of financial service provision	
Improvement in productivity of value adding input use in financial service provision	Shock *avaall*
Improvement in the productivity of intermediate input use in financial service provision	Shock *afall*
Productivity of capital used in all industries	
Improvement in the productivity of capital in all industries	Shock *afeall*

Table 1. The GTAP model variable of the productivity shock in financial service and capital use

These exogenous technology variables are included in the modelling of product and factor prices, and output (in percentage changes) according to the following relations.

$$pva(j,r) = \sum SVA(j,r) \times [pfe(j,r) - afe(j,r)] \tag{4}$$

$$qfe(i,j,r) + afe(i,j,r) = qva(j,r) - \sigma_{VA}(j) = [pfe(i,j,r) - afe(i,j,r) - pva(j,r)] \tag{5}$$

$$qva(j,r) + ava(j,r) = qo(j,r) - ao(j,r) \tag{6}$$

$$qf(i,j,r) + af(i,j,r) = qo(j,r) - ao(j,r) \tag{7}$$

Equations (4) and (5) describe the nesting of technology trees in which producers invest in production factors. They specifically explain the price changes of composite factors (pva) and the changes of enterprises' demand for factor endowments in each sector(j). Here, the coefficient $sva(i,j,r)$ refers to the proportion of factor endowment commodity (i) in the total input cost in the sector (j) of region (r). In addition to the price variable $pfe(i,j,r)$, the equation also includes the variable $afe(i,j,r)$, which represents the technological innovation rate of factor input expansion. Note that $afe(i,j,r)$ is the rate of change of variable $afe(i,j,r)$, where $afe(i,j,r) \times qfe(i,j,r)$ is equal to

the effective input to the original element i in regional r sector j. Therefore, if $afe(i,j,r) > 0$, the effective price of factor i will decrease. For these reasons, $pfe(i,j,r)$ needs to be deducted from $afe(i,j,r)$ which leads to the following effects:

Through the right half of equation (5), production factor i is used to replace other factors. Through the left half of equation (5), the demand for factor I is reduced (when the effective price is constant).

Equation (4) is used to reduce the cost of composite elements, thus promoting the expansion of enterprises and increasing the demand for all elements for a given level of real factor inputs.

In equation (6) and (7), the variables $ava(j,r)$ and $af(i,j,r)$ refer to the expanding technological innovation on values-added and intermediate inputs, respectively. The variable ao (j, r) refers to Hicks' neutral technological innovation, which uniformly reduces the restriction on factor input under the condition of given output. With the other variables fixed, the increase of $ava(j,r)$ and $af(i,j,r)$ will result the increase of $qo(j,r)$, which is the quantity of products. It means if there is productivity improvement of input use in financial service provision and capital use in all industries, the output will increase[10](p41-45).

5. Methodology and data

5.1 GTAP model

This paper uses the comparative static version global trade analysis project (GTAP) model to simulate the potential changes of GDP, net export and welfare level of China and Japan from effective financial market liberalization policies. GTAP is a multi-regional and multi-sectoral general equilibrium model, which can flexibly analyze the changes of international trade price and quantity brought about by tariff reduction, free trade area, trade and subsidy policy adjustment, as well as the changes of economic and welfare indicators of various countries[10](p13).
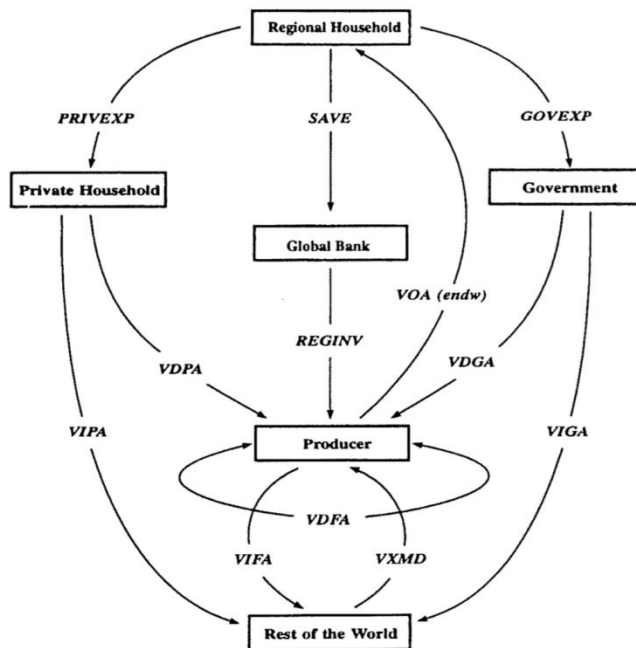
Figure 9. Structure of GTAP model[10](p17).

In **Figure 9**, at the top is the regional household account, whose expenditure is allocated by a total utility function and has three directions: private consumption expenditure, government expenditure and savings. In the standard closed model, the Cobb Douglas utility function of regional accounts ensures a fixed share of each type of expenditure. The only source of residents' income in regional accounts is to sell factor endowment (VOA) to manufacturers. Manufacturers combine these factor endowments with intermediate goods (VDFA) to produce goods to meet the final

demand. The final demand includes private consumption (VDPA), government consumption (VDGA) and investment goods regional accounts (REGINV) sold to meet the savings demand of regional accounts.

Rest of world (ROW) is the import source of regional economy, and also the export destination (VXMD is the export value divided by destination). In the domestic economy, the import is traced back to the specific exporter, which leads to different payments of private consumption (VIPA), government consumption (VIGA) and manufacturer (VIFA) for import.

The world bank acts as an intermediary between global savings and regional investment. It gathers a series of regional investment product portfolio (REGINV), and then sells some products in the portfolio to regional account residents to meet their saving needs.

5.2 Data

The simulations in this paper are based on GTAP database (9th edition), the reference year 2011.

According to the needs of analysis, the original 129 countries (regions) in GTAP database are summarized into six groups, namely Australia, China, Japan, the United States, EU 28 countries and ROW (rest of the world). The original 57 industrial groups in GTAP database are aggregated into 13 industrial sectors. The 5 primary factor inputs are land, natural resources, skilled labour, unskilled labour and capital.

5.3 Derivation of shocks

Two sets of data were used to determine the magnitude of the shock on required rate of return. The first set of data is GTAP data (**Table 2**). By comparing the net return on capital of China and the United States, the difference between the return on capital of China and the United States can be calculated in **Table 2**. The shock on required rate of return should be set to 14.66 to close 1/3 of the return rate wedge between China and the U.S.

	Gross receipts on capital	Depreciation	Net returns to capital	Value of installed capital	Gross rate of return	Net rate of return	Points difference from the US	Close 1/3 of the difference	Percentage
	USD mill.	USD mill.	USD mill.	USD mill.	%	%	pp	pp	% change
China	2642362	1040756	1601606	26018896	10.16	6.16	2.71	0.90	14.66
USA	3579879	1922722	1657157	48068048	7.45	3.45	0.00	0.00	0.00

Table 2. The determination of the RRR shock by GTAP data. (Source: Author estimates from GTAP9a model and data base).

Another set of data is the real interest rate (**Table 3**). The point difference of real intertest rate between the two countries is 1.366. If we want to close 1/3 of the return rate wedge between China and the U.S, the shock required rate of return should be set to 14.632.

	Real interest rate	Points difference from the US	Close one third of the difference	Percentage
	%	pp	pp	% change
China	3.112	1.366	0.455	14.632
USA	1.746	0.000	0.000	0.000

Table 3. The determination of the RRR shock by real interest rate. (Source: Author estimates real interest rate data from World Bank).

It can be seen that the calculated result is very close by the two data set. In summary, the required rate of return shock is determined to be 15, narrowing 1/3 of the investment barrier wedge.

For the other two productivity improvement scenarios, the shock is set to be uniform one, which is the standard unit in GTAP system.

6. Simulation result

Simulation		Change of GDP	
		CHN	JPN
China	90 basis point reduction in the RRR on capital	6.18	-0.02
	uniform 1 improvement in productivity of financial service provision	0.08	-0.00
	uniform 1 improvement in productivity of capital used in all industries	0.71	-0.01
Japan	uniform 1 improvement in productivity of financial service provision	-0.00	0.11
	uniform 1 improvement in productivity of capital used in all industries	-0.00	0.79

Table 4: The simulation result of GDP. (Source: Author estimates from GTAP9a model and data base)

After lowering investment barriers, which is presented by the reduction in required rate of return in GTAP model, more capital will flow into China and investment will increase. China's GDP is projected to increase substantially due to the increase of investment. According to the simulation, a reduction in the gap between China and the United States required returns on capital of one third (equivalent to 15 basis points), is projected to raise China's GDP by 6.18%.

The improvement of financial industry productivity is a manifestation of financial development. The expansion of financial transaction scale and the process of financial industry upgrading can bring about the continuous improvement of financial efficiency. It is reflected in the elimination of financial repression and the improvement of financial structure, that is, the innovation of financial instruments and the diversification of financial institutions to adapt to economic development[7].

The efficiency of using funds in the industrial sector reflects the total factor productivity, which is a productivity index to measure the total output per unit of total investment. It is often regarded as an indicator of scientific and technological progress, and its sources include technological progress, organizational innovation, specialization and production innovation.

Improving the productivity of financial service delivery and the productivity of capital across all industrial sectors will have a positive impact on the economy of China and Japan. For China, increasing uniform 1 productivity of the financial sector can lead to an increase of GDP by 0.08, while increasing the productivity of the industrial sector of uniform 1 can lead to an increase of GDP by 0.71. For Japan, the two types of productivity increases can potentially bring 0.11 and 0.79 GDP growth, respectively. Under the same level of shock, the potential effect of improving the efficiency of capital use in all industrial sectors is the more significant.

According to the previous analysis, China's financial sector efficiency is slightly lower than that of developed countries, but the gap is not large. The efficiency of Japan's financial sector is even much higher than that of other developed countries. However, the time series analysis above indicates China and Japan's industrial sectors are less efficient in using capital than other developed countries. The results suggest that if this gap is reduced, China and Japan could achieve substantial economic gains and have potential in improving efficiency of capital used.

Simulation		Change of Net Export	
		CHN	JPN
China	90 basis point reduction in the RRR on capital	166861.9	-17885.6

Table 5. The simulation result of Net Export. (Source: Author estimates from GTAP9a model and data base).

Reducing investment barriers means reducing investment risk, which can attract foreign capital inflow. MacDougall argues that the inflow of foreign capital will increase the availability of capital, decrease the marginal products of capital and devalue the domestic currency, which is conducive to export[8]. As shown from the simulation results, China's net export is expected to increase by 16.69 million US dollars (2011 benchmark values). Some products exported by China and Japan are fungible, so the reduction of China's investment barriers will reduce Japan's net exports by 1.79 million US dollars.

Simulation		Change of Real Income	
		CHN	JPN
China	90 basis point reduction in the RRR on capital	3.85	-0.04
	uniform 1 improvement in productivity of financial service provision	0.1	-0.00
	uniform 1 improvement in productivity of capital used in all industries	0.67	-0.01
Japan	uniform 1 improvement in productivity of financial service provision	0	0.12
	uniform 1 improvement in productivity of capital used in all industries	-0.00	0.83

Table 6. The simulation result of Real Income. (Source: Author estimates from GTAP9a model and data base)

According to the Solow-Swan model, total output is used to pay the capital rent and labor wage. With the increase of total output, the income of workers will rise. It can be seen from the simulation results that after reducing the basis point in investment barriers, the real income of Chinese residents is expected to increase by 3.85%. Improving the efficiency of financial industry and capital use will also increase the real income of residents and the growth rate in real income is close to the growth rate of GDP.

7. Conclusion

7.1 Main conclusion

Financial market liberalization is expected to bring substantial economic benefits to China and Japan. The reduction of investment barriers will increase the inflow of foreign capital in China, contribute to China's commodity exports, and thus promote the growth of GDP. China's GDP is expected to increase by 6.18% and real income is expected to increase by 3.85% if China reduces the investment barrier that is 1/3 of the gap between China and the United States.

Financial reform plays an important role in promoting economic development. The improvement of production efficiency in the financial sector can help to improve the efficiency of capital allocation, thus promoting the increase of output. For every 1% increase in financial industry productivity, China's GDP is expected to increase by 0.08%, and the national real income is expected to increase by 0.1%. Japan's GDP is expected to increase by 0.11% and its real income is expected to increase by 0.12%.

The capital used for investment will flow into the industrial sector. The improvement of industrial sector's use of capital productivity can contribute to the increase of output. For every 1% increase in industrial sector productivity, China's GDP is expected to increase by 0.71% and the national real income is expected to increase by 0.67%. Japan's GDP is expected to increase by 0.79% and the national real income is expected to increase by 0.83%.

7.2 Limitations of study and further scope

In this paper, the derivation of stock is not rigorous enough. The best way is to use econometric method to model and predict through three groups of data. In addition, the description of the simulation results is not detailed enough.

In the later research, dynamic GTAP model can be introduced to explain the impact process of shock on the research object. Moreover, the analysis of three simulation scenarios and results can be specific to the policy level.

References

1. Chang L. Analysis of inflation and monetary policy in China from 2010 to 2011 (in Chinese). Southwest University of Finance and Economics; 2012.
2. Goldsmith RW. Financial structure and development. New Haven and London. Yale University Press; 1969. doi: 10.2307/3654543.
3. Gretton P. Modelling the potential impacts of economic reform in a partnership between Australia and China. Eaber Working Paper Series; 2016.
4. Kagan J. Investopedia 2018. Available from: https://www.investopedia.com/terms/f/frictioncost.asp.
5. Kenton W. Investopedia 2019. Available from: https://www.investopedia.com/terms/c/capm.asp.
6. Krugman PR, Obstfeld M, Melitz MJ. International economics theory & policy. 9th ed. 2010.
7. Li W. Financial dictionary. Heilongjiang People's Publishing House; 2002.
8. MacDougall GDA. The benefits and costs of private investment from abroad: A theoretical approach. The Economic Record 1960; 36(73): 13-35. doi: 10.1111/j.1475-4932.1960.tb00491.x.
9. McKibbin WJ. Financial reforms and consequence of changing risk perceptions in APEC economies. Brookings Discussion Papers in International Economics 1999; (148).
10. Thomas H, Powell A, Frisvold G. Global trade analysis: Modeling and applications. Cambridge University Press; 1997.
11. McKinnon RI. Money and capital in economic development. Washington, D.C.: The Brookings Institution; 1973. doi: 10.2307/1960040.
12. Shaw ES, Cole DC. Financial deepening in economic development. New York: Oxford University Press; 1973. doi: 10.2307/2978421.
13. Stiglitz JE. Capital market liberalization, economic growth, and instability. World Development 2000; 28(6): 1075-1086. doi: https://doi.org/10.1016/S0305-750X(00)00006-1.
14. Wang W. The research on Harold-Doma economic growth (in Chinese). 2011.

The Impact of Financial Information on Noise Traders: Based on the Perspective of Behavioral Finance

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Abstract: In China's incomplete stock market which mainly consists of retail games and short-term operations, both of the high stock turnover rate and P/E ratios reflect excessive noise trading. This article focuses on the characteristic that individual investors are susceptible to financial media information, combined with the development and characteristics of financial media. From the perspective of behavioral finance, this paper analyzes the impact of financial media on noise trading. Using behavioral finance and psychology-related knowledge, investor behavior can be better understood, so as the motivation behind noise trading. Finally, in order to promote the healthy development of the stock market, this paper makes recommendations to improve the efficiency of the capital market.

Keywords: Noise Trading; Behavioral Finance; Financial Media; Investor Behavior

1. Research and development of behavioral finance

The development of behavioral finance is based on the theoretical research of classical finance,especially starting from the anomalies in the financial market. The theoretical framework of classic finance and the anomalies that appeared in the financial market are sorted out as follows.

1.1 Classic finance and the anomalies in the financial market

Markowitz's "Portfolio Selection" theory marked the birth of modern finance and also started many new fields in finance, which followed the Capital Asset Pricing Theory (CAPM) and efficient market theory, *etc*. Both theories are inseparable from the two most important premises of classical finance, the rational man hypothesis and the equilibrium hypothesis. Generally, there are three assumptions in the effective market: 1. Investors are completely rational; 2. There are irrational behaviors, but the impact can be offset each other; 3. Overall, irrational behaviors cannot be offset. But the market can use rational investors to balance prices. These assumptions have always occupied the mainstream of financial research and have been verified by many empirical tests. However, with the development of market, phenomena cannot gradually be explained by classic finance, especially when the investor is collectively affected by psychology, such as Shefrin and Statman (1985) investors' tendency to retain losses and Shiller's (1981) discovery of stock price volatility anomalies, *etc*. These practical problems raise questions about traditional assumptions, especially rational investors.

1.2 The emergence and development of behavioral finance

Different from the rational assumptions in traditional finance, behavioral finance focuses on the behaviors under actual psychological influence. The first is to prove the investor behavior system will collectively deviate from the perfect Bayes rule. Representative views are the psychological account proposed by Tversky and Kahneman, which also formed the prospect theory system. In the later stage of behavioral finance, the relationship between the market and investors is deepened and behavioral finance was used as a tool to study market laws. For example, Debondt and Thaler (1985) tested the overreaction hypothesis from a 50-year market analysis. With the progress of psychology and sociology, the research methods are more abundant, combining with a lot of psychological knowledge, based on the limited arbitrage theory.

1.3 Research on the connection between behavioral finance and noise trading

In reality, collecting information is complicated and costs a lot and investors themselves have different capabilities to process information. Therefore, the information can't be fully complete and thus the behavior of the trader is not really rational. Based on this premise, there is the deviation which calls noise and thus noise traders are the ones who can't identify the authenticity and relevance of information. The exploration of the connection between behavioral finance and noise trading is based on the framework of noise trading theory, which breaks through the assumptions of traditional finance. Delong also proved that noise traders can survive in the market and exist in a large number of market transactions. Collecting securities information is complex and beyond capacity for individual investors in Chinese security market. Through trial and error in short-term transactions, individual investors' operation leads to the high turnover rate in the Chinese stock market. Especially, there is often a "free ride" behavior of financial media information, and thus the investors' sentiment and behavior will be affected by the media. If investors conduct noise trading and pass wrong price information to the market, they eventually weaken the market's functions such as price discovery, resource allocation and risk diversification. However, in the past research of financial news, the media is just regarded as a tool to obtain information. It is often neglected that the role in guiding investor sentiment and behavior and the impact of false news and errors which may lead to noise traders in the market. But no deep exploration has been done. The innovation of this article is to use behavioral finance to contact the media industry and the securities market, discuss the noise traders' motivation and finally suggest the ways to improve China's imperfect securities market and reduce the noise in the securities market.

2. Current situation and problems of financial media in China's securities market

2.1 Current situation

With the development and improvement of the securities market, as of February 2020, data from China Securities Depository and Clearing Corporation Limited (CSDC) shows that the number of Chinese investors has reached 1,614,484. The huge scale and flow of the Chinese securities market require the professional and effective financial media. For a long time, most of the comprehensive financial information products have been supplied by Reuters and Bloomberg, two overseas media. However, after the "National Reserve Copper Incident", as Reuters leaked the state's material reserves to disrupt the market order, Chinese financial media realized the importance of calling the tune on financial information. Take the China's influential media platform China Business Network (CBN) as an example. CBN is the first financial media company to include daily newspapers, TV channels, radio and websites for comprehensive coverage of financial information. The figure below shows CBN's industrial chain.
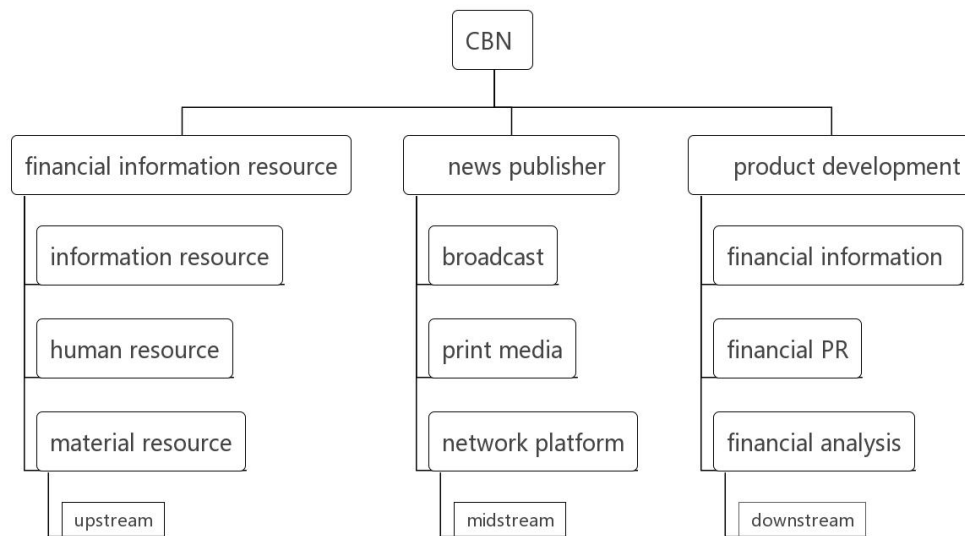
Figure 1. Industrial chain of CBN.

CBN not only integrates a wide range of financial information resources at home and abroad, but also uses professional analysis technology and comprehensive communication channels to provide users with rich financial products and services. Meanwhile, CBN gains a wide spectrum of audience. In addition to CBN, mainstream Internet financial media such as 36 krypton has gained more than 10 million users.

2.2 Problems

However, the role of financial media is not limited to a simple information channel. The media industry itself has the following characteristics. Because of the sophistication of this industry, it may bring hidden dangers to the securities market.
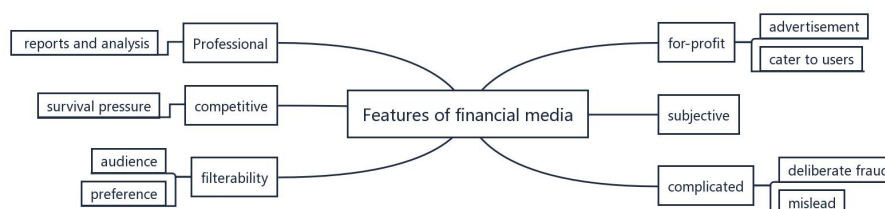
Figure 2.

Due to the heterogeneity of the media industry, financial media cannot just serve as a completely objective information tool. In addition to professional information, it needs to design attracting content to stimulate readers' attention. Faced with the survival pressure and the interests of their readers, financial reports may not only contain false information related to their advertisement interests, but also false package of the listed company for profit, which will mislead investors. Solomon believes that the media tends to publish more positive news reports to cater to investor psychology. Moreover, media communication naturally has its own filtering mechanism. Different media have different available conditions, participants, and content preferences and the audience will subjectively process the information. Finally, the market will take false feedback. As for the reason of this transmission mechanism appears in individual investors, this article uses a behavioral finance perspective to analyze the investor's behavioral characteristics, which can help understand the reasons why media information affects investors' noise trading.

3. Explanation of the reasons why financial media influences noise traders from the perspective of behavioral finance

In the stock market, the daily price are rich news materials for the financial media. When it comes to money and information, investors are enthusiastic. Here, combining the characteristics of financial media and investors, this paper analyzes the motivation behind noise trading using behavioral finance theory.

3.1 Internet financial information and investors' overconfidence

Internet financial media often misleads noise traders who tend to overestimate their knowledge, ability and accuracy of information, which is called overconfidence. Besides, financial information on the Internet has exacerbated the illusion of controlling. Barber and Odean have found that because of the Internet's financial information, noise traders has led to speculative bubbles in the market. "National Stock Market Investor Status Report" also shows that China has the largest proportion of investors in the average holding time from January to June, indicating that China's over-trading phenomenon is serious, and Chinese investors are still blindly relying on excessive trading trial and error in the short term. Not only can the value discovery function be undermined, but also will the efficiency of the market be greatly reduced with the market full of noise.

3.2 Rich financial information and limited attention of investors

The abundance of information leads to scarcity of attention. Investors can only use the limited information they have to make investment judgments. In particular, the market manipulators tend to use the attention effect to disturb market order by cooperating with financial media to create false information. Individual investors who are restricted in their time and energy are more inclined to analyze the financial news that attracts their attention. With the misleading of financial media, some market participants mistakenly regard noise as useful information. This attention-driven investment transaction creates noise for the market.

In particular, it should be noted that the financial media also affects their way of thinking. Different expressions of scenarios or problems by financial media will invert people's preferences to make faulty choices. For example, faced with the same issue: when it is described as a benefit, people ignore risks; when it is described as a loss, people tend to exaggerate risks. This subjective investment deviates from the company's fundamental value. So the fluctuation of emotions violates the assumption of rational people and triggers noise in the market.

3.3 Characteristics of financial products and investor mentality

Financial products are more likely to be sticky with customers, allowing individual investors to rely on them and then produce a herd effect on recommended products. Especially in the current Internet era, according to CNNIC, the number of Internet news users reached 579 million, most of which are mobile phone users. Internet users are using mobile terminals to browse information for longer and longer time. The reliance on mobile terminals is more and more obvious, especially when most of the financial media have moved to online reporting. For example, Wall Street News has become the most reliant app other than WeChat with its timeline-based 24/7 real-time newsletter. Investors needs to open the app multiple times to follow the market situation. Wu Jing once used Wall Street news as an example to study the influence of financial media. The data proves that the retention rate of users of "sight" is as high as 60 to 70 percent. Investors' dependence on financial media information is not the correct basis for trading, which is often the inducement of noise trading.

In the financial market where the majority of individual investors have information costs, due to the incomplete information asymmetry in the market, humans as social animals want to follow other investors to minimize fear and to reduce the cost of collecting information as much as possible. This is where the media is the most attractive to investors. The more you lack information, the more you depend on others. The innovation of information technology has greatly increased the spread and speed of financial news. Investors who lack knowledge, experience, and other personal characteristics: knowledge, intelligence, and the ability to receive information are in need of information integration and

analysis. Over-reliance on information will cause a group of investors to buy and sell at the same time and enter an industry sector. Decision-making depends on the herd's sense rather than company fundamentals. The herd effect described in behavioral finance relies too much on public opinion and imitates the decisions of others, instead of private information and analysis. Therefore, the guiding role of information is particularly important for individual investors. Although the purpose of buying stocks is to sell them at a high level, the common information in the market will provide a gathering channel for individual investors who are difficult to produce synergy. But following information in a noisy market is more likely to add noise.

4. Conclusions and suggestions

The previous analysis proves that the financial media has a significant influence on the behavior of noise traders, but the research on the influence of the financial media on the securities market needs to be further deepened, which is of great significance for cultivating investors' rational ability and improving the securities market. The following recommendations are now made from the perspective of individual investors, securities market management authorities, listed companies, and financial media:

4.1 Cultivate rational ability

After analysis, it is clear that rationality is not a kind of understanding, but a kind of ability. Investors should grasp the characteristic of emotions and attention and rationally treat financial media. This needs them to remind themselves not to fall into the trap, not to blindly follow the trend and to filter the information obtained, especially for retail investors. With information advantages, the banker can artificially create lagging or even false information to take advantage of the retail investors, which leads to noise in the market. Therefore, retail investors should pay more attention to improving the rational ability and skip the misleading.

4.2 Strengthen the supervision of public opinion-oriented financial media

When strengthening the supervision of the securities market, the supervisory authority should also pay attention to the manipulation of public opinion information leading by the financial media to prevent too much false information in the market and affect the function of the securities market. Realizing the significant influence of financial media in the securities market, attention should not only be paid to the control of the surface of quantity, word, *etc*., but also to the meaning of information and the motivation behind it, especially to correct and constrain the position and role of financial media in the current securities market. Therefore, in order to standardize and guide media reports, government regulators should take "fairness, openness, and impartiality" as the important rule, restrict the malicious hype of the media from the regulatory level, and cultivate media self-discipline from the institutional level. The connotation encourages objective and authentic financial media to reduce the asymmetric distribution of information in the market and balance the power gap between retail investors and institutions, thereby minimizing noise transactions caused by human factors. As a part of the overall social system, financial media should submit to the supervision of the financial market. Regulators should also improve the supervision mechanism of the entire social system and create a legal environment that is conducive to the realization of the supervision function. This is the prerequisite for the better maintenance of market order.

4.3. Improve the information disclosure system of listed companies

The financial media provides investors with more information about listed companies than traditional reports such as the annual reports of listed companies. So investors can understand the company's operations and situation in time. It is an important approach for investors to understand listed companies. However, in essence, the information asymmetry between listed companies and investors still exists, and the market's system for disclosing, transmitting, and disclosing information is not yet perfect. Especially at the level of listed companies, the timeliness and accuracy of the information disclosed to investors need to be further improved. Only by truly regulating the financial information

disclosure mechanism and increasing the punishment for false information can multi-dimensional information exchange and interaction among individual investors, institutional investors, markets, and regulators be formed in a true sense.

4.4 Cultivate the sense of responsibility of financial media

Although financial media will inevitably have a profitable nature due to market competition, in the face of interests. But laws, regulations and responsibilities should be the first. Especially, the media should play a good role in information transmission in the securities market and shoulder their due responsibilities. Therefore, financial media must adhere to the principle of objectivity, avoid subjective opinions and reasons that affect objective information transmission, and maintain a neutral and rational attitude. The authorities can also encourage this important consciousness of the financial media through the reward and punishment system. To make the financial media accountable to investors and the market, they should observe the maintenance of the securities market order by themselves.

References

1. Shefrin H, Statman M. The disposition to sell winners too early and ride losers too long: theory and evidence. The Journal of Finance 1985. doi: 10.1111/j.1540-6261.1985.tb05002.x.
2. Shiller RJ. Do stock prices move too much to be justified by subsequent changes in dividends? Reply. The American Economic Review 1983; 73(1).
3. Kahneman D, Tversky A. Prospective Theory: An analysis of decision under risk. Routledge 2014; 8: 29-30. doi: 10.1111/1468-0262.00439.
4. Thaler R, DeBondt WF. Does the stock market over-react. The Journal of Finance 1985; 40(3): 793-805. doi: 10.1111/j.1540-6261.1985.tb05004.x.
5. Solomon DH. Selective publicity and stock prices. Journal of Finance 2012. doi: 10.1111/j.1540-6261.2012.01726.x.
6. Barber BM, Odean T. Trading is hazardous to your wealth: the common stock investment performance of individual investors. The Journal of Finance 2000; 55(2). doi: 10.1111/0022-1082.00226.
7. Wang X, Shang W, Wang S. Analysis of the impact of Internet news media reports on China 's stock market (in Chinese). Systems Engineering Theory and Practice 2019; 39(12): 3038-3047.
8. Wu J, Liu H. Exploring the business model of new media in finance and economics based on the power of communication: Taking "Wall Street News" as an example (in Chinese). Contemporary Communication 2018; (4): 67-70. doi: CNKI:SUN:DACB.0.2018-04-027.

The Influence of Interest Rate Liberalization on Commercial Banks and Its Countermeasures

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Abstract: The liberalization of interest rate is an important part of the financial reform in China under the current economic situation, and it is the inevitable result of the economic development of China to a certain extent. With the deepening of interest rate liberalization reform in China, commercial banks have been affected to a certain extent; the deposit and loan spread, which accounts for the main income of commercial banks, has been narrowed, and the profit space of commercial banks has been further reduced. Therefore, this paper discusses the impact of interest rate liberalization on commercial banks and the choices that commercial banks should make under this situation.

Keywords: Interest Rate Liberalization; Commercial Banks; Influence; Strategy

1. Introduction

The liberalization of interest rate means that the monetary authorities hand over the decision power of interest rate to the market, and the main body of the market determines the interest rate independently, while the monetary authority indirectly affects and determines the level of market interest rate by using monetary policy tools in order to achieve the goal of monetary policy[1]. Interest rates are the prices of funds and play a vital role in the economy and society. According to the theory of interest rate put forward by famous scholars McKinnon and Shaw, for developing countries, in order to promote economic development, a free and loose financial environment should be created. Under the influence of their thoughts, China has also embarked on the journey of interest rate liberalization. At the third plenary session of the 14th Central Committee of the CPC in 1993, China put forward the idea of interest rate liberalization for the first time, and began to carry out the reform of interest rate liberalization in 1996. First, the People's Bank of China liberalized the inter-bank lending market interest rate, and then liberalized the inter-bank bond repurchase, market policy-oriented financial bonds and bond issuance interest rates one after another. In 2013, the loan interest rate was fully liberalized, and in 2015 the People's Bank of China decided to eliminate the upper limit of floating deposit rate of commercial banks, marking the preliminary end of the reform of interest rate liberalization in China. While interest rate liberalization has improved the development of China's economy and better allocated resources, it also contains a lot of risks.

2. The influence

2.1 The positive influence of interest rate liberalization on China's commercial banks

2.1.1 Beneficial for commercial banks to absorb more idle funds

After the liberalization of interest rate, commercial banks can regulate and control the interest rate of deposit and loan independently, so as the major banks. In order to compete for customer resources, deposit interest rates will be properly raised in the short term. When deposit interest rates rise, more major customers and retail investors will deposit their idle funds in the bank, then the banks will absorb a large number of idle funds, and the absorption of these idle funds can enable them to better carry out all kinds of business, such as providing loans to companies in need of funds.

2.1.2 Beneficial for commercial banks to innovate financial products

Before the liberalization of interest rate, the commercial banks of China mainly obtain the income through the deposit and loan interest rate spread. After that, this way can no longer bring more benefits to the commercial banks, and the competition among the major banks is also intensified. In order to compete for more customers and improve the profit growth point, they are bound to develop more new business and improve their own service level in addition to the traditional lending business, for example, to provide financial advice to customers and to help listed companies sell securities.

2.1.3 Beneficial for commercial banks to optimize their own structure and customer structure

Under the background of liberalization reform of interest rate, the government abandons the direct control of interest rate, allowing the commercial banks to have the autonomy of interest rate pricing. At this time, commercial banks can fully consider their own income by calculating management costs, capital costs and operating costs, and then self-regulate interest rates according to the actual supply and demand of the market. This is beneficial for commercial banks to optimize their own structure. Secondly, through the comprehensive consideration of customers' credit situation and default, commercial banks properly increase the financing costs of those customers who may harm the interests of banks in the future, and appropriately reduce the financing costs of those customers who have good reputation and have prospects for development. This avoids the risks posed to banks by customers with poor reputation, but promotes long-term partnerships with high-quality customers

2.2 The negative influence of interest rate liberalization on China's commercial banks

2.2.1 Impact on the credit risk of commercial banks

Due to the full liberalization of loan interest rate in 2013, the major banks began to expand their loan business in the short term in order to pursue high profits. Because of the continuous expansion of loan business, it is difficult for banks to fully grasp all the real information and credit status of borrowers, which will lead to a decline in the quality of loans. The credit risk faced by banks also increases (credit risk refers to the possibility that the debtor is unable or unwilling to perform the debt and cause losses to creditors[2]). Non-performing loan ratio is the core index to measure the credit risk of loans. **Table 1** collects and collates the non-performing loan ratios of banking financial institutions from 2012 to 2018. From the table, it can be seen that the non-performing loan ratio of the banking industry began to rise from 2013 to 2014, while the non-performing loan ratio rose sharply from 2014 to 2015, indicating that banks made a lot of non-performing loans during this period. In the following years, although the rate of non-performing loans has not increased significantly, or even declined, the proportion is still high, indicating that the disposal and management of non-performing loans require further development.

	2012	2013	2014	2015	2016	2017	2018
Non-performing loan ratio	1.6%	1.5%	1.6%	1.9%	1.91%	1.85%	1.83%

Table 1. Non-performing loans of banking financial institutions as a percentage of total loans from 2012 to 2018. (Data Source: Annual Report of China Banking and Insurance Regulatory Commission).

2.2.2 Impact on the traditional profit model of commercial banks

The traditional profit of commercial banks is mainly obtained through the difference of interest rate between deposits and loans, while the People's Bank of China liberalized the upper limit floating area of commercial bank loans and deposit interest rates in 2013 and 2015, respectively, which greatly affected the way that commercial banks get returns through deposit and loan spreads. **Table 2** collates the net interest income of some commercial banks in 2015 and 2016. As can be seen from **Table 2**, the net interest income of the major banks in China has decreased to varying degrees from 2015 to 2016, especially the decrease of the net interest income of the state-owned banks. This shows that because of the liberalization of interest rate, in order to compete for more customers, banks will moderately raise the interest rate of deposits and reduce the interest rate of loans, which will make commercial banks get less and less benefits from deposit and loan spreads and certainly affect their profits. If commercial banks do not change this profit model, the liberalization of interest rate will have a serious impact on their development.

Net interest	2015	2016	Year-on-year decline
Bank of China	3286.50	3060.48	6.88%
Agricultural Bank	4361.40	3981.04	8.72%
ICBC	5078.67	4718.46	7.09%
Construction Bank	4577.52	4177.99	8.73%
Bank of Communications	1441.72	1348.71	6.45%
China Merchants Bank	1375.86	1345.95	2.17%
China Everbright Bank	664.59	652.88	1.76%

Table 2. Net interest income of commercial banks in 2015 and 2016 year. (Data Source: Data consolidation of annual bank statements)

2.2.3 Impact on the traditional business model of commercial banks

The interest income of banks can be broadly divided into four categories: the first is the payment of funds to individuals or enterprises and temporary advances on behalf of clients; the second is the income of investing funds in securities; the third is the income of depositing some of the funds in the income of monetary authorities; and the fourth is the remuneration of lending funds to other banks to help them out of trouble. The liberalization of interest rate reduces the difference between deposit and loan interest rate, and the benefits obtained by banks through this way are gradually decreasing. In addition, due to the liberalization of interest rates, the prices of stocks, bonds, futures and so on will fluctuate up and down, and it will be more difficult for banks to invest. Relatively little is paid for the deposit of funds in the income of the monetary authorities and the lending of funds to other banks. The liberalization of interest rate has an impact on the traditional business model of commercial banks. In order to cope with this impact, commercial banks can develop intermediate business and increase non-interest income. **Table 3** collates the proportion of non-interest net income of some banks from 2015 to 2018. From the table, it can be seen that the proportion of non-interest net income is relatively low, while the proportion is roughly increasing year by year, indicating that the major banks are developing intermediate business.

	2015	2016	2017	2018
Bank of China	30.71%	36.72%	42.82%	28.64%
Agricultural Bank	18.66%	21.33%	17.71%	20.19%
Construction Bank	24.36%	30.95%	27.22%	26.20%
ICBC	27.20%	30.19%	28.14%	26.01%
Bank of Communications	25.62%	30.19%	36.29%	38.44%
China Merchants Bank	31.71%	35.82%	34.43%	35.47%

Table 3. Net non-interest income as a percentage of operating income from 2015 to 2018. (Data Source: Data consolidation of annual bank statements)

3. Countermeasures

3.1 Enhance the control of credit risk

In order to reduce the losses caused by credit risk, banks should strengthen the credit risk supervise and control, detect and deal with problems in a timely manner, and strive to prevent the deterioration of the situation before the loss occurs or take measures to reduce the loss caused by credit risk in advance. They can strengthen the control of credit risk through the following measures: perfecting the separation system of loan examination and loan, improving the level of loan decision-making; popularizing mortgage loan and pledge loan, improving the effectiveness and security of mortgage loan and pledge loan; strengthening the inspection work after loan and actively clearing up the non-performing loan[2].

3.2 Vigorously develop intermediate business

The intermediary business of commercial banks mainly include payment and settlement, bank card, agency, guarantee, commitment, transaction, fund trusteeship and consulting. Among these types of intermediate business, the income of payment and settlement business is greatly reduced, and the bank card business is developing rapidly in the commercial banks of China. However, the traditional intermediary business will no longer bring more benefits to commercial banks, so they should actively explore and innovate in order to stabilize the foundation of traditional intermediate business. Learn from the successful experience of foreign commercial banks, the development of more new types of intermediate business, such as the development of investment banks, asset management and financial products, to enhance their competitive advantage under the continuous development of business varieties. At the same time, pay attention to personnel training, establish a perfect training system, in order to ensure the professional advantages of their own business. Finally, under the liberalization of interest rate, the traditional profit model of commercial banks based on net interest income is changed to the profit model of non-interest income. This is not only conducive to commercial banks to obtain more profits, but also conducive to the innovation of financial products.

3.3 Strengthen cooperation with the Internet industry

Now the Internet industry is greatly developed, with more and more people using online services. Banks should cooperate with Internet enterprises on a large area to cover a wide range of online and offline services through the Internet. In addition, banks can find more customers through the integration of the Internet and develop targeted services according to their needs, which will make them feel convenient and satisfied. Then they may will establish long-term business dealings with the bank.

3.4 Improve their own service level

With the continuous improvement of people's living standards, customers have higher and higher requirements for efficient and considerate service. In the face of this situation, commercial banks should first establish a customer-oriented service. When customers come to the bank to do business, bank personnel should provide smile

service, carefully ask them what kind of business they want to do, then guide and help them to complete it. If they are interested in learning more about products, bank personnel should patiently advise them. Only if customers feel the enthusiasm of the bank will they be more willing to do business at the bank.

References

1. Yang Q. The influence of interest rate liberalization on China's commercial banks and its countermeasures (in Chinese). Finance Economy 2019; 500(2): 48-50. doi: CNKI:SUN:JRJJ.0.2019-02-020.
2. Song Q. Bank management (second edition). China Finance Publishing House; 2017.
3. Ji X. The impact of interest rate liberalization on China's commercial banks and its countermeasures (in Chinese). Finance Economy 2019; (16).
4. Lu J. The influence of interest rate liberalization on China's commercial banks and its countermeasures (in Chinese). Modern Finance 2019; (8): 27-29.
5. Chen G. Study on the profit model of China's state-owned commercial banks (in Chinese). Shanghai: Tongji University; 2006. doi: CNKI:CDMD:2.2006.047982.
6. Hao G. An empirical analysis of the profitability of commercial banks in the process of interest rate liberalization in China (in Chinese). Research on Financial and Economic Issues.
7. Li L, Zhang W, Hu H. The profit model transformation of China's modern commercial banks (in Chinese). South China Finance 2007; (6): 42-43. doi: CNKI:SUN:GDJR.0.2007-06-015.
8. Huang J. Interest rate liberalization and risk control of commercial banks (in Chinese). Economic Research Journal 2001; (1): 19-28+94. doi: CNKI:SUN:JJYJ.0.2001-01-002.
9. Gao X. The analysis about the strategy of China's commercial banks to interest rate liberalization policy (in Chinese). University of International Business and Economics; 2006.
10. Liao X. Analysis of interest rate liberalization and China's commercial bank management (in Chinese). Market Modernization Magazine 2017; (10): 162-163.

A Study on the Effect of Fiscal Expenditure on Public Health and Residents' Satisfaction: A Case Study of Bengbu, China

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Abstract: In order to understand the effect of financial expenditure on the grass-roots public health services, the authors conducted a questionnaire survey on residents of Bengbu, Auhui Province. In addition, the weighted TOPSIS method is adopted to analyze the effect of financial investment in the grass-roots public health services from the perspective of residents, thus finding the problems in the grass-roots public health services. Finally, this paper puts forward some suggestions, such as increasing the financial investment in the grass-roots public health services, and improving the supervision and management mechanism of financial investment.

Keywords: Public Health Expenditure; Basic Public Health Services; Financial Investment; TOPSIS Method

1. Introduction

In recent years, China's financial expenditure on health care has increased year by year. Among them, the scale of financial investment in grass-roots public health services increased significantly. But what is the effect of public health expenditure on the improvement of grass-roots public health services? In order to understand the role of financial expenditure in improving public health services at the grassroots level, the authors conducted a questionnaire survey on residents of Bengbu, Anhui Province to explore the status of public health services at the grass-roots level and residents' satisfaction.

2. Research ideas

At present, many scholars have studied the role of fiscal expenditure in the field of grass-roots public health services. Lin Xiuyan and Wang Hong (2019) found that public health investment can promote the improvement of rural medical security level and help to narrow the gap between urban and rural areas in China. Zheng Xiyang (2019) found that health expenditure can not only significantly improve the health level of residents, but also reduce the health expenditure. Aoqin and Jaligo (2018) believe that urban residents have a higher awareness of health care and basic public health services than rural residents. Zhang Aijun and Xu Lingzhong (2018) found that the community public health prevention and control lacked a perfect organizational system, and the residents lacked a correct understanding of the grass-roots public health prevention and control as well.

To sum up, most of the current research is based on the scale of public health expenditure. From the perspective of residents, this paper analyzes the effectiveness of financial investment in public health services at the grass-roots level. Through the empirical analysis of the current situation of public health services and residents' satisfaction, the effect of

financial expenditure on the improvement of public health services is obtained.

3. Residents' cognition of grass-roots public health services

3.1 Lack of residents' cognition

The results show that the residents do not know enough about the basic public health services. Of all the respondents, 38.2% said that their understanding of the grass-roots public health services was "average"; 27.34% of them didn't know much; 22.85% of them knew detail information; the rest of the respondents didn't know anything.

3.2 Diversified cognitive channels of residents

By investigating the ways of residents to understand the knowledge of grass-roots public health, it has been found that most of the respondents learned the information of grassroots public health through TV news and micro blog. In addition, 49.81% of the respondents obtained information through the publicity of the residents. 46.44% of them acquired knowledge through their relatives and friends, while another 26.97% learned about public health in other ways. Generally speaking, residents mainly understand the basic public health knowledge through newspapers, television and the Internet.

3.3 The popularity of basic public health services needs to be improved

Of all the respondents in this survey, 44.57% of them had received vaccination services. At the same time, 40.07% of the respondents have received health education services. In addition, only 26.97% had accepted the management of residents' health records. Another 22.1% of the respondents declared to receive the health management services of hypertension and diabetes from the grass-roots public health services. The number of respondents who had accepted other projects is even smaller, such as maternal health management. These data show that basic public health services are not well popularized.

4. Comprehensive evaluation of grass-roots public health services

In order to understand the effect of financial investment in the field of grass-roots public health services, the authors investigated the residents' enjoyment of grass-roots public health services. On this basis, from the perspective of residents' satisfaction, TOPSIS method is adopted to evaluate the implementation of public health services in Bengbu.

4.1 Normalize the data

The original data needs to be normalized to eliminate the dimension and make the data comparable. The principle of data normalization is as follows:

$$Y_{ij} = \frac{X_{ij}}{\sqrt{\sum_{i=1}^{n}(X_{ij})^2}}$$

Where i=1,2,..,n; j=1,2,...,m. X_{ij} represents the value of the ith evaluation object on the jth index. The matrix Z is obtained by normalizing the value of the matrix.

$$Z = \begin{bmatrix} 0.293568025 & 0.289654258 & 0.283030172 & 0.296841327 \\ 0.276142511 & 0.279461824 & 0.284461257 & 0.279641355 \\ 0.360138647 & 0.294367182 & 0.350246379 & 0.306971354 \\ 0.315791341 & 0.298613816 & 0.301687362 & 0.298346872 \\ 0.341894625 & 0.293164827 & 0.311793425 & 0.289413587 \\ 0.274681646 & 0.289413572 & 0.291352465 & 0.281354792 \\ 0.289625735 & 0.296653241 & 0.299066317 & 0.286542738 \\ 0.304627124 & 0.284675136 & 0.297168946 & 0.301428572 \end{bmatrix}$$

4.2 Determine the weight

The implementation of grass-roots public health services needs to be evaluated through performance appraisal. Therefore, combined with the needs of the investigation, the evaluation index system of basic public health services has been established. The weight value of the required indicators is obtained, as shown in **Table 1**.

First level indicators	Secondary index	Scores	Project weight
Project implementation	Residents' health records	6	0.21
	Health education	4	0.1
	Vaccination	5	0.18
	Health management services for children aged 0 to 6	5	0.17
	Maternal health management services	5	0.13
	Health management for the elderly	4	0.1
	Health management of patients with hypertension and diabetes	4	0.11

Table 1. Indicators and weight of grass-roots public health services

4.3 Get the sorting results

The weighted matrix s can be calculated by substituting the weight of each term into the normalized matrix Z. Then, according to the results of weighted matrix s, the authors calculate the positive and negative ideal solutions of weighted matrix s, which are represented by S^+ and S^- respectively:

$$S^+ = \{0.0349815273611733, 0.0329645521476254, 0.033571542745475\}$$
$$S^- = \{0.0114673592243571, 0.0116803711915373, 0.011257647664264\}$$

The Euclidean norm is used to measure the distance. According to the formulas (1) and (2), the Euclidean distance between the seven basic public health service items and the positive and negative ideal solutions is calculated, which are expressed by a and B respectively

$$D_i^+ = \sqrt{\sum_{j=1}^{m}(S_{ij} - S_j^+)^2} \qquad i=1,2,...,n \qquad (1)$$

$$D_i^- = \sqrt{\sum_{j=1}^{m}(S_{ij} - S_j^-)^2} \qquad i=1,2,...,n \qquad (2)$$

Calculate the relative paste progress C_i according to formula (3), and sort it according to the relative paste progress C_i,

$$C_i = \frac{D_i^-}{D_i^+ + D_i^-} \qquad i=1,2,...,n \qquad (3)$$

Organize the results as shown in **Table 2**.

Evaluating indicator	D^+	D^-	C_i	Sort
Residents' health records	0.003029276	0.045013428	0.93694618	1
Health Education	0.025637541	0.020672583	0.446394464	7
Vaccination	0.006574513	0.044369754	0.870946951	2
Child health management	0.010249457	0.038564626	0.790030738	3
Maternal health management	0.011725863	0.037143821	0.760058547	4
Health management for the elderly	0.024972182	0.023487563	0.484681935	6
Health management of hypertension and diabetes	0.024725464	0.024154466	0.494159177	5

Table 2. Comprehensive ranking results of evaluation indexes

4.4 Result analysis

According to the survey, the current financial investment in basic public health services is still the main work of the government in health care. Residents' satisfaction with basic public health service projects is a strong basis for judging the effectiveness of project implementation. The weighted TOPSIS method is adopted to get the residents' satisfaction evaluation of basic public health service projects. By sorting the project evaluation, the following results can be obtained: the residents' health file project has the highest satisfaction evaluation among all basic public health service projects; the vaccination project ranks second; the children's health management ranks third, followed by the maternal health management, the hypertension and diabetes health management, the elderly health management and health education in turn.

The scores of elderly health management project and hypertension and diabetes health management project are low, which shows that there is a lack of basic public health services for residents with hypertension and other chronic diseases. Therefore, the local government should strengthen the further support of these two health management projects to meet the health needs of special groups in the community and village. The health education program has the lowest scores and the lowest ranking. This result indicates that the government needs to strengthen the publicity of health education.

5. Main recommendations

5.1 Increase the financial investment in the grass-roots public health service sector

Through the investigation, it has been found that compared with large hospitals, the comprehensive ability of medical staff in the grass-roots public health service departments is relatively poor, and the medical and health resources are scarce. The government should increase investment in village clinics, township hospitals and community hospitals. In particular, it is necessary to improve the professional skills of the medical staff in the grass-roots public health service departments. The government should attract more excellent medical workers to participate in the grass-roots public health departments, and purchase new medical devices for the grass-roots public health service departments in time, so as to improve the service capacity of the grass-roots public health service departments.

5.2 Strengthen the transfer payment and improve the legal and policy system

The government should increase the transfer payment of medical resources in rural areas and towns to further narrow the gap between urban and rural areas. In addition, the government should improve the legal system with clear responsibilities and strictly enforce the law in the process of comprehensive management planning of medical and health system, so as to further play the legal effect. The government should also set up a long-term incentive and restraint mechanism to ensure the sustainable development of basic health services, so that the health of the masses can be maintained and guaranteed.

5.3 Improve the supervision and management mechanism of financial investment in health care

The government should improve the performance appraisal system of financial investment in the field of health care, bringing disease prevention, medical care and other work into the long-term management of grass-roots public health services. The supervision and management of basic public health services is conducive to gradually improving the quality of community health services so as to truly meet the needs of residents. In addition, in rural health services, the state should strengthen the medical service level of village clinics and township hospitals, and improve the quality of community health services. Moreover, the relevant performance evaluation mechanism should be established, taking the evaluation results of prevention and control of daily diseases and active response to public health events as the evaluation criteria of wages and benefits, so as to stimulate the enthusiasm of staff.

5.4 Establish a new modern operation system

It is necessary to comprehensively improve the networking of grass-roots public health service systems and strengthen the collection of public health data and information. In addition, developing and using the intelligent public health service system to establish the residents' health archives will be conducive to the popularization of basic health consultation and residents' health files, thus improving the efficiency and quality of public health services.

5.5 Strengthen the publicity and education of health concept

The quality of public health environment is not only related to the quality of life, but also to the sustainable development of the whole society. Relevant departments should expand the level of health publicity and education and narrow the gap between urban and rural areas. The significance of public health can be publicized by means of video advertisement and network media. Through the communication between community health service center and the masses, the publicity of public health awareness can be strengthened and the participation of residents improved.

5.6 Form information sharing and feedback mechanism

A government community public disease prevention and control system should be established with the government as the leading role and the health sector as the main body. Local governments should give full play to social forces, effectively integrate and utilize public health resources at the grassroots level, so as to improve the level of disease prevention and control at the grassroots level; at the same time, they should make full use of the Internet, unblock the channels of public supervision and feedback and information sharing, and achieve information transparency and efficient service.

6. Conclusion

At present, the global epidemic in 2020 is a crisis in the field of public health, which reminds everyone that the improvement of public health services is of great significance to the health of residents and the stability of the country. The questionnaire survey of residents in Bengbu, China revealed the problems of finance in the field of public health services. Finally, the paper puts forward some policy suggestions. It is hoped that this study can improve the importance of public health in various regions and provide reference for the establishment of a more perfect grass-roots public health mechanism.

References

1. Lin X, Wang H. An empirical analysis of public financial support for the integration of urban and rural basic medical care (in Chinese). Journal of Chongqing University of Technology (Natural Science) 2019; 33(1): 210-216. doi: CNKI:SUN:CGGL.0.2019-01-032.
2. Zheng X, Shen S. Government health expenditure: Improving health or reducing expenditure? Business Managment Journal 2019; 41(1): 5-21. doi: 10.19616/j.cnki.bmj.2019.01.001.
3. Ao Q, Jia L, Liu J, *et al*. A study on residents' satisfaction with basic public health services in urban and rural

primary medical and health institutions: A case study of Hubei province (in Chinese). Chinese Journal of Health Policy 2018; 11(4): 73-76. doi: CNKI:SUN:ZGWZ.0.2018-04-015.

4. Zhang A, Xu L. Discussion on the problems and strategies of community public health disease prevention and control (in Chinese). China Health Industry 2018; 15(7): 136-137. doi: 10.16659/j.cnki.1672-5654.2018.07.136.

Risks and Preventive Solutions for Financing of Small and Medium Enterprises under Inclusive Finance

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Abstract: In recent years, with the steady development of economy in China, small and medium-sized enterprises are an important part of China's economic industry, but their own characteristics make them have trouble getting financing. The emergence of inclusive finance has alleviated this situation, but there are still many problems in the financing of small and medium-sized enterprises. This article starts from the existing problems and actively discuss the way to solve these problems.

Keywords: Inclusive Finance; The Financing of Small and Medium-Sized Enterprises (FSMSE); Credit Risks

1. Introduction

The development of inclusive finance has received a lot of national attention in recent years. In December 2015, the State Council promulgated the "the Inclusive Finance Development Plan (2016-2020)", which raised the development of inclusive finance to a national strategic level and made its development goal to continuously improve the accessibility of financial services for the disadvantaged. Its main targets include small and medium sized enterprises. Under the present economic condition, the small and medium-sized enterprises have been tested by the difficulty of financing. It is of great significance to study risks and preventive solutions for FSMSE under inclusive finance.

2. Current situation of FSMSE under inclusive finance

According to the investigation of FSMSE in China, there is a great demand for financing and the financing frequency is high in the development of small and medium-sized enterprises.But it is difficult to obtain financing on time because of imperfect credit record, inadequate asset mortgage and high credit risk of company. It is hard to support its funding costs even when financing is available.By the end of June 2019, the balance of loans to small and medium-sized enterprises nationwide was 35.63 trillion yuan.In the first half of 2019, the average interest rate on newly issued inclusive small and medium-sized enterprise loans was 6.82%.The financing of small-sized enterprises in China is difficult, expensive and slow, which is closely related to their existing problems.

3. The problem of FSMSE under inclusive finance

There are three common problems in FSMSE under inclusive finance: credit risk, absence and offside of government, imperfect of credit reporting system.

3.1 Problems in small and medium-sized enterprises

Compared with the steady large-scale enterprises, the small and medium-sized enterprises are small in scale, weak in risk-resisting ability, and imperfect in-house personnel management structure. It does not have a sound financial system. Its related production and operation concept may not be updated in a timely manner. Their credit rating is low, which creates a greater credit risk. The national non performing loan rate for small and medium-sized enterprises is 3.75%, which accounts for a large proportion of the overall non performing loan rate. The small and medium-sized enterprises lack mortgage guarantee, causing a higher financing risk. Moreover, the operating range of the small and medium-sized enterprises is small, with great uncertainty in development prospects. Information lag makes its management and operation can not be updated on time. In addition, the repayment pressure and other multiple issues increase the credit risk of small and medium-sized enterprises.

3.2 Implications of inclusive finance

Financial institutions which involved in lending to small and medium-sized enterprises will face low yields and high risks, which limits the participation of financial institutions to some extent. It may be difficult for financial institutions without sufficient capacity to prevent and control risks to get involved. The social responsibility of financial institutions alone can hardly keep the market functioning properly. Therefore, the development of small and medium-sized enterprises under inclusive finance loans can not be separated from government regulation. But for now, government regulation presents a dilemma. On the one hand, excessive government regulation makes the financial market lack of vitality, which may lead to market contraction, increase the cost of corporate financing and waste financial resources. On the other hand, it is difficult to truly ease the financing problem of small and medium-sized enterprises with imperfect laws and regulations in inclusive finance. On the contrary, there will be a "close to death, put on the chaos" phenomenon.

3.3 Focusing on small and medium-sized enterprises that are relatively weak in financing

This group has a great risk of default, so its credit needs to be assessed. The assessment data partly come from the report provided by the enterprises themselves, but Chinese citizens' credit consciousness is insufficient and the relevant laws and regulations need to be improved urgently. To sum up, it is very risky to rely mainly on the self-restraint of the enterprise to carry on the credit evaluation. Moreover, some enterprises' own financial system is not perfect, making it difficult for them to provide useful data. Then, the financial institutions themselves will assess the credit of loan enterprise. The rate of return for financial institutions has fallen again, taking into account the cost of assessment. Finally, the ratings provided by the existing credit rating agencies in the Chinese market, which are widespread in the Chinese economy, are overwhelmingly unreliable.

4. Preventive solutions for FSMSE under inclusive finance in China

In view of the above three problems, this paper puts forward the following countermeasures.

(1) Small and medium-sized enterprises as the main participants of financing, in the course of operation must keep a positive attitude. First of all, enterprises should improve the internal financial system, ensure the accuracy of internal fund flows and improve financial transparency and credibility, which will ease the information asymmetry between enterprises and borrowers. This can be achieved by hiring professional accountants such as those with CPA certificates and accounting experience. The enterprise itself must establish the positive financial consciousness. Second, small and medium-sized enterprises should also improve the efficiency of funds, rationally allocate funds and strengthen effective capital control. In the course of operation, they should perfect the risk prevention and control mechanism, strengthen the risk assessment, improve the ability of resisting risk, so as to reduce the credit risk of financing and prepare for the next round of financing.

(2) Under inclusive finance, the development of FSMSE can not be done without support from government. The government should play its macroeconomic regulation and control role in the financial market, formulate effective

financing policies, and reduce the phenomenon of financing inequality and single financing service. The government can increase expenditure in inclusive finance to provide financial support for FSMSE, mitigate the risks arising from market failure and improve financial regulation. The government can actively guide the development and improvement of the financial market to provide a good environment for the financing of small and medium-sized enterprises. It could provide further preferential tax services to boost the incentives of financial institutions. Moreover, the government could delegate professionals to help enterprises develop healthily. The government is the bridge and premise linking enterprises and financial institutions. Only with the correct guidance and supervision of the government, it is possible to solve the problem of FSMSE.

(3) Credit is a prerequisite for the operation of financial markets, and effective information can reduce the credit risk in the financing process and alleviate the problem of information asymmetry. This can be done by establishing rules and regulations to raise the awareness of participants, such as raising the interest rate on loans or not granting loans if the company is found to provide untrue information. The truth of information is the foundation of the operation of inclusive finance. In this section, Zhima Credit of Alipay does very well. Zhima Credit, which is tied to a user's daily life, is rated monthly based on the user's usual behavior. Financial institutions can cooperate with them to mitigate information asymmetry.

5. Conclusion

Small and medium-sized enterprises have increasingly become an important part of promoting employment and promoting grass-roots innovation, which is small in scale is small, but great in number and wide in distribution. The development of small and medium-sized enterprises provides a basic guarantee for people's livelihood. Therefore, it is particularly important to support the development of small and medium-sized enterprises. It is urgent to solve the problem of FSMSE, which requires the cooperation of the enterprise itself, the support of financing institutions and the help of the government. The combination of these three parties can build a perfect financial market.

References

1. Li L. Research on financial risks and counter strategies of small and micro enterprises in China under Internet finance (in Chinese). Economic Research Guide 2019; (24): 83-84.
2. Zhao R. Research on mechanism innovation of inclusive finance (in Chinese). Think Tank Era 2019; (39): 39+55.
3. Wen Y, Zhang X. A preliminary study on the financing mechanism innovation of small and micro enterprises from the perspective of inclusive finance (in Chinese). Economic Research Guide 2019; (24): 88-89.
4. Zhou W, Ling J. Inclusive finance and the financing constraints of SMEs: Evidence from SMEs in China. Collected Essays on Finance and Economics 2018; (6): 34-45.
5. China inclusive financial development report 2019.
6. Zong M. The ethical basis and practical principles of inclusive finance (in Chinese). Zhejiang Social Sciences 2020; (5): 102-110+159-160.
7. The tax incentives were extended for four years (in Chinese). Domestic and Foreign Toy Manufacturing 2020; (5): 76.

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