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Journal of Finance Research (JFR) is an international peer review journal publication. The aim of JFR is to be the most reliable sources for research information in the field of business finance all over the world.

The journal expected to deliver high-quality original research papers that are significant in all disciplines of finance research. We encourage paper submissions especially from young researchers and focusing on new research findings and exploring new theories and methods that can be applied in the business financial industry and professional. However, we also seek a contribution that complement in the field of economics development. The subject areas covered by the journal are but not limited to:

- Marketing Management
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Editor-in-Chief

**Piotr Rażniak**

*Pedagogical University  
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## ARTICLE

# Wuyutai Business Plan

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### ABSTRACT

Wuyutai founded in 1887, it has been over 130 year's history. As a Chinese tea brand, Wuyutai brand enters into Australia market is difficult. It has to keep Chinese traditional culture to make sure Australia consumer can accept this new brand and Chinese tea product. And Australia market have already fulfilled tea product from premium class product to lower price class product like T2 brand and Lipton brand. Those exist brands have stray in Australia market for long years. Especially Lipton brand, it also can buy it in China market. Wuyutai have to face powerful Competitor in Australia market. This article uses porter five forces to analysis Australia tea market, SWOT to analysis Wuyutai itself and use marketing 4P theory to make marketing strategies. It not only uses theory to analysis, the article uses Wuyutai existing financial data to ensure that the marketing plan can be implemented.

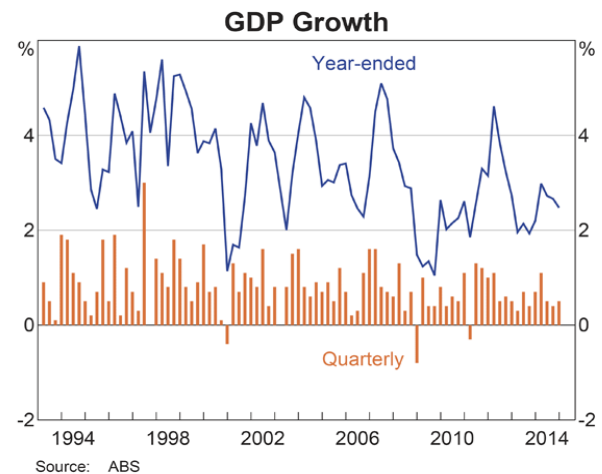
## 1. Situation Analysis

This section will identify both external and internal factors that can affect the marketing strategies of the company.

Remote environment consists of several factors such as economic, political, social, ecological and technological factors or forces that impact on decision-making abilities of the company.

### 1.1 External Environment (Remote)

#### 1.1.1 Economic Factor



Sources: Reserve Bank of Australia 2015

**Figure 1**

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Hao Wu,

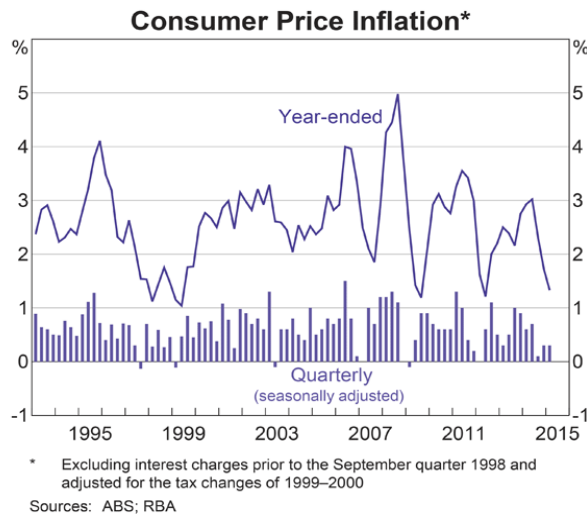
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As the Figure 1 above, it can be seen that, the growth of Australia GDP has fluctuated in a small range of 1% to 4%. The Australia GDP growth rate experienced a quick recovery from the Global Financial Crisis in 2008 (the 2.0 percentage growth in GDP from 2009 to 2010 and then dropped slightly to 2.5% in 2013). To sum up, Australia GDP growth has remained on a stable trend and is expected to increase up to 3.0% in 2015.

### 1.1.2 Consumer Price Inflation



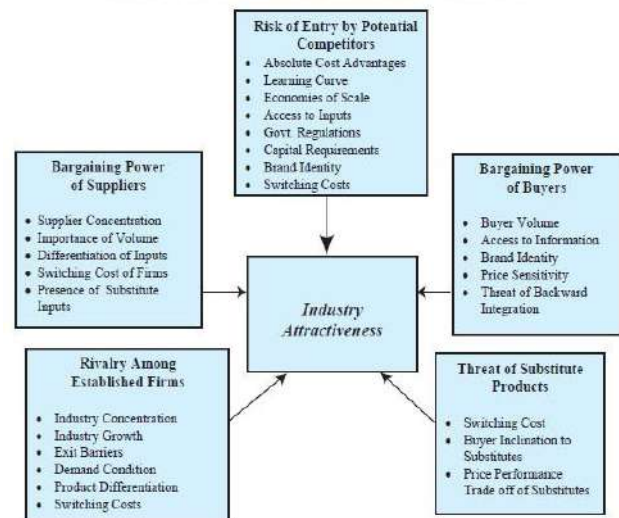
Sources: Reserve Bank of Australia 2015

Figure 2

As the diagram shown above, the consumer price inflation in Australia increased sharply from 2009 to 2011. Nonetheless, the inflation has been cut by the Australia government after 2011, which aims to stable the price level of products and services. This action will cause buyers of Wuyutai have relative more credit to finance their purchases.

## 1.2 Industry Analysis—Porter Five Forces Analysis

Tea is a popular drink in Australia's non-alcoholic beverages market. The demand of tea by customers has been increased sharply in local market in last 5 years because of an increasing interest in health by public, as well as the Australian tea market achieves 4% off-trade value growth and make the category to \$377 million Australian dollars in an industry (Tea in Australia, 2013). Hence, it is crucial for Wuyutai Tea Corporation to understand industry forces and to develop marketing strategies by analysing porter five forces model.



Sources: Alam, Azim &Islam, 2010

Figure 3

### 1.2.1 Threat of New Entrants

According to Australian Bureau of Statistics (2014), it can be seen that taking business in tea industry tends to have high threat. If the level of threat by other new entrants is high, the industry attractiveness will diminish and also can take advantages to keep some competitors out of the industry.

Particularly, Wuyutai Tea Corporation requires significant set-up cost for various activities such as cost for vast number of tea product categories imported from China, advertising campaigns and building brand image and awareness. Hence, long-term investment is required when entrants want to enter into Australian tea industry, so this will discourage new entrants to participate in the market. Brand loyalty, besides, is another key factor can affect the threat from new entrants. Brand loyalty is challenging for new entrant to entry the market due to other established-brand like T2 tea, Lipton and Bushells (Alam,Azim &Islam, 2010). Additionally, new entrants must also be aware that customer demands tend to change and therefore be altered to meet the needs and wants of customers.

### 1.2.2 Threat of Substitutes

The main threat of substitutes for this industry is large numbers of established coffee shops and several milk tea or non-alcoholic beverage shops such as Starbucks Coffee and Chatime stores. Furthermore, if low switching cost for customers to switch easily to a substitute product that will poses greater threat. Thus, when customer can switch to

coffee or milk tea products with higher cost, the threat of substitute product for Wuyutai can be limited. Additionally, frequency of consumption is another factor that affects the threat of substitutes. It can be noted that frequency of tea drinking is high that will against other substitutes in daily life. The nature of tea is benefit for customers' health, such as lowering blood sugar and reducing the risk of heart disease. So customers' health claims will limit the threat of substitutes (Alam, Azim & Islam, 2010).

Nonetheless, tastes and habit of customers are not easy to change. According to Australian Bureau of Statistics (2014), Australians as one of the great lovers of coffee over the world, it was consumed by about half the population around 46% in Australia. Hence, the threat of substitute product is a little bit high.

### 1.2.3 Bargaining Power of Buyers

The bargaining power of buyer is high as they can substitute tea products of Wuyutai with other brands such as T2 tea and Lipton if they offer similar products with lower prices. In addition, the factor of purchase volume can influence the bargaining power of buyers. Normally, the buyers of Wuyutai purchase a small quantity of tea products at each time and consequently the buyers have lower bargaining power by lower level of bargaining leverage (Alam, Azim & Islam, 2010).

### 1.2.4 Bargaining Power of Suppliers

Wuyutai Tea Corporation establishes their tea bases over many countries in China and also provides outstanding quality and origin assurance to customers. Thus, it is limit bargaining power of suppliers.

### 1.2.5 Competitive Rivalry

Currently, Australian market is comprised of several competitors such as Lipton in supermarket and T2 tea stores in shopping malls and other tea drink shops. Especially, the T2 tea stores and Bushells can take advantage of economies of scale as well as brand recognition to increase their market share. Even though Wuyutai face some rivalry, the firm also has opportunities to participate in the market due to product differentiation and low switching cost. Low switching cost in the market of tea can increases the competition rivalry. Besides, tea as a commodity product that is difficult for firms to differentiate their products. However, Wuyutai can take advantages by providing special traditional tea producing and high quality products and giving specific introduction for tea products in the stores of Wuyutai Tea Corporation.

## 1.3 Company Analysis

### 1.3.1 Company Background

Wuyutai co. is one of the most prominent and esteemed manufactures of tea food and beverage in China. It can be noted that it first established in 1887, Wuyutai enjoys fame as one of the "China time-honoured brand" and is well known for high-quality tea products and hospitable service. Wuyutai Tea house, which was renamed Beijing Wuyutai Tea Co in 2005 after development over a century. Now it has over 180 stores across the country and has been holding up its traditional tea producing methods and won high reputation and credibility among generations of tea lovers.

### 1.3.2 Financial Performance

Wuyutai Tea Corporation's financial performance in recent years have shown an upward trend. According to their annual report, the annual growth rate of net revenues is about 25% each year. In 2005, as representative in the tea industry in China, Wuyutai's total annual sales was near CNY ¥600 million. Hence, Wuyutai have achieved great long-term financial performance in recent 20 years.

### 1.3.3 SWOT Analysis

SWOT analysis will be used to illustrate effect of macro environment and internal capabilities; it combines the strength, weakness, opportunities and threat of company. In this case, the SWOT analysis is formalized based on the industry analysis and internal analysis.

Table 1

<b>Strength</b> <ul style="list-style-type: none"> <li>● High brand equity in China</li> <li>● Specialized in high quality tea product</li> <li>● Strong financial performance</li> </ul>	<b>Weakness</b> <ul style="list-style-type: none"> <li>● Lack of development various product line</li> <li>● Low brand awareness in Australian</li> </ul>
<b>Opportunity</b> <ul style="list-style-type: none"> <li>● Increasing health conscious</li> <li>● More western people interest in Chinese tea</li> <li>● Capital gain from function of exchange rate</li> </ul>	<b>Threat</b> <ul style="list-style-type: none"> <li>● Heavily competition</li> <li>● Many substitutes for tea</li> <li>● Customers are keep changing their taste</li> </ul>

#### (1) Strength

High brand equity in China: As mentioned before, Wuyutai was established at 1887 which is over 100 year history and became China time-honoured brand. Those indicated that Wuyutai has excellent reputation and extraordinary production quality in China. The high brand equity may help Wuyutai be recognized widely in Australia faster (Tumbuan & Hudrasyah, 2015).

Specialized in tea products: the high quality of produc-

tion not only implied strong capability of internal performance but also enhance core product value, according to the veffin theory, the product will be more desirable if it make customer feel luxury. Therefore, the high quality of its products allows Wuyutai increase price and profitability accordingly as the better good worth the higher price (Sarmah & Borah, 2015).

**Strong financial performance:** The expansion of Australian market should need a vast amount of capital effort that will include some sunk cost such as marketing research. Since the Wuyutai has earned high profit in the Chinese market, it may affordable for more and deeper research and explore. Hence, the more effort the higher probability to be succeed (Tumbuan & Hudrasyah, 2015).

#### (2) Weakness

**Lack of various product line developments:** The profit from the single product might be limited and restricted long run positioning for company expect marketer decide to be competed at niche position.

**Low brand awareness in Australia:** Due to the lack of exploration of the Australian market, the awareness will be extremely low. As a result, the company need to cost a lot on marketing activities such as advertising. In addition, it may have negative effect on the heavy competition.

#### (3) Opportunity

**Increasing health conscious:** As more and more people are willing to purchase health product, customers are likely to choice tea rather than other drinks such as coke since it is healthier (Dunchan, Shi and Tyer, 2004).

**More western people interest in Chinese tea:** Since the accelerated globalization, western people started to interest in the lifestyle of Asian country. Unlike the western for drinking tea (black tea with milk and sugar), Chinese tea contain some natural herbals that could good for physical (China daily, 2015). There are more and more Australian started to interest in and drink Chinese tea that increase market potential for Wuyutai.

**Capital gain on fluctuation of exchange rate:** According to the RBA (2015), the exchange rate of Australian to Chinese dollar dropped democratically, which from the highest point at 6.8 to 4.8 recently. To assume Wuyutai need to import tea from China and capital investment is from China, there is a noticeable reduces on expense due to the lower exchange rate of Australian dollar.

#### (4)Threat

**Heavily competition:** As mentioned in competition rivalry, this industry is completed heavily because it has many players provide various drinking to customer. Therefore, company may not obtain a large profit in this industry.

**Many substitutes for tea:** The category of non-alcoholic drink contain diversity product, as consumers are free to switch, it is difficult to gain loyalty customer in this industry. Additionally, coffee is still the most popular drink in the Australian market; it will be hard to take market share from coffee providers.

**Changing taste of consumer:** The tastes of customers are keeping change, therefore company need to explore new product line and improve R&D to fit the changing customer tastes.

## 2. Marketing Objectives

According to Peter (2006), if the objectives in marketing plan are specific and consistent with companies' goals, the marketing plan is more likely to produce the expected performance. In this marketing plan, there are three main marketing objectives in the aspects of top line revenue objectives; profitability position and revenue mix strategies.

According to food and agricultural organization of the united state (2010), in 2000, Australia consumed 14,000 tons of tea annually. Tea consumption in Australia is tremendous. However, Tea production in Australia remains very small. Most tea produced in Australia is black tea, and there are small quantities of green tea produced. As a result, there is big proportion of black tea and green tea is imported from China. Australian customers are familiar to Chinese green tea and Chinese jasmine tea. Other than green tea, black tea and jasmine tea, Wuyutai also has much more Chinese traditional tea like oolong tea and herb tea. The tea products category of Wuyutai almost covers the all types of tea in the Australia tea market. As such a mature and strong Chinese tea corporation Wuyutai is able to achieve a big market share in Australia tea market. On the other hand, there are still some competitive tea corporations in Australia like T2 and Tonic. So Wuyutai could set a target market share about 5% in the first year. This proportion of market share is not difficult to Wuyutai to achieve in the first year entering Australia tea market.

To be more specific, according to Mike (2013), based the T2 sales statistics the top line revenue of Wuyutai could reach about 2 million. Beside high human resource cost, shop rent and advertisement fee, there is still a considerable profit for Wuyutai. As Australia has a relatively big consumption of tea, if Wuyutai could achieve its marketing top line revenue objectives, Australia would become a profitable target market.

In the aspect of profitability position, Wuyutai is able to maintain a high profitability position in the Australia tea market. According to Li (2013), China is the world's largest tea producer. It produced 1.3 million tons tea in 2009, taking for 31 percent of the world total. Moreover,



China's tea plantations have total area of 1.86 million hectares, which accounts for about half of the world's total tea growing space. Such a tremendous production of tea makes China become the country with the lowest cost of tea production among major tea producing countries in the world. Moreover, low labour cost of the tea manufacture process in China also makes the cost of production much lower than other tea producing countries. On the other hand, as exchange rate between Australian dollar and Chinese Yuan is about 5 times, Wuyutai is able to set a higher price in Australia market than domestic market. As mentioned above, low cost of tea production in China and high price of tea sales in Australia finally result in a high profitability position of Wuyutai in Australia tea market.

In term of revenue mix strategies, the main source of revenue is from the sales of tealeaves. Other than popular tea bag products in Australia, main tea products of Wuyutai are tealeaves. Loose tealeaves have better taste and quality than tea bag, which is more suitable to Australians who pursue high quality of lives. There is 70% revenues from tea leaves sales about 1.05 million. The following 30% revenues come from tea sets sales about 0.45 million which apply to traditional Chinese tealeaves.

### 3. Marketing Strategies

#### 3.1 Target Market Segments

Wuyutai tea has widely product line; it can cover every segment. The tea product includes instant tea, premium tea, tea food, tea products and the tea ceremony utensils. Our target market is from high-income group to school students, because we have different type products. For high income customers we are going to introduce our premium tea, it has utility quality and taste, keep to drink can improve body health, and it also can be good gift for friend. For office workers we are going to introduce our middle class tea and tea food, because tea is good for health, it can help office works to keep them health. For young students we are going to introduce our tea food, for young customers, Chinese tea is hard to accept because it tested bitter, but our tea product improve our taste, incline bitter keep the tea taste and nutrition, it is easy to accept for young customers. For old customer, choose our tea product is not only can keep health but also can develop interests and hobbies about tea ceremony.

##### (1) Premium Teas



Figure 4. Dahongpao tea

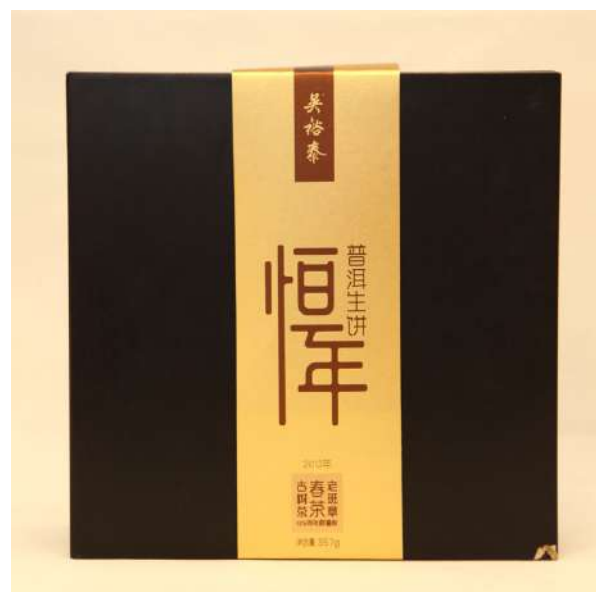


Figure 5. Pu'er tea



Figure 6. Oolong tea

(2) Middle Class Teas



Figure 7. Longjing tea



Figure 8. Tie Guanyin tea



Figure 9. Biluochun tea

(3) Low Class Teas (instant tea)



Figure 10. Jasmine tea



Figure 11. Green tea



Figure 12. Barley tea

#### (4) Tea Products



**Figure 13.** Tea moon cake

### 3.2 Brand Positioning

Wuyutai tea has high class, middle class and low class product. We are going to cover entire instant drink market. About our high class product, we set our position is compare with premium class coffee drink such as blue mountain coffee, we also want to make our high class tea to compete to Australian coffee traders association members. For our middle class tea product, we are going to compete to Starbucks's coffee drink and Gloria Jeans' coffee drink, we want to let Australia's consumer know there has an alternative choice can buy that is our Wuyutai tea drink, our tea drink is not only can refresh oneself but also can keep health by drink tea, it is a good alternative for coffee drink. About our low class product-instant tea, we are planning to compete with Lipton's instant tea ball, because we are standard for the best Chinese tea quality in the world.

### 3.3 Product Strategies

Wuyutai tea is Chinese traditional brand; it has more than 100 years' history, it represents mysterious Chinese culture. In 2008, Wuyutai is official Olympic sponsor; we have shown our excellent quality to entire world during the 2008 Beijing Olympic Games, therefore we are not only a Chinese traditional brand without energy. We are going to use our brands' history to develop Australia's new market.

For our high class products, we will show our brands' history and excellent quality to consumers, we will let entire Australia know we are stand for premium life quality, choose our brand means hope to experience high taste eastern culture and choose Chinese healthy way. For middle class consumers, we are going to introduce our healthy

drink concept. Tea is Chinese traditional healthy drink, drinking tea can be refreshing, and it can help office works improve work efficiency. Some office workers would like to smoke to refresh them, Tea can precipitate nicotine, and it can help them to clean nicotine by urine. For our low class product- instant tea, we want let consumer know we are making reasonable price and good quality tea product that makes everyone can have opportunity to drink traditional Chinese tea, everyone can by this way to feel Chinese culture and help themselves to keep health.

### 3.4 Pricing Strategies

Pricing objective: Product-quality leadership.

Wuyutai tea has three classes of products: high, middle and low class.

Product line pricing: For high class tea is super premium in drinks market, so the price is can compare to the best coffee in the Australia. We are hoping that Wuyutai high-class tea can be seen as luxury gifts.

For middle class tea, we are going to make it become affordable luxuries, premium level tea with high-level quality but with acceptable price. It can be seen as BMW in automobile industry.

For low class tea, we hope everyone can affordable, consumer can find Wuyutai tea in supermarket, which means we can provide everyone acceptable price with good quality, make everyone lives in Australia can have chance to experience Wuyutai traditional Chinese tea. We hope to make Wuyutai tea drinks become Australians' normal drink like coffee to everyone.

### 3.5 Distribution Strategies

We are going to choose exclusive distribution, first year we will set an independent store in Chadstone shopping mall to sell our full series product, included high class, middle class and low class, also has some other products about tea can be found in our unique Wuyutai tea shops.

After first year we are planning to set a flagship store in Collins Street that can make Australian know our brands and corporate strength. We are also choosing intensive distribution to sell our middle class and low class tea. We will set independent counter in different shopping mall to sell our middle and low class shop, such as Emporium. After our brand has become a famous brand in Melbourne, we will also plan to distribute our low class tea to supermarket; include Coles, Woolworth, it will appear in 7-11 and any other convenience shops. We want make our consumers and potential consumers can easily purchase our Wuyutai tea product.

We will operate Wuyutai online stores. All products



can be ordered online. All products will be shipped directly from China origin to Australia. We will ensure that the quality of all products imported from China.

### 3.6 Integrated Marketing Communication Strategies

Wuyutai tea is stranger to Australian; therefore advertising for Australia market is very important. We will choose multiple ways to advertise our tea product.

**Table 2.** Integrated marketing communication strategies

Integrated marketing communication strategies	
<b>Advertising</b>	Wuyutai tea will run print ads in variety of fashionable magazines. Our advertising will appear in a variety of social networking sites, such as Facebook, Twitter, and YouTube.
<b>Sales promotion</b>	In the first year we used gift vouchers ways to attract customers. The future we will use the membership discount system, like footlocker membership discount system.
<b>Public relation and publicity</b>	Sponsorship of schools, make young people know about the tea culture. Organize activities to help elderly people, provide free tea to the older people for keep healthy like Chinese way.
<b>Events and experiences</b>	Our brand can sponsor all have activities related to Chinese culture, so that the Australian customers understand Chinese culture and tea culture.
<b>Direct and interactive with marketing</b>	Providing free tea drink or free tea sample in public occasion like casino, shopping mall. By this way to get contract way from potential consumer, and send them messages or email to advertise our new product.
<b>Work of mouth marketing</b>	Looking for celebrity endorsements.
<b>Personal selling</b>	The company provides the basis for the sales staff to sell the course.

## 4. Budgets

**Table 3.** Wuyutai Tea Corporation Income Statement for the year ending 31 December 2015

<b>Incomes</b>		
<b>Sales</b>		2000,000
<b>Costs of goods sold</b>	750,000	
<b>Costs of equipment</b>	3,000	
<b>Gross profit</b>		1247,000
<b>Expenses</b>		
<b>Advertising Expense</b>	400,000	

<b>Staff Wages</b>	146,000	
<b>Rent Expense</b>	540,000	
<b>Water Expense</b>	8,000	
<b>Electric Expense</b>	20,000	
<b>Interest Expense</b>	804	
		(1114,804)
<b>Income before tax</b>		132,196
<b>Income tax</b>		(26,600)
<b>Profit</b>		105,596

**Table 4.** Wuyutai Tea Corporation Statement of Changes in Equity for the year ending 31 December 2015

<b>Capital at 1 January 2015</b>	100,000
<b>Add additional contributions</b>	27,600
<b>Add profit</b>	105,596
<b>Less drawings</b>	(120,000)
<b>Capital at 31 December 2015</b>	113,196

**Table 5.** Wuyutai Tea Corporation Balance Sheet as at 31 December 2015

<b>Current assets</b>			<b>Current liabilities</b>	
<b>Cash at bank</b>	19,173		<b>Accounts Pay- able</b>	147,620
<b>Accounts Receiv- able</b>	12,429		<b>Interest pay- able</b>	804
<b>Prepaid rent</b>	540,000	571,602	<b>Non-current liabilities</b>	
			<b>Bank loan</b>	312,982
<b>Non-current assets</b>				
<b>Tools and Equip- ment</b>	3,000		<b>Capital</b>	113,196
		\$574,602		\$574,602

## 5. Marketing Program

The first act for Wuyutai is to have a teashop in the Australian shopping mall like Chadstone. As this is the first entering for Wuyutai in Australia market, the location of the first tea shop should in the most prosperous city area. The rent of the teashop in the shopping mall of city area is about 450 dollars per square per month. In order to establish a high-grade tea brand from China, the area of this first shop could not be too small. The first Wuyutai teashop that has 100 square meters area needs at least



2 salesmen and 1 manager. Based on Australia average salesman wages level are about 4000 dollars per month and the shop manager is about 5000 dollars per month, the labour cost of Wuyutai is about 0.16 million taking into 8 percent of the total top line revenue. However, this labour cost is not tied to sales but rather the minimum staff required to run the store. Wuyutai needs these people on the floor of the teashop whether there is \$300 in sales or \$1,000 in sales. Here is the risk that if the sales could not achieve the revenue objective, Wuyutai still bears the labour cost. On the other hand, the teashop rent cost is also the biggest expenditures of Wuyutai. Wuyutai should have a control in the rent cost and there are still some other expenditures needed to be considered, as a result, rent cost should under 25% of the top line revenue. Assuming that the area of the first tea top of Wuyutai is 100 squares, the number of rent cost will be 0.54 million which accounts into about 27% of total top line revenues. Besides the teashop, online sales are also an important distribution channel. Wuyutai could also post up their tea products on the EBay and Amazon these E-commerce platforms to sell. The cost of online sales is so small and online sales are also an efficient advertisement channel to attract more online shoppers to pay attention to this new strong Chinese tea brand.

In the end, advertisement is the indispensable factor in the implementation process. The Wuyutai should not only wait for the customers to visit its tea shop. There must have advertisement in the early years of operation in order to increase the brand awareness and establish the first group of royal Australian customers. In the first year, Wuyutai could choose use newspaper, magazine and the internet as the advertisement channels, because these channels have relatively low cost and also a widely spread range. As this is the first time Wuyutai entering the Australia tea market, advertisement cost could be relatively higher than the following years, but the advertisement cost should still in the reasonable range. In the end, the expected proportion of advertisement cost will be 20% of total top line revenue that is about 0.4 million dollars.

## 6. Evaluation and Control

The marketing budget is the most important factor needs to be evaluation and control. The marketing budget is a balance between the cost in the implementation process and the revenue created by the marketing plan. There are several controls in place that can be used to monitor a marketing budget, including printing advertising expenses, internal personnel costs shows and rent cost contracts. All of these costs need to be closely monitored to minimize spending and maximize profitability. By examining expenses, Wuyutai is able to maintain budget and realize

exactly where spending increases come from.

Moreover, this Wuyutai marketing plan has determines the top line revenue objectives and target segmentation. So the Actual sales in the target market could be compared to the marketing plan objectives to see if any changes need to be made. Wuyutai has different customer segmentation, and then the target segmentation sales reports would monitor sales made to that group. If some specific segmentation sales are down, then further market research needs to be done to see why the target audience is not interested in tea products of Wuyutai.

Another control could be applied in this marketing plan is the monitoring of customer feedback through polls and surveys. Wuyutai can reach customers indirectly by hosting online polls on the Internet that ask specific questions about customers' satisfaction with tea products and marketing promotion. Moreover, doing surveys is a more direct method to reach customers by interviewing marketing groups or individual through phone or in person.

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## ARTICLE

# Research on the Construction of China-Europe Cross-border E-commerce Ecosphere Based on Blockchain Technology

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### ABSTRACT

Based on the blockchain technology to construct the relevant research on the China-Europe cross-border e-commerce ecosystem, we must first define the main significance and combine the core technology application of blockchain to explore the blockchain China-Europe cross-border e-commerce ecosystem, thereby drawing effective measures such as establishing a cross-border e-commerce integrated service system, improving e-commerce credit risk management and establishing a blockchain supply chain intelligence system, which comprehensively elaborates on the importance of blockchain technology to build a China-Europe cross-border e-commerce ecosystem.

## 1. Introduction

In recent years, China's economy has continued to develop. The main import and export market is the European Union (EU). China and the EU countries have always maintained close ties. However, the development of China-Europe cross-border e-commerce is relatively backward, which is affected by the differences in market environment and economic structure. In the face of fierce market competition, we must build a harmonious and unified trade ecological environment, so as to improve the management level of China-Europe

cross-border e-commerce. Blockchain technology is a very advanced technology that not only solves the problems encountered in the development of China-Europe cross-border e-commerce, but also improves the integrated service platform for e-commerce, and on this basis, continuously improves the credit risk management system, which lays the foundation for the development of the China-Europe cross-border e-commerce ecosystem to develop a unified blockchain standard for the long-term development of China-Europe cross-border e-commerce, thereby improving the efficiency of block transactions and reducing the security risk index.

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## 2. The Significance of the Research on the Construction of China-Europe Cross-border E-commerce Ecosphere Based on Blockchain Technology

The EU is an influential organization in the world, and at the same time, it is also an important cooperative trading partner of China. In recent years, China and the EU have always been friendly partners in the field of traditional international trade and cross-border e-commerce. Therefore, China-Europe bilateral trade has complementary advantages, and the cooperation between China and the EU comprehensively promotes the development of financial science and technology. The Chinese government advocates the Belt and Road and free trade programs, which are to achieve China-Europe cross-border trade and win-win cooperation and cooperation in various fields.

According to the survey of Eurostat, the trade volume between the EU and China has reached 600 million in 2016, accounting for 15% of the EU's total foreign trade, and the trade volume between the EU and the US is not too much. Combined with the trend of development, the trade volume between the EU and the United States has been declining since 2011, while the EU-China trade volume has increased by 6% and averaged three times per year. By the beginning of 2017, the EU's exports to China increased by 20%, and the corresponding imports increased by 10%. The development of China-Europe cross-border e-commerce is relatively backward, but as the trade market continues to improve, it has innovated related technologies for e-commerce. In 2015, the distribution of China's export e-commerce market has gradually increased, and the EU only accounts for 70% of the transaction volume. This problem arises. The main reason is that because of the long transit time between China and Europe, in the process of transportation, it will be affected by many factors. European consumers believe that there are insecure factors in Chinese goods. There is still a lack of logistics tracking system, and the returned system is not perfect. In this regard, a sound legal system has not been established. At the same time, European consumers still worry that there will be many unsafe factors in cross-border sales. Many problems have constrained the development of China-Europe cross-border e-commerce.

## 3. The Application of Blockchain Core Technology

### 3.1 Point-to-point Networking

Point-to-point networking, for this approach, the net-

work center point has not yet formed. Within the system, the nodes of the network are distributed, but the way the system works is not independent. In the process of system trading information, the links between the various nodes are closely related and inseparable. For this kind of point-to-point networking, the security of the trading system can be guaranteed, and the central node and the single node can be avoided and the entire network system can be operated smoothly, thus reducing the cost input and promoting the healthy development of the economy.

### 3.2 The Timestamp Technology

The timestamp technology is mainly applied in the blockchain. The timestamp technology is a relatively advanced technology. The main dimension is the blockchain time. At each time node, the timestamp technology is adopted. In the process of trading, fill in the information time and make a record. Finally, in each block, links are made in the order of the timestamps, and in the process of the transaction, the transaction time and data are saved in the block link of the record, such effective storage can be conveniently found.

### 3.3 The Asymmetric Encryption Technology

The Asymmetric encryption technology mainly uses two kinds of asymmetric ciphers, namely public key and private key, which mainly encrypt or decrypt data. For the public key, the node is mainly exposed, but the private key is strictly confidential. Regardless of whether the public key or the private key is used in the process, there is certain security and reliability in the process of data transmission, which is mainly applied in asymmetric encryption technology, which facilitates the authentication and digital signature of the blockchain on the network.

## 4. Research on China-Europe Cross-border E-commerce Ecosystem Based on Blockchain

### 4.1 The Overall Framework of the E-commerce Ecosystem

There is a big difference in the trading market environment and market structure between China and the EU. A harmonious and perfect trade ecological environment should be established, and cross-border e-commerce should be guaranteed to proceed smoothly. Block link is an advanced collaborative technology, which mainly solves the problems in China-Europe cross-border e-commerce through centralization and district trust. In



combination with the main reasons for problems, build a communication platform in collaborative cooperation, and establish a credit risk system. As shown in Figure 1, in the framework of this figure, the block linking technology is a stratum with five built-in systems, and the main features of the block linking technology are used to achieve the synergistic effect. Meantime, it is necessary to establish an integrated service platform, build a data storage platform and a credit risk management system on the basis of improving the rational system, and effectively promote the data information docking to ensure effective cargo supervision and trade tracking of the internal data of the China-Europe cross-border logistics system. At the same time, customs supervision departments should also be established.

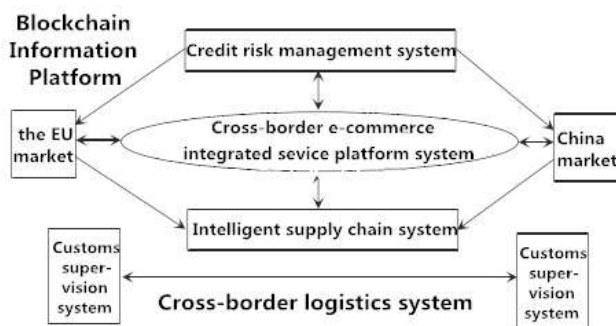


Figure 1. Blockchain Information Platform

## 4.2 Construct China-Europe Cross-border E-commerce Ecosphere

### 4.2.1 Construct Cross-border E-commerce Ecosphere

#### (1) Existing Problems in Cross-border E-commerce Integrated Services

At present, China-Europe cross-border e-commerce trade between mainly passes through many well-known e-commerce platforms, including Alibaba. There are many European consumers who have many problems with the quality and safety factors of Chinese products. Because the European market has developed for a long time, the related technology is more advanced than China's technology, and the e-commerce market mainly runs through the entire network management process. There are many people who complain that there is exaggerated publicity in the market e-commerce platform, not only the problem of customer information leakage, but also the negative information such as creating false transaction volume, which has seriously affected the reputation of the Chinese market, leading European consumers to doubt the quality of Chinese goods.

#### (2) Effective Solutions

To develop an effective solution, a complete blockchain basic data savings platform should be established. Relevant staff should strictly control the internal information and make a good connection with the supply chain. At the same time, customers can find their favorite products through the data interface, and can also see the certification of product quality and brand, thereby increasing the user experience and ensuring the authenticity of the product. Relevant staff should distinguish according to the requirements of consumers, collect relevant information of customers in time and improve the quality of service, and replace traditional advertisements with authentic advertisements.

Establish a decentralized trading platform, which is very different from the e-commerce platform, mainly through the third-party management of operating costs to collect fees, to achieve a peer-to-peer shopping model; the main advantage of this shopping model is to avoid the phenomenon of fraud in e-commerce companies. In this way, through the blockchain consensus mechanism, a multi-consumer co-management model and a common supervision mode can be used to reduce costs and increase the benefits brought by customers. The blockchain-based cross-border e-commerce business integrated service platform system, as shown in Figure 2.

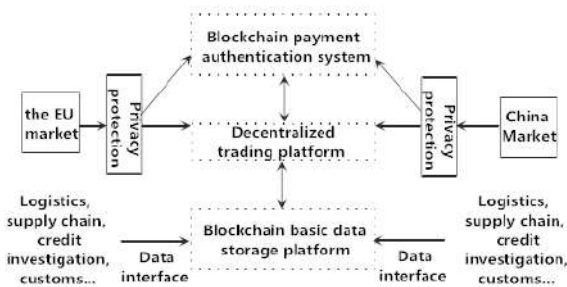


Figure 2. Blockchain-based Cross-border E-commerce Business Integrated Service Platform System

### 4.2.2 Blockchain Credit Risk Management System

#### (1) Existing Problems in E-commerce Credit Risk Management

In the e-commerce market, there will always be a credit crisis. Therefore, the Chinese government and related enterprises have continuously improved the electronic morning credit risk management system. However, the life cycle of SMEs in the Chinese market is relatively short. To establish a sound credit risk management system, it is necessary to adhere to efficient, transparent,

rigorous and comprehensive development, not only to protect personal privacy, but also to abandon the traditional e-commerce practices. Introduce the blockchain consensus mechanism from the technical level to build a China-Europe cross-border e-commerce credit risk collaborative management system.

#### (2) Effective Solutions

Focus on creating a blockchain basic data storage platform. This platform can mainly achieve the purpose of information sharing, ensure the authenticity of data, and cannot tamper with relevant information of data. At the same time, we must also establish a cross-border credit information platform, mainly relying on the blockchain consensus mechanism to objectively collect merchant and customer credit information. The establishment of a public credit service center to ensure the completion of credit inquiry and credit guarantees, and a series of assistance and coordination work on the basis of perfect system. The credit risk management system of the blockchain is shown in Figure 3.



**Figure 3.** Blockchain Credit Risk Management System

### 4.2.3 Blockchain Intelligent Supply Chain System

#### (1) Existing Problems in the Supply Chain

At this stage, the development of cross-border e-commerce supply chain is relatively backward. Therefore, relevant personnel should develop and innovate the integrity of e-commerce. Compared with European suppliers, the main problems are life cycle, lack of work experience, no brand effect, and no perfect supply management. Although China's low-cost suppliers have a solid position in the domestic market competition, in the process of perfecting the supply chain, the company's healthy and sustainable development is guaranteed. At present, the China-Europe cross-border supply chain of has remained at the supply stage and has been innovated for its reputation. In order to win the competitiveness and development goals of the market, the cross-border supply chain should adhere to the development principles of informationization, branding, efficiency and service, to ensure that consumers can experience and obtain

high-quality services from merchants, and after-sales services of high-quality goods.

#### (2) Effective Solutions

At present, the establishment of the blockchain basic data storage platform and the sharing of data information are mainly based on time stamp technology. On this basis, the information traceability platform is established and improved, mainly for the raw materials to the production and processing, and then in the various sales links, there must be evidence to follow to ensure the reliability of China-Europe product standards and certifications, contractual technology should be adopted for filing. In the use of blockchain traceability anti-counterfeiting features to build a supply chain tracking platform, relevant staff should integrate and unify relevant information. If there is a problem, you should combine the preset instructions and then impose a penalty. It is best to set up a supply chain collaboration center so that it can ensure a consensus mechanism, establish an effective communication platform, promote the connection between the various platforms, and ensure the openness of the data.

### 5. Conclusion

In a word, in various industries, blockchain technology brings significant innovation, traditional fast virtual payment, and serves online e-commerce virtual transactions, which is the best evaluation of the blockchain. At present, with the continuous development of science and technology, cross-border e-commerce is also developing, mainly relying on the characteristics of centralization and trust, creating a new ecological environment for cross-border e-commerce. This paper mainly analyzes the core technology of blockchain, mainly adopting distributed consensus algorithm, asymmetric encryption technology, timestamp technology and point-to-point networking. Combining the problems of cross-border e-commerce integrated services, the problems of e-commerce credit risk management and the problems of supply chain, the paper draws effective measures to improve and perfect the problems of e-commerce. Promote cooperation between China and Europe in cross-border e-commerce, thereby improving synergy and innovation capabilities, laying the foundation for the development of cross-border China-Europe e-commerce, and providing new ideas and impetus for development.

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## ARTICLE

# Construction of Enterprise Financial Management System Based on Comprehensive Budget Management

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### ABSTRACT

Economic development and social progress have put forward new requirements for the construction of corporate financial management system, and the role of comprehensive budget management has become more and more significant, which has been highly valued and paid attention within the enterprise. Based on comprehensive budget management, it can promote the smooth development of daily business activities of the enterprise, continuously improve the level of financial management, create favorable conditions for the construction of the financial management system of the enterprise, and promote the realization of the strategic goals of the enterprise. This paper mainly discusses the construction of enterprise financial management system based on comprehensive budget management, and focuses on some targeted improvement measures.

## 1. Introduction

In the process of continuous development of enterprises, based on the perspective of comprehensive budget management, the construction of corporate financial management system is the most important, which plays an incomparable role and advantage in improving the management level and achieving the strategic goals of the enterprise. In the modern market, the competition situation is intensifying. If enterprises want to have a place in the fierce competition in the industry and gain a higher competitive advantage, they must strengthen the construction of the financial management system and integrate comprehensive budget management. In this way, the efficient use and configuration of enterprise resources can be realized,

giving enterprises a new vitality and vitality.

## 2. The Concept and Characteristics of Comprehensive Budget Management

### 2.1 Connotation Overview

A comprehensive budget can fully reflect the financial plan of the company's business activities in a specific period in the future, aiming to achieve the target profit of the company. Based on the sales forecasting perspective, forecast production, cost and cash receipts and payments, and strengthen the preparation of cash flow statements and balance sheets to reflect the financial status and operating results of the company. Comprehensive budget

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management is one of the important methods for internal management control of enterprises, and has become an important management tool, which covers many functions such as control, incentive, evaluation, etc. It runs through all aspects of the business strategy and plays an important role in the internal control of the enterprise.<sup>[1]</sup>

## **2.2 Characteristics**

### **2.2.1 Comprehensiveness**

Firstly, for the whole staff, it mainly means that in the process of budget formulation, all personnel of the enterprise should actively participate in it and decompose into two aspects: First, the budget goal is decomposed into various departments and management levels. In order to facilitate the participation of all employees, establish a high degree of cost and benefit awareness; second, the participation of the department in the budget process reflects the allocation and control of resources by various departments. Through the budget, the enterprise resources are reasonably distributed among various departments of the enterprise.

Secondly, for the whole process, it mainly refers to the process of formulating budget standards, budget preparation, budget execution and budget evaluation. In the actual implementation process, the relationship between accounting system and budget management is closely related and inseparable, and the budget execution process is also the accounting process. Strengthening the construction of the budget early warning mechanism, through the accounting system, the problems existing in the budget execution can be fully reflected, and the budget plan is constantly adjusted to give play to the incentives for business operations, thereby promoting the smooth development of business operations.

### **2.2.2 Mechanism**

Through the budget to strengthen internal management, and achieve a smooth transition from budget to management means, greatly reflecting the role of comprehensive budget management. For budget management, it is necessary to conduct an in-depth analysis of the market mechanism and continuously improve it in conjunction with the internal organizational structure.

## **3. Common Problems in Enterprise Financial Management**

### **3.1 Unreasonable Setting of Budget Management Organization**

Generally speaking, the budget management committee, the budget preparation office, and the budget appraisal

office are important components of the overall budget management organization structure. However, in some enterprises, the organization setting is relatively unreasonable, mainly reflected in: First, lack of perfection Budget management organizational structure. The lack of review institutions is reflected in the external supervision of the entire process, and also reflects the role of budget operators in the supervision and control of knowledge; secondly, the lack of a reasonable budget management organization. For a long time, business managers have not attached great importance to budget management. In the actual budget preparation process, most of them have led the Finance Section to lead various departments. However, the degree of attention of unit leaders is insufficient, and budget management shows a trend of formal development, making it difficult to achieve strategic goals. For comprehensive budget management, it is one of the comprehensive management activities, which requires the enterprise sales department and procurement department to actively participate in it. It is difficult to complete the comprehensive budget management task with the help of the finance department only.<sup>[2]</sup>

At the same time, due to the lack of a reasonable budget management agency, it is difficult to reflect the comprehensiveness of budget preparation. For budgeting, the Finance Section and members of various departmental units are required to actively participate in it, continuously improve the comprehensiveness of the budget, and ensure the accuracy and rationality of budget execution. However, in practice, the budget examination office is not reasonable in the actual implementation process. Because the relationship between the budget assessment and the reward and punishment mechanism is inseparable, its incentive effect is significant. However, if only the audit department is used to assess the budget execution, it will easily lead to the generality of the audit department's assessment. In fact, only the budget and the actual deviation rate are assessed, and the comprehensiveness and timeliness of budget preparation are not reflected.

### **3.2 The Goal of Budget Management Is Not Clear Enough**

In budget management, the focus is on prior planning and planning the future behavior of the company, and also to rationally allocate many resources within the enterprise. Through the implementation of budget management, in the normal operation of the enterprise, combined with the established goals, it can promote the realization of the strategic goals of the enterprise. However, at this stage, some enterprises in the actual implementation process, too much emphasis on the financial goal of the budget, no in-

dicators to assess the business objectives, it is very prone to short-sighted financial goals. At the same time, some companies only make financial goals based on accounting perspectives, so the realization of financial goals lacks good value support. Due to the serious lack of guidance on strategic objectives, coupled with the short-term impact of budget targets, some companies have set strategic goals, but budget targets are difficult to integrate with strategic goals. In turn, the budget goal is too much emphasis on short-term economic activities, which is not conducive to the long-term development of enterprises.

### **3.3 Poor Implementation of the Responsibility for Financial Management**

The causes of many problems are mostly caused by organizational problems and lack of clear division of responsibilities. For example, "For the budget for purchasing a camera, there is no provision for subordinate office preparation and camera usage. Therefore, in the actual budget management process, the lack of clear budgeting main body and the smoothness of the process connection are also seriously insufficient. The reason for this phenomenon is inseparable from the lack of clear division of duties.

In the management division of labor, if there is a lack of responsible departments, it will easily lead to the emergence of management vacancies; If more than two departments in the same budget are being prepared, there may be a lack of clear division of labor and division of responsibilities, which can be summarized as a result of budget organization.

### **3.4 Financial Management Lacks Information System Support**

In the process of implementing comprehensive budget management, informatization is also a crucial part. In-depth analysis of many processes, such as preparation, evaluation and review, and careful calculation and evaluation, is difficult to meet the requirements of modern enterprise management by means of manual means. At this stage, some companies' financial departments and audit departments have widely applied EXCEL tools to manage their budgets. However, it is difficult to timely report important information, and it is difficult to achieve effective management and control of the budget. This is mainly reflected in:

Firstly, some businesses are difficult to manage dynamically through EXCEL. Due to the lack of budget data sharing and process management platform construction, budget management efficiency cannot be effectively im-

proved; secondly, in the process of constructing the budget target model, the required workload is relatively large, and EXCEL is difficult to meet the actual needs; finally, the process interaction of the accounting system is seriously lacking; at this stage, some enterprises have applied the NC accounting calculation process. When calculating the data, it is necessary to export the tables in the system, and then fill in the form to calculate the calculation form of the table, which is not combined with the financial accounting system.

### **3.5 Failure to Establish a Sound Assessment and Incentive Mechanism**

#### **3.5.1 Lack of a Sound Assessment System**

For the evaluation and evaluation system standards, its technicality and unity are seriously lacking. If the assessment is not consistent with the actual situation, it is difficult to implement its own estimated accounting control, and the expected accounting control is ineffective. Due to the lack of a sound evaluation mechanism, it has been fully reflected in economic performance indicators and monthly budget management assessment indicators.

#### **3.5.2 Lack of a Reasonable Economic Performance Assessment System**

In the operational results accounting system, if the estimated accounting control data is added, in fact, the role of the accounting audit assessment is not fully realized. In all the auditing systems, it is expected that there will be a small proportion of accounting controls, which is far from the reward effect, and it is difficult to reflect the role of the accounting audit.

#### **3.5.3 Lack of a Sound Incentive System**

At this stage, the reason for the incentives for corporate budget management is difficult to reflect is the budget slack. For budget slack, it is difficult to closely combine budget goals with strategic goals, and the control role of budget management is difficult to play.

## **4. Construction of Enterprise Financial Management System Based on Comprehensive Budget Management**

### **4.1 Set up a Dedicated Comprehensive Budget Management Agency**

#### **4.1.1 Build Working Mechanism**

Based on the budget management organization, enterpris-

es should strengthen the construction of corresponding working mechanisms and equip them with corresponding working forms and procedures. For example, with the help of regular meetings, budget compilers can be actively involved. In practice, due to the lack of a suitable form of work, it is very easy for the finance department to complete the work independently. Generally speaking, comprehensive budget management has a great impact on many aspects of business management. The budget management agency should play its own role and give relevant departments some help in budget management.<sup>[3]</sup>

#### **4.1.2 Add a Budget Review Agency**

For the whole process of budget management supervision, it can also be called budget review. The content of the review mainly includes: First, reviewing the budget purpose can avoid bad behavior in the budget preparation department; second, review the budget execution process, supervise and control the estimated accounting, and need to determine the corresponding responsible units; third, reviewing budget incentives and penalties can implement the principle of fairness in the review of expected accounting and guide employees to increase their enthusiasm for participation in the implementation budget.

#### **4.2 Clarify the Goal of Comprehensive Budget Management**

Firstly, in the process of setting goals, we must reflect the strategic management objectives of the enterprise. By building a corporate strategic goal, it is required to unify all functional departments of the enterprise to ensure consistency of all employees. Therefore, in the process of building a corporate strategic goal, it is necessary to conduct an analysis based on the strategic height of the enterprise, implement comprehensive budget management, and continuously refine and decompose budget targets, thereby ensuring a steady improvement of enterprise management efficiency.

Based on the target profit perspective, the company's overall budget is compiled through the integration of business, capital and information. Through comprehensive budget analysis and budget tracking, we will build a performance appraisal framework including cost and investment to ensure that the company's business activities are consistent with the established plan of the overall budget.

Secondly, cultivate the core competence of the enterprise, it is necessary to maintain close contact between various departments within the enterprise, and the senior management of the enterprise must also strengthen the cultivation of core competence. The implementation of

comprehensive budget management should combine the factors of improving core competitiveness. In the process of constructing the actual budget target, it is necessary to conduct an in-depth analysis of the position of the company in the market and forecast and analyze the market in the long run.

#### **4.3 Divide the Rights and Responsibilities of Comprehensive Budget Management and Carry out Centralized Management**

For the business indicators of the enterprise, it is necessary to continuously refine and determine the first responsible person. Each department must implement its budget goals in conjunction with its own content. In the process of preparation and implementation of the budget, it is necessary to have a corresponding responsible department, which fully reflects the budget implementation of its own department. The enterprise budget management committee is the decision-making department. In actual work, it is difficult to exert the supervision and management functions. Therefore, before the preparation of the competent department, it is necessary to carry out a good budget review, and also to play its own supervisory function, responsible for handling the budget plan of its own department. Therefore, in the actual budget control process, the reporting process should be standardized. In the process of reporting the budget to the department, the budgetary management department budget personnel should calculate the various expenses and determine whether there is an annual budget. In the case of a budget, the finance staff should fill in the documents and implement them in conjunction with the corresponding standardization process.

#### **4.4 Improve the Feedback Mechanism of Budget Management and Strengthen the Implementation of Financial Management**

In budget management, in order to promote the smooth completion of budget work, we must pay attention to information feedback, so companies must continuously refine the feedback mechanism of budget execution and improve it. Strengthen communication and collaboration between the upper and lower levels, especially the finance department and other grassroots units. The grassroots responsibility budget unit shall report the budget implementation in a timely manner, and the superior management department shall report it back to the responsible party at the grassroots level.

The Enterprise Budget Management Committee shall conduct regular budget work meetings to conduct in-depth analysis and discussion on whether budget revisions or

follow-up implementation plans are required. All budget-responsible departments should strengthen the construction of budget work accounts. The department heads should record the accounts in a timely manner and report them to the higher-level departments in time, so that the department heads can fully understand the work of the department.

#### **4.5 Strengthen the Construction of Financial Management Information and Realize Real-time Control of Budget Execution**

Firstly, it is necessary to strengthen the application of UF financial software, increase the development of the budget management branch module, and perform the compilation and summary analysis in the budget management work in real time. Combined with the needs of enterprise managers, through the financial NC accounting system, it is possible to accurately screen out important information and automatically generate chart analysis in combination with the needs of the enterprise, thereby realizing budget management data and informationization.

Secondly, the budget management control node can be moved forward through approval before the budget is executed. In the computerized system, for the use of the subsidiary's expenses, dynamic supervision and management should be carried out. For example, the budget advancement is very close to the cost limit, and the system will automatically prompt it to effectively control the over-standard phenomenon beforehand, realizing pre-existing management.

#### **4.6 Deepen Budget Management and Strengthen Effective Communication among Various Departments in the Process of Financial Management**

In the implementation of budget management work, it is necessary to continuously communicate to improve the budget preparation work. After the higher level releases the budget preparation notice, the lower level must communicate effectively during the process of preparation. Therefore, in the budget preparation, it is necessary to strengthen the application of the "up and down" approach. Before the budget is prepared, each department must do a good job in collecting information and communicate and discuss the budget-related content. In the process of reporting the budget, the business personnel should maintain close contact with the financial personnel to ensure a high degree of integrity in reporting the budget information. After the budget target is released, budget preparation is carried out and reported in a bottom-up order.

#### **4.7 Improve the Assessment and Incentive Mechanism Based on Comprehensive Budget Management**

In the overall budget management, we must give full play to the incentives of budget management. First of all, in the early stage of budget preparation, employees should be guided to participate actively and make their own opinions and suggestions. Moreover, employees must participate in the formulation of budget plans, establish a high sense of responsibility, and increase the enthusiasm for participating in budget work. Second, we must clarify the concept of assessment and reward and punishment management. Through corporate rewards and punishments, it aims to ensure employees' high work enthusiasm and good reward and punishment measures, which can fully exert their work abilities.

Among them, the monthly budget assessment indicators of various departments of the enterprise should cover the budget implementation. The enterprise budget management committee shall conduct regular budget completion meetings. The finance department shall conduct an effective analysis of the completion of the monthly budget, and in order to ensure the smooth implementation of budget management, enterprises shall establish an internal audit department to supervise and audit the budget implementation.

### **5. Conclusion**

In short, based on comprehensive budget management, it is especially important to build a corporate financial management system, which can promote the smooth development of business operations, realize the efficient allocation of various resources of the enterprise, and achieve the strategic development goals of the enterprise as a whole.

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## ARTICLE

# Analysis on the Reform and Innovation of Enterprise Human Resource Management

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### ABSTRACT

Judging from the current development of China's enterprises, there are many shortcomings and problems in the management of human resources in enterprises, which have a certain impact on the economic benefits of enterprises. Therefore, in order to effectively improve the economic advantages of enterprises and promote the stable development of enterprises, it is imperative to analyze the reform and innovation of human resources management.

## 1. Introduction

At present, China's social and economic system is constantly reforming, and competition in all walks of life is becoming fiercer. In order to be invincible in the trend of competition, enterprises need to continuously enhance their competitive advantages and strengthen their comprehensive strength. But the competition between enterprises can be seen as the competition between human resources. Therefore, enterprises need to constantly improve the human resource management system of enterprises, attract high-quality talents, and formulate scientific and rational human resource management programs, so that employees can fully exert

their subjective initiative and effectively improve work efficiency.

## 2. The Relationship between Enterprise Human Resource Management and Enterprise Economic Development

In the process of development, human resource management occupies a more important position. In order to better play the role of human resource management and realize the optimal allocation of human resources, enterprises need to attach importance to the management of human resources. Resources are used scientifically and rationally to improve the economic benefits of enterprises.

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es. If the enterprise does not make good use of human resources in the process of development, it will have a certain impact on the economic benefits of the enterprise, and it will hinder the value of human resource management. Therefore, enterprises need to scientifically develop human resources. The management enables enterprises to effectively enhance their competitive advantages and improve economic efficiency.<sup>[1]</sup>

Objectively speaking, in the process of development, human resources will not only have a certain impact on the economic benefits of enterprises, but also have a certain impact on the technology and capital of enterprises. The economic benefits of enterprises are composed of human resources, technology and capital. Therefore, scientific human resource management can effectively improve the efficiency of employees, thus creating higher value for the enterprise. In the process of enterprise economic development, human resources will not only have a more positive impact, but also have a corresponding negative impact.

In the process of enterprise development, we can attach importance to human resource management, combine it with relevant management systems, and improve the reward mechanism, which can effectively improve the efficiency of employees, and thus enhance the human capital stock of enterprises. However, if enterprises fail to pay attention to the importance of human resource management to enterprises, they will have certain negative impacts, leading to the loss of talents, reducing the enthusiasm of employees, reducing work efficiency, and thus affecting the economy of enterprises. Therefore, enterprises should judge the human resource management from many aspects, and clarify the significance of human resource management to the development of the enterprise, so that the value of human resources can be visually displayed through the economic benefits of the enterprise.<sup>[2]</sup>

### 3. Existing Problems in Enterprise Human Resource Management

#### 3.1 The Backward Human Resource Management Method

Judging from the current situation of human resource management in China's enterprises, most enterprises lack a perfect human resources management system, and there are deficiencies and problems. Firstly, most enterprises lack long-term planning when conducting human resource management, and there is no long-term plan for the future development of the company. And the lack of attention to the human resources management of

enterprises leads to the irrational management of human resources, which makes the high-quality talents of enterprises shortage and hinders the stable development of enterprises. Secondly, most companies lack comprehensive human resource management procedures and are not systematic and law enforcement.

In addition, from the perspective of the current scale of Chinese enterprises, SMEs (small medium enterprises) occupy a dominant position and are subject to various factors. These enterprises usually ignore employee training, and do not have reasonable procedures for human resource management, and do not pay attention to laws and regulations. There are often violations such as lengthening the trial time of employees. Finally, some companies adopt a family-based human resource management model, which is not conducive to the recruitment of employees, and it has a certain inhibitory effect on the enthusiasm of the employees.<sup>[3]</sup>

#### 3.2 Lack of Perfect Human Resource Management Reward Mechanism

At present, most enterprises in China lack a perfect human resources management reward mechanism. At the same time, enterprises pay too much attention to business indicators, neglect the constraints of human resource management and incentive mechanisms, and even some enterprises do not have constraints and incentive mechanisms, and a small number of enterprises have only issued basic wages to employees. Although some enterprises have established relevant reward mechanisms, they have not fully exerted their substantive functions. The relevant systems formulated have not been effectively implemented and their implementation is low. For example, when the company is on legal holidays, the employee's welfare and subsidies have not been effectively implemented, which has reduced the employee's work enthusiasm to some extent.<sup>[4]</sup>

#### 3.3 Lack of Awareness of Human Resource Management

In the process of selecting and appointing talents through human resource management, enterprises need to formulate reasonable systems related to them according to relevant scientific policies so as to better promote the economic development of the enterprise, enhance the driving force of enterprise development, maximize the role of human resource management, and lay a good foundation for the stable development of the enterprise. Therefore, in the process of development, enterprises need to pay more attention to human resource manage-

ment, correctly understand the significance of human resource management, and fully clarify the positive role of human resource management in the process of enterprise development. In the process of development, human resources occupy a very important position, not only can effectively enhance the competitiveness of enterprises, but also provide a good guarantee for enterprises to strengthen their own strength.

However, judging from the current actual development of enterprises, most enterprises do not recognize the importance of human resource management and lack human resource management awareness. In the process of enterprise management, human resource management is not placed at the core position, and the material resource management of the enterprise is over-emphasized, which makes the development of human resources management work hindered.<sup>[5]</sup>

### **3.4 There Are Differences in the Level of Human Resource Management**

With the rapid development of China's economy and the continuous reform of the social and economic system, the government has also continuously reformed this issue. Due to the certain complexity of the employment pattern in China, the situation of enterprises is different, and the level of human resources management is also different. Judging from the current situation of enterprise human resources management, some enterprises pay more attention to the cultivation of talents, regularly organize professional skills training for employees, and improve the overall quality of employees, so as to promote the promotion of economic efficiency of enterprises. However, some enterprises have not realized the importance of human resource management for enterprise development, neglecting the important position of human resource management in the process of enterprise economic development, and then the situation of different levels of human resource management.

## **4. Reform and Innovation Measures of Enterprise Human Resource Management**

### **4.1 Innovate Human Resource Management Model**

With the continuous development of science and technology and the advent of the era of network globalization, computer technology has been integrated into people's daily life, and the application of computer technology can be seen everywhere in the work. Therefore, enterprises need to keep pace with the times, integrate human

resources management into information technology, and make human resource management tend to develop digital and data informatization. In this process, enterprises can first register the employee's personal information, use information technology, establish a complete database, and store employee information in the database. At the same time, the database needs to be stored confidentially to prevent the leakage of employee personal information. In addition, the Internet can be integrated into the human resource management system by means of the efficiency and integrity of the Internet. Through the use of the data transmission function of the Internet, employees can be trained in relevant training, and reward mechanisms can be established to conduct performance evaluation, thereby perfecting the human resources management system and laying a good foundation for the enterprise to carry out scientific and rational human resource management. At the same time, enterprises can also make full use of Internet technology to expand their positive role and achieve optimization, which enables the Internet to serve and manage human resource management, effectively improve the efficiency of human resource management, enhance the competitiveness of enterprises, and promote the stable development of enterprises.<sup>[6]</sup>

### **4.2 Establish a Reasonable Reward and Punishment System**

In general, human resource management is to optimize the allocation of human resources, so as to improve the efficiency of human resource utilization, maximize the subjective initiative and enthusiasm of employees, and effectively improve the efficiency of employees, thereby providing talent protection for the stable development of the company in the future.

From the current market development situation, enterprises can properly establish a scientific and reasonable reward and punishment system to maximize the utilization of human resources, fully explore the potential of employees, and stimulate the enthusiasm of employees, which enables employees to create positive value for the company to the greatest extent, while at the same time improving material security for itself. In the process of establishing a scientific reward and punishment mechanism, enterprises can appropriately adopt the material reward and punishment incentive mechanism, and combine the employee's work performance to make reasonable material rewards and punishments for employees. In this process, companies need to pay attention to adopt differentiated rewards and punishments to avoid the average reward and punishment situation. For example, enterprises pay wages and bonus benefits to employees,

and need to make reasonable rewards and punishments for employees' material income according to their work performance, so as to effectively mobilize employees' work enthusiasm, give full play to subjective initiative, effectively improve production efficiency, and enable employees to increase their confidence in the company.

In the process of implementing material incentives, enterprises can effectively improve the enthusiasm of employees, which shows that the reward system plays an active role in the development of enterprises. In addition, spiritual motivation can also meet the spiritual needs of employees and recognize the value employees create for the company. For example, an enterprise can award an honorary title to an employee who creates greater value for the enterprise, affirm the value created by it, and give important work to it to express its trust in the employee. At the same time, appropriate criticism is given to employees who perform poorly, thus effectively improving the enthusiasm of the overall staff and providing a solid strength for the development of the company. In addition, in the process of formulating the reward system, enterprises need to pay attention to adopting a variety of reward and punishment incentive systems to ensure the fairness of the system, thereby effectively improving the enthusiasm of employees, so that employees can fully exert their subjective initiative, which lays a good foundation for the development of human resources management and achieves the goal of maximizing the allocation of human resources.

### 4.3 Correctly Understand the Importance of Human Resource Management

In the process of enterprise development, human resource management needs to follow the humanized management principles, and also needs to pay more attention to talents. Correctly understand the importance of human resource management, understand the positive role of human resource management in the development of enterprises, regard talents as an important part of enterprise development, and put human resources management at the center of enterprise management so as to achieve the optimal allocation of human resources, effectively mobilize the enthusiasm and enthusiasm of employees, so that they can play a subjective initiative, fully tap the potential of employees, and create greater value for the enterprise. In addition, in the process of managing human resources, enterprises need to pay attention to the concept of humanized management, give appropriate trust and dependence to employees, give full play to the value of human resources, and effectively promote the stable and sustainable development of enterprises.<sup>[7]</sup>

### 4.4 Innovate in the Development Plan of Human Resource Management

In the process of development, in order to be able to stabilize long-term development, it is necessary to make rational planning for the human resources management system. At the same time, the company's work responsibilities and staff training and other work are scientifically planned and strictly implemented. Relevant goals and tasks are set for each stage of the plan, so that employees can fully understand their work goals and job responsibilities. In addition, enterprises need to create a good working atmosphere for employees based on their own development, and provide a large space for development, so that employees can effectively improve their enthusiasm. At the same time, In the process of human resource management, enterprises should also incorporate information technology to effectively improve the efficiency of human resource management, ensure the quality of employees' work, and help employees to enhance their sense of independent innovation, thus effectively promoting enterprises to improve economic efficiency.<sup>[8]</sup>

## 5. Conclusion

In summary, enterprise human resource management has certain complexity and systemicity. If enterprises want to be invincible in the fierce competition, they need to carry out innovative reforms on human resource management. In the process of innovating human resource management, enterprises also need to combine the development of the enterprise itself, sum up experience, and timely discover the problems existing in the process of innovation reform and make reasonable solutions, thereby effectively improving the competitive advantage of enterprises, promoting enterprises to improve economic efficiency, and laying a good foundation for the stable development of enterprises.

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**ARTICLE****Research on the Development of Jiangsu Textile Industry Based on Input-Output Analysis Method****An Lu Jian Wu\* Liang Liu Min Zhang Shuai Li**

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**ABSTRACT**

Based on the latest 2012 input-output data of Jiangsu Province, this paper uses MATLAB-assisted calculation to quantitatively analyze the industrial ripple effect and industry type of textile manufacturing industry in Jiangsu Province. The research results show that the textile manufacturing industry in Jiangsu Province is a type III final demand industrial sector; the current value added of textile manufacturing in Jiangsu Province is low; the textile manufacturing industry's influence coefficient  $e_i$  and induction coefficient  $e_j$  are higher than the social average.

**1. Analysis of Total Output of Textile Manufacturing Industry in Jiangsu Province**

The input and output tables for Jiangsu Province in 2017 are still in the statistics, and the latest complete data is the 2012 input-output table. As shown in Figure 1: In 2005, the total output of textile manufacturing in Jiangsu Province reached 35,813,839,500 million yuan. By 2007, the total output of the textile manufacturing industry reached 50,22,975.61 million yuan,

an increase of 40.25% over the same period of 2005. By 2012, the total output of textile manufacturing in Jiangsu Province reached 6,664,445,500 million yuan, an increase of 32.69% compared with the data in 2007. From 2005 to 2012, the total output of textile manufacturing in Jiangsu Province increased by 86.1% year-on-year. The textile manufacturing industry in Jiangsu Province has maintained a large scale in recent years.<sup>[1]</sup>In 2005, the textile manufacturing industry in Jiangsu Province accounted for 19.25% of the province's GDP. By 2012, the total output

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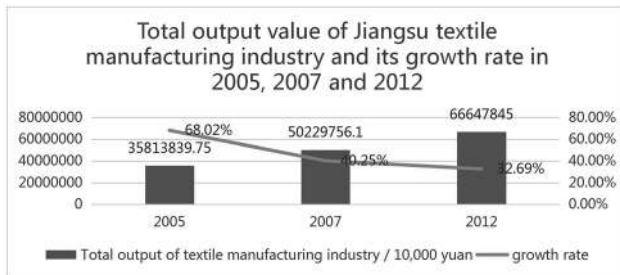
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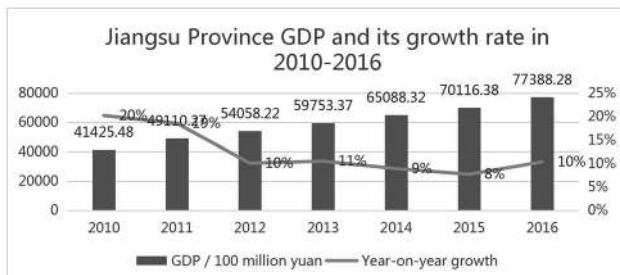
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of textile manufacturing industry accounted for the GDP of Jiangsu Province was 12.3%. Although it has declined year on year, it still has a large share. Judging from the GDP growth rate of Jiangsu Province in 2012, the GDP of Jiangsu Province in 2012 was significantly lower than that of 2011. The slowdown in the growth of textile manufacturing in Jiangsu Province in 2012 has constrained the growth rate of Jiangsu's GDP this year to some extent.



Source: National Bureau of Statistics

**Figure 1.** Total output value of Jiangsu textile manufacturing industry and its growth rate in 2005, 2007 and 2012



Source: National Bureau of Statistics related data measurement

**Figure 2.** Jiangsu Province GDP and its growth rate from 2010 to 2016

## 2. Analysis of the Ripple Effect of the Textile Manufacturing Industry in Jiangsu Province

When a certain industrial sector changes, this change will lead to changes in the industrial sector directly related to it along different industrial linkages, and changes in these related industrial sectors will lead to changes in other industrial sectors directly related to it. In turn, the influence gradually weakens, and this process is ripple effect. The degree of influence of one industrial sector on other industrial sectors is called influence, and the degree of influence of one industrial sector by other industrial sectors is called induction. [2] Analysis of the textile industry's industrial ripple effect in Jiangsu Province requires the use of Jiangsu's value-based input-output table to calculate the input coefficient table and the inverse coefficient table. The influence coefficient  $e_i$  and the induction coefficient  $e_j$

are calculated by the matrix determined by the input coefficient table and the inverse matrix coefficient table. [3]

### 2.1 Induction Coefficient Analysis

The induction coefficient is used to measure the degree of impact of an industry's response to changes in other industries. The calculation formula is as shown in equation (1):

$$e_i = \frac{\sum_{j=1}^n C_{ij}}{\frac{1}{n} \sum_{i=1}^n \sum_{j=1}^n C_{ij}} (i, j = 1, 2, \dots, n) \quad (1)$$

Where:  $e_i$  is the sensitivity coefficient of the  $i$  industry;  $i, j$  are the rows and columns in the input-output table;  $n$  is the number of industrial sectors;  $C_{ij}$  is the element in the column  $C$  of the Leontief inverse matrix coefficient ( $i, j = 1, 2, \dots, n$ ). From the input-output table of Jiangsu Province in 2012, the induction coefficient of 42 major industries in Jiangsu Province can be calculated.

If  $e_i > 1$ , it indicates that the demand for the industry is higher than the social average for each additional unit of output in the national economy. [4] The data in Table 1 shows that the induction coefficient of textile manufacturing industry in Jiangsu Province in 2012 was 1.02, slightly higher than 1, indicating that the textile manufacturing industry in Jiangsu Province had a slight impact on other industry changes.

**Table 1.** Table of Jiangsu Province Industry Induction Coefficients

Industry	Induction coefficient
Metal smelting and rolling processed products	4.349599896
Chemical product	3.673072135
Metal mining products	2.541016427
Coal mining products	1.741110874
Electricity and heat production and supply	1.599368905
Transportation, warehousing and postal services	1.519540246
Financial	1.321382297
Leasing and business services	1.313707955
Agriculture, forestry, animal husbandry and fishery products and services	1.245157315
Wholesale and Retail	1.215404917
Metal products	1.182858034
Paper printing and cultural and educational sporting goods	1.121861101
Oil and gas extraction products	1.066541545
Gas production and supply	1.063494193

Communication equipment, computers and other electronic equipment	1.058832769
Textile	1.0154514
Food and tobacco	0.992532268
Petroleum, coking products and nuclear fuel processed products	0.949632757
Electrical machinery and equipment	0.89983984
Non-metallic mineral products	0.893329361
General Equipment	0.850457171
Non-metallic minerals and other mining products	0.817890294
Waste scrap	0.741589805
Accommodation and catering	0.67915136
Wood processed products and furniture	0.606804087
Professional setting	0.581187023
Resident services, repairs and other services	0.52928799
Real estate	0.529109614
Information transfer, software and information technology services	0.527372968
Transportation equipment	0.517437767
Other manufactured products	0.475431415
Textile clothing, shoes and hats, leather down and its products	0.467810479
Instrumentation	0.442910387
Repair of metal products, machinery and equipment	0.433440675
Building	0.413948056
Scientific research and technical services	0.399484456
Water production and supply	0.386560677
Education	0.385913576
Culture, sports and entertainment	0.379723675
Health and social work	0.361481461
Public administration, social security and social organization	0.35480022
Water, environmental and public facilities management	0.354472613

## 2.2 Analysis of Influence Coefficients

The influence coefficient is used to measure the extent to which the production and supply of other industries change correspondingly when the production and demand of an industry change.

$$e_j = \frac{\sum_{i=1}^n C_{ij}}{\frac{1}{n} \sum_{i=1}^n \sum_{j=1}^n C_{ij}} (i, j = 1, 2, \dots, n) \quad (2)$$

Where:  $e_j$  is the influence coefficient of the  $j$  industry;  $i, j$  are the rows and columns in the input-output table;  $n$  is the number of industrial sectors;  $C_{ij}$  is the element in

the column  $C$  of the Leontief inverse matrix coefficient ( $i, j=1, 2, \dots, n$ ). From the input-output table of Jiangsu Province in 2012, the influence coefficient of 42 major industries in Jiangsu Province can be calculated.

If  $e_j > 1$ , it indicates that the influence of the industry sector is above average in 42 industries. The data in Table 2 shows that the influence coefficient of the textile manufacturing industry in Jiangsu Province in 2012 was 1.18, which has a strong driving effect on the economy of Jiangsu Province.

**Table 2.** 2012 Jiangsu Province Influence Coefficient Table

Industry	Influence coefficient
Metal mining products	1.610248269
Metal smelting and rolling processed products	1.415224825
Transportation equipment	1.414389258
Electrical machinery and equipment	1.359226555
Communication equipment, computers and other electronic equipment	1.346334206
Repair of metal products, machinery and equipment	1.317137552
General Equipment	1.302538657
Metal products	1.284285472
Other manufactured products	1.283469593
Instrumentation	1.278854866
Professional setting	1.275948815
Building	1.229510752
Gas production and supply	1.207059173
Wood processed products and furniture	1.18204446
Textile	1.177280286
Non-metallic mineral products	1.169520614
Textile clothing, shoes and hats, leather down and its products	1.154588215
Chemical product	1.142591204
Paper printing and cultural and educational sporting goods	1.116043964
Non-metallic minerals and other mining products	1.071342779
Electricity and heat production and supply	1.044597923
Scientific research and technical services	0.959629791
Health and social work	0.933051241
Food and tobacco	0.89563038
Culture, sports and entertainment	0.865939411
Resident services, repairs and other services	0.847037502
Transportation, warehousing and postal services	0.844592343
Coal mining products	0.839321666
Accommodation and catering	0.836808941
Water production and supply	0.805760011



Water, environmental and public facilities management	0.796695017
Information transfer, software and information technology services	0.787666955
Petroleum, coking products and nuclear fuel processed products	0.784678617
Leasing and business services	0.776313918
Financial	0.733392934
Agriculture, forestry, animal husbandry and fishery products and services	0.714323959
Public administration, social security and social organization	0.629841961
Real estate	0.550603191
Education	0.513826692
Waste scrap	0.513476133
Wholesale and Retail	0.511012951
Oil and gas extraction products	0.478158946

### 3. Analysis of the Types of Textile Manufacturing Industry in Jiangsu Province

According to the 2012 input-output table of Jiangsu Province, the intermediate demand rate and the intermediate investment rate of the industry can be obtained separately. The intermediate demand rate and the intermediate investment rate can be used to analyze the type of industry, as shown in Table 3:

**Table 3.** Schematic diagram of industrial three-dimensional structure

	Small intermediate demand rate	Large intermediate demand rate
large intermediate investment rate	III Final demand industry sector	II Intermediate product industry sector

**Table 4.** Intermediate demand rate of various departments in Jiangsu Province in 2012 (unit 10000RMB)

Industry	Intermediate demand rate	Total intermediate demand	Total output
Oil and gas extraction products	0.999122873	18938273.9	1053666.914
Non-metallic minerals and other mining products	0.987633538	21263542.79	2265445.072
Metal mining products	0.98712649	16621515.45	1163896.355
Repair of metal products, machinery and equipment	0.98204223	3713155.639	336183.6639
Coal mining products	0.977011058	30243925.05	3447888.35
Metal smelting and rolling processed products	0.954993897	254290304	154742095.4
Electricity and heat production and supply	0.926878523	45992144.38	45992143.95
Water production and supply	0.857885897	1145492.696	1141229.736
Waste scrap	0.855212781	17115805.29	17115805.1
Leasing and business services	0.841611569	52561926.44	43847183.57
Non-metallic mineral products	0.81272698	59841662.32	36948592.22
Metal products	0.765142856	51070842.23	49392966.07
Paper printing and cultural and educational sporting goods	0.760386412	35533518.61	26328378.83

small intermediate investment rate	IV Final demand-based basic industry sector	I Intermediate product-based basic industry sector
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The research results show that in 2012, the textile manufacturing industry in Jiangsu Province has a large intermediate investment rate and a small intermediate demand rate, which belongs to the final demand-oriented industrial sector.

### 3.1 Intermediate Demand Rate Analysis

The intermediate demand rate refers to the ratio of the intermediate demand of each industrial sector to the total demand of the industrial sector, as shown in formula (3):

$$G_i = \frac{\sum_{j=1}^n X_{ij}}{\sum_{j=1}^n x_{ij} + Y_i} (i, j = 1, 2, \dots, n) \quad (3)$$

Where:  $G_i$  is the intermediate demand rate of the  $i$ -th industry sector;  $\sum_{j=1}^n X_{ij}$  is the sum of the intermediate demand for the  $i$ -sector products of each department;  $Y_i$  is the final demand part of the products of the  $i$ -th industrial sector. From the 2012 Jiangsu Province Input-Output Table, the intermediate demand rate of 42 major industries can be calculated.

Since the “intermediate demand rate” + “final demand rate” = 1, the higher the intermediate demand rate of an industrial sector, the lower the final demand rate; the lower the intermediate demand rate of an industrial sector, the higher the final demand rate. These two cases represent two different industries, the first reflects the nature of the sector's raw materials industry, and the second reflects the nature of the sector's final product.

Other manufactured products	0.760323544	5467753.174	2704310.98
Transportation, warehousing and postal services	0.744120462	65017499.52	53707475.28
Petroleum, coking products and nuclear fuel processed products	0.725093426	31535431.05	23017271.95
Agriculture, forestry, animal husbandry and fishery products and services	0.700191123	66737284.44	57612890.8
Chemical product	0.694086345	269181668.6	219715247.5
Gas production and supply	0.673557535	4841091.31	3236689.47
Financial	0.62949255	58185088.8	57158987.96
Textile	0.601774435	71517111.39	66647844.94
Accommodation and catering	0.595098947	24931453.75	24898027.38
Resident services, repairs and other services	0.542457062	13447119.73	13197063.08
Wholesale and Retail	0.501472219	72602755.2	72602755.15
Wood processed products and furniture	0.479942337	22353398.96	18482246.5
Food and tobacco	0.465037454	65413447.21	54523386.81
General Equipment	0.452747804	83164346.35	64187499.72
Communication equipment, computers and other electronic equipment	0.409979716	221948322.9	169813878.9
Information transfer, software and information technology services	0.357883196	25240932.34	22089754.69
Electrical machinery and equipment	0.323799012	143268604.6	134722259.3
Instrumentation	0.249645392	32912047.09	27087819.04
Culture, sports and entertainment	0.240037418	6199004.145	5974807.97
Scientific research and technical services	0.233032521	15761916.75	14150397.45
Real estate	0.221774826	41737137.23	41185629.35
Transportation equipment	0.208487554	89267187.35	87339443.54
Professional setting	0.204889085	51511798.32	40669030.4
Textile clothing, shoes and hats, leather down and its products	0.144665276	44092172.34	43257442.4
Education	0.107439189	18414552.24	17993120.53
Water, environmental and public facilities management	0.088509786	5806457.632	5911074.903
Health and social work	0.041880788	15206691.12	14921699.15
Building	0.027746641	163994429.4	125590876.2
Public administration, social security and social organization	0.021266338	538819.5757	25175338.81

As shown in Table 4, the intermediate demand rate of the textile manufacturing industry in Jiangsu Province is 0.6, and the intermediate demand rate is relatively small, so it has the nature of the final product.

### 3.2 Analysis of the Intermediate Input Rate

The intermediate input rate refers to the ratio of the intermediate input to the total input in a certain period of time (usually one year) in an industrial sector<sup>[5]</sup>, as shown in formula (4):

$$F_j = \frac{\sum_{i=1}^n x_{ij}}{\sum_{i=1}^n x_{ij} + D_i + N_j} \quad (i, j = 1, 2, \dots, n) \quad (4)$$

Where:  $F_j$  is the intermediate input rate for the  $j$ -th industrial sector;  $\sum_{i=1}^n x_{ij}$  is the sum of the intermediate

demand for the  $i$ -sector products for each department;  $D_j$  is the full depreciation charge for the  $j$ -th industrial sector for one year;  $N_j$  is the value created by the  $j$ -th industrial sector. From the 2012 Jiangsu Province Input-Output Table, the intermediate input rate of 42 major industries can be calculated.

According to the "intermediate input rate" + "additional value rate" = 1, the higher the intermediate input rate of an industrial sector, the lower the value-added rate; the lower the intermediate input rate of an industrial sector, the higher the value-added rate.<sup>[6]</sup>

According to the data in Table 5, the intermediate investment rate of textile manufacturing industry in Jiangsu Province in 2012 was 0.8, and the added value was low, which was a high intermediate investment rate. Therefore, the textile manufacturing industry needs to optimize the industrial structure and increase the value-added rate in the future development.

**Table 5.** Intermediate investment rate of various industries in Jiangsu Province in 2012 (unit 10000RMB)

Industry	Intermediate investment rate	Total intermediate investment	Total investment
Metal mining products	0.842505078	980588.5891	1163896.355
Transportation equipment	0.835169321	72943223.78	87339443.54
Other manufactured products	0.822385912	2223987.252	2704310.98
Metal smelting and rolling processed products	0.820897947	127027468.4	154742095.4
Textile	0.797321042	53139729.2	66647844.94
Wood processed products and furniture	0.795739773	14707058.63	18482246.5
Petroleum, coking products and nuclear fuel processed products	0.792721068	18246276.4	23017271.95
Electrical machinery and equipment	0.792388656	106752389.9	134722259.3
Communication equipment, computers and other electronic equipment	0.787013	133645730.3	169813878.9
Metal products	0.779644309	38508944.9	49392966.07
Textile clothing, shoes and hats, leather down and its products	0.77451128	33503377.06	43257442.4
General Equipment	0.771946277	49549301.47	64187499.72
Gas production and supply	0.770251476	2493064.841	3236689.47
Non-metallic mineral products	0.767311265	28351071.05	36948592.22
Electricity and heat production and supply	0.758965162	34906435	45992143.95
Chemical product	0.756425744	166198269.6	219715247.5
Paper printing and cultural and educational sporting goods	0.755649976	19895038.85	26328378.83
Repair of metal products, machinery and equipment	0.755416373	253958.6439	336183.6639
Instrumentation	0.747292554	20242525.47	27087819.04
building	0.743613176	93391030.26	125590876.2
Professional setting	0.737982607	30013037.06	40669030.4
Non-metallic minerals and other mining products	0.708080997	1604118.606	2265445.072
Food and tobacco	0.691902348	37724859.35	54523386.81
Leasing and business services	0.648026684	28414144.96	43847183.57
Accommodation and catering	0.580203691	14445927.38	24898027.38
Scientific research and technical services	0.576392437	8156182.076	14150397.45
Transportation, warehousing and postal services	0.569760131	30600378.17	53707475.28
Culture, sports and entertainment	0.536710487	3206742.098	5974807.97
Coal mining products	0.532657419	1836543.308	3447888.35
Health and social work	0.516019609	7699889.361	14921699.15
Resident services, repairs and other services	0.512063397	6757732.946	13197063.08
Water, environmental and public facilities management	0.510550922	3017904.744	5911074.903
Water production and supply	0.5075405	579220.3103	1141229.736
Information transfer, software and information technology services	0.455067348	10052326.09	22089754.69
Financial	0.451265494	25793878.96	57158987.96
Agriculture, forestry, animal husbandry and fishery products and services	0.406679451	23429978.8	57612890.8
Public administration, social security and social organization	0.31944213	8042063.855	25175338.81
Real estate	0.273337752	11257587.35	41185629.35
Wholesale and Retail	0.214263978	15556155.15	72602755.15
Education	0.182755933	3288349.533	17993120.53
Waste scrap	0.177184355	3032652.879	17115805.1
Oil and gas extraction products	0.156985111	165410.0178	1053666.914

#### 4. Concluding Remarks

The share of total textile manufacturing output in Jiangsu's GDP has been declining this year, but the contribution of textile manufacturing to Jiangsu's economic development cannot be ignored. From the perspective of the influence coefficient, the textile manufacturing industry has a strong driving force for the province's GDP. Under the general environment of slowing GDP growth in Jiangsu Province, the textile and garment industry should play its positive role and drive a new round of growth in the Jiangsu economy. The added value of textile manufacturing in Jiangsu Province is low, and it is necessary to increase investment in technology, improve the operational efficiency of enterprises, and increase the added value of the textile manufacturing industry.

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## ARTICLE

# Analysis on the Efficiency of Anhui's Industrial Sectors under the Carbon Emission Constraints

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### ABSTRACT

This paper uses the SBM-DDF model to measure the green inefficiency of all kinds of industries in Anhui Province under the constraint of carbon emissions from 2006 to 2014. The results show that whether from the perspective of the overall industries in Anhui Province or from the perspective of separate industry groups, the sources of the green inefficiency are mainly from insufficient industrial output, followed by excessive emissions of CO<sub>2</sub>. The green inefficiency values of each group (from big to small) are sized down by high-emission industries, medium-emission industries and low-emission industries respectively. During the period of research, the effect of the emission reduction in high-emission industries was not significant, and the potential of reducing the green inefficiency in the medium-emission and low-emission industries by increasing the output was not large.

## 1. Introduction

Since the reform and opening-up, China's economy has developed rapidly, but the problem of environmental pollution is getting more and more serious. Especially in terms of carbon dioxide emissions, China's emissions in 2007 reached 6 billion tons, which accounted for 21% of the total global emissions. This means China has become the biggest carbon-dioxide emitter instead of the United States. In this paper, CO<sub>2</sub> emissions are introduced into the efficiency measurement framework as the undesirable output, and the SBM-DDF model is used to calculate the green inefficiency of Anhui's industrial sectors under the constraints of CO<sub>2</sub> emissions from 2006

to 2014. The input and output factors are combined to analyze the sources of the inefficiency. The study is of great significance for formulating energy-saving and emission-reduction schemes in Anhui Province of China.

## 2. Literature Review and Theoretical Basis

When it comes to dealing with undesirable output, the following methods are commonly used. The first method is to deal with the reciprocal of undesirable output as the desirable and then solve the problem in the classical DEA model, but this is contrary to the actual production process. The second method is to introduce undesirable output as traditional input into the model. In both meth-

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ods, variables are changed from output to input. Although the process of taking undesirable output as input allows for the constraints of environmental carbon, it violates the laws of physics and standard production theories, and leads to conceptual confusion as well; therefore, it cannot reflect the actual production process. The third type is the directional distance function method. Chung et al. (1997) proposed the directional distance function (DDF) when measuring the productivity of a Swiss pulp mill and explained that Shephard's output distance function is a special case of directional distance function<sup>[1]</sup>. Fukuyama & Weber (2009) proposed a directional distance function method based on slack measure on the basis of Tone's (2001) non-radial, non-angle and Slack-based measurement (SBM) efficiency measurement<sup>[2, 3]</sup>. It theoretically proves that when there is no slackness existing, the result of the directional distance function based on the slack measure is the same as the result of DDF. When slackness appears, the former's result will be larger than the latter's, indicating that the DDF model will overestimate the efficiency of the decision making unit.

The value calculated according to the directional distance function is the efficiency value or inefficiency value of various decision-making units on a static level, and it is needed to introduce productivity index in order to further study the evolution of the green efficiency over time and analyze the change of it according to the change of productivity index. Chambers (1996) developed the non-oriented Luenberger productivity index<sup>[4]</sup>. The difference between L and M-L productivity index is that the former is additive and the latter is multiplicative. Wang Bin (2010), Liu Ruixiang (2012), Li Ling (2012) et al. used L productivity index to do the dynamical analysis<sup>[5, 6, 7]</sup>.

Thus it can be seen that, although DDF model can well introduce undesirable output, for it's a radial and oriented way, it may overvalue the efficiency of decision-making units when slackness exists. The improved SBM-DDF model can solve this problem. This paper uses the SBM-DDF model to measure the green inefficiency of various industries in Anhui Province of China under the constraint of carbon emissions from 2006 to 2014, decomposes it based on the input and output elements and analyses in depth the evolution of different industry's green efficiency in Anhui province.

### 3. The Empirical Analysis

#### 3.1 Model Construction

This paper sets each separate industry as a decision making unit (DMU) and constructs an efficiency boundary with the input and output data of all DMUs, and then mea-

sures the distance between each DMU and the boundary, which is the inefficiency value of each DMU.

Since the efficiency boundary is in a piecewise linear form, the direction distance function is likely to be slack when measuring the degree of inefficiency, which can be simply explained in the following figure:

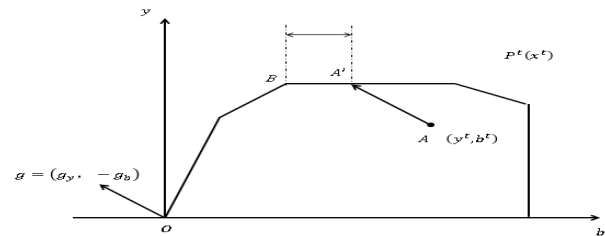


Figure1. Slack of directional distance function

Directional distance function measures the degree of inefficiency from point A to point A', but we can see clearly in the figure that A' is not efficient because the undesirable output is reduced without the reduction of the desirable one at point A', and to B, A'B is slack, so when slack exists, the measure of directional distance function can underestimate the inefficiency of decision making units, namely overestimate its efficiency. Aiming at this problem, Tone(2001) proposed Slack-based measure model (Slack-based measure, SBM)<sup>[3]</sup>, Fukuyama & Weber (2009) turned Tone's SBM model generally into a non-radial, non-angled directional distance function based on the slack measure (SBM - DDF)<sup>[2]</sup>. According to Fukuyama & Weber (2009) and Liu Ruixiang (2012)<sup>[2, 7]</sup>, the specific form of SBM - DDF can be expressed as follows:

$$S_V^t(x_i^t, y_i^t, b_i^t; g^x, g^y, g^b) = \frac{1}{3} \max \left( \frac{1}{N} \sum_{n=1}^N \frac{s_n^x}{g_n^x} + \frac{1}{M} \sum_{m=1}^M \frac{s_m^y}{g_m^y} + \frac{1}{K} \sum_{k=1}^K \frac{s_k^b}{g_k^b} \right)$$

$$s.t. \sum_{i=1}^I \lambda_i^t y_{im}^t - s_m^y = y_{i'm}^t, m = 1, \dots, M$$

$$\sum_{i=1}^I \lambda_i^t b_{ik}^t + s_k^b = b_{i'k}^t, k = 1, \dots, K$$

$$\sum_{i=1}^I \lambda_i^t x_{in}^t + s_n^x = x_{i'n}^t, n = 1, \dots, N$$

$$\sum_{i=1}^I \lambda_i^t = 1, \lambda_i^t \geq 0, i = 1, \dots, I$$

$$s_m^y \geq 0, s_k^b \geq 0, s_n^x \geq 0$$

(1)

We can get the inefficiency of the first i' decision making unit by solving the linear programming above, which means the first i' industry in this paper.  $(x_{i'}^t, y_{i'}^t, b_{i'}^t)$  represents

the input and output of the first  $i$ ' industry.  $(g^x, g^y, g^b)$  represents the direction of the decrease of input, the increase of desirable output and the decrease of the undesirable output, which is positive.  $(s_n^x, s_m^y, s_k^b)$  represents input and output slack of the first  $i$ ' industry. If the direction vector is evaluated as the observed value of each variable in each province, not only can eliminate subjective factors, but can also make the slack variable in the same unit with direction vector without data standardization process, so that the efficiency value of the input and output can be additive. The inefficiency can be decomposed continuously:

$$IE = S_v^t = IE_v^x + IE_v^y + IE_v^b \quad (2)$$

The inefficiency of input:  $IE_v^x = \frac{1}{3N} \sum_{n=1}^N \frac{s_n^x}{g_n^x}$ ; The inefficiency of desirable output:  $IE_v^y = \frac{1}{3M} \sum_{m=1}^M \frac{s_m^y}{g_m^y}$ ; The inefficiency of undesirable output:  $IE_v^b = \frac{1}{3K} \sum_{k=1}^K \frac{s_k^b}{g_k^b}$ .

In this paper, input includes labor, capital and energy sources; the desirable output is the total output of the industrial sector; the undesirable output is the carbon dioxide emissions of industrial sector. According to the specific input-output factors and formula (2), the inefficiency IE can be decomposed as:

$$IE = IE_{cap} + IE_{lab} + IE_{ene} + IE_{out} + IE_{co_2} \quad (3)$$

The bigger the inefficiency IE is, the smaller the green efficiency will be.

## 3.2 Data Selection and Processing

### 3.2.1 Selection of Variables

In this paper, the shown data of industrial sector in Anhui province is used for the analysis, the time span is set as the total nine years from 2006 to 2014. carbon dioxide emissions are regarded as the undesired output, the total output value of the industry as the desirable output, capital stock, labor input and energy consumption as input variables.

### 3.2.2 Processing of Data

Based on the average annual carbon dioxide emissions of various industries in the analysis period, industries that emit more than 10 million tons of annual emissions are classified as high-emission industries, including: thermal, power supply industry, nonmetal mineral products industry, ferrous metal smelting and rolling industry. The industries which emit between 100,000 tons and tens of thousands of tons of annual emissions are classified as

medium-emission industries, including: textile industry, electrical machinery and equipment manufacturing industry, non-metallic mineral industry, waste resource utilization industry, ferrous metal industry, chemical fiber industry, transportation equipment manufacturing industry, fabricated metal products industry, wine industry, beverage and refined tea manufacturing industry, wood processing and wood, bamboo rattan palm grass products industry, agricultural sideline products processing industry, food, general equipment manufacturing industry, rubber and plastic products industry, medicine industry, non-ferrous metal smelting and rolling industry, paper and paper products industry, the rest belongs to low emission group, including: computer communications and other electronic equipment manufacturing industry, furniture manufacturing industry, water production and supply industry, tobacco products industry, instrument industry, printing and recording media reproduction industry, non-ferrous metal industry, special equipment manufacturing industry, a total of 28 industries.

## 3.3 Green Inefficiency Result and Decomposition of Industrial Sector under Carbon Emission Constraints

We use the formula (1) and formula (2), build efficiency boundary interface with the value of current samples, select the sample value of each industry as a direction vector, standardize the slack of each input and output, calculate the green inefficiency of the industrial sectors in Anhui province (hereinafter referred to as inefficiency value) between 2006 and 2014 under the assumptions of variable return scale (VRS) and constant return scale (CRS). The average green efficiency of the industrial sector in Anhui province is 0.9768, while the inefficiency related to CO<sub>2</sub> is up to 0.3263, accounting for 34% of total inefficiency value. The inefficiency of output is up to 0.4876, accounting for 50% of total inefficiency value. Among the three elements of input, energy input contributes the most inefficiency, whose specific value is 0.1037, followed by capital investment 0.0337, and the least is labor input 0.0256, by picking out the contribution of energy input from the input factors and adding it together with the contribution of carbon dioxide, the added contribution inefficiency value is 0.4299, accounting for 44% of the total, the overuse of energy and excess of carbon dioxide emissions cause a greater degree of inefficiency, which suggests that energy conservation and emissions reduction is very important for the sustainable development of the industrial sector in Anhui province and insufficient industrial output and excessive carbon dioxide emissions are the main reasons for the inefficiency of the overall in-

dustrial industry in Anhui province. This is similar to the conclusion of the national industrial research by Song fan (2013)<sup>[8]</sup>.

Most of the industries whose inefficiency is bigger than the average of the whole province belong to heavy industry such as: non-metallic mineral products industry, ferrous metal industry, black metal smelting industry, general equipment industry, chemical fiber industry, electricity and heat production industry or polluted light industry such as: paper and paper products industry, printing media industry. But among such high inefficient industries, medical manufacturing industry, food manufacturing industry, beverage manufacturing industry and textile industry are also included. Decomposing the inefficiency of medical manufacturing industry, we can see clearly that the inefficiency of its output is 0.9918, contributing 72% to the total inefficiency, but as a high technology industry, it should have high added value, the output should not be the main source of its inefficiency, this paper believes that the possible reason for such a result may be that most of the added value of the medical manufacturing industry is absorbed by the circulation department and the profits from the final distribution to the medical manufacturers are not much and such kind of high technology enterprise also have to pay high research cost, so the output is not enough. For food manufacturing industry, beverage manufacturing industry, textile industry, the output is also contribute no more than 60% of the inefficiency value, especially for food manufacturing industry, it illustrates that this three industry is still in the low side of manufacturing. This consumption industry is in the low side of the industry sector, whose brand effect is not strong, which leads to its low added value and little profits.

The industries whose inefficiency value is smaller than the average of the whole province include agricultural food, communications computer electronic equipment, special equipment, wood processing, nonferrous metal, metal products, transportation, and electrical machinery and so on. Technology of electrical machinery industry is relatively dense, the its total inefficiency is lower for high added value, together with low carbon emissions, the calculation results also show that the inefficiency of its industrial output is 0.0527, and its output inefficiency in recent five years is 0, which shows that its output has reached a completely efficient standard. Although the level of inefficiency for Agricultural food, non-ferrous smelting, special equipment industry is not very high, their carbon dioxide emissions contribute more than 40% of the total inefficiency, especially for agricultural food, if the inefficiency value of the energy is added together, it will account for 60% of the total efficiency, which means

these industries seriously need energy conservation and emissions reduction.

Among the industries above, five industries with the lowest efficiency are: tobacco products industry, nonferrous metal smelting industry, electrical machinery manufacturing industry, instrument industry and waste resource industry. Electrical machinery manufacturing industry and instrument industries have high added value, low efficiency output low energy consumption and low carbon dioxide emissions. Tobacco products and furniture manufacturing are light industries and the tobacco products industry is controlled by the state. However, nonferrous metal smelting is a heavy industry with high energy consumption; it should be an inefficient industry. By decomposing the inefficiency according to input and output factors, we can find that the inefficiency of its output is 0.1289, which is the lowest except the electrical machinery, tobacco products, instrument, waste resources, the addition of inefficiency value of its energy and carbon dioxide emissions accounts for 68% of the total efficiency, which shows that the added value of nonferrous metal smelting industry is very high, but at the same time it still has the inefficiency problem of energy use and carbon emissions, which should also be as the focus of energy conservation and emissions reduction. The analysis shows that the characteristics of these industries are that the inefficiency of the total output is relatively smaller and the carbon dioxide emissions contribute most of the inefficiency.

From the perspective of different groups, the efficiency of the high- emission group is 1.2554, which is significantly higher than that of the other two groups, followed by the medium-emission group, the lowest efficiency is the low- emission group. It is worth mentioning that the labor inefficiency of the high-emission group is 0.0068, which is very close to complete efficiency, indicating that it has less labor absorption than other industries.

From the perspective of single output factors, the most inefficient industry is the product and supply of water, reaching up to 2.662. The most inefficient industry associated with energy and carbon dioxide emissions is the electric power industry, which fully reflects the high energy consumption and high carbon emissions of the electric power industry. The industry with the highest inefficiency is the furniture manufacturing and textile industry, respectively 0.0587 and 0.0547. It shows that furniture manufacturing and textile industry are typical labor-intensive industries, which can absorb many workers. However, high inefficiency also reflects the problems of poor skill and inefficient labor input in the furniture manufacturing and textile industry in our province. It is necessary to strengthen the training of employees, improve their proficiency



and the ability to grasp the new technology.

#### 4. Conclusion

Through empirical analysis, this paper draws the following conclusions: Insufficient output and excessive carbon dioxide emissions are two major factors that lead to inefficiency in the overall industrial sector during the analysis period. From 2006 to 2014, the average efficiency of the industrial industry in Anhui province was 0.9768, the inefficiency of the output were the biggest, accounting for 50% of the inefficiency value, followed by the inefficient value of carbon dioxide emissions, accounting for 34%. In terms of grouping, the high-emission industry group has the highest inefficiency in both input, output and carbon dioxide emissions.

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**ARTICLE****A Research on E-Commerce Shipping Platform Models In the Context of “Internet Plus”****Zikun Zhai\***

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**ABSTRACT**

In cyber-age, with the creation and growth of e-commerce platforms online causing profound changes to the way of business-doing in traditional sectors, “Internet Plus shipping” is now well predicted as an inevitable trend shipping business. As e-commerce shipping platforms make advertising, publication of information, business communication and transaction easier and more convenient, they are becoming a driving force accelerating the development of shipping industry. In domestic market today, there are already a variety of comparably matured models with which online shipping platforms operate, however, through evaluating their performances; these models have both unique advantages and disadvantages or deficiencies. The paper in the first place gives a summarization to what exactly e-commerce shipping can do, then introduces some most recognizable operational models on current stage, and lastly, from the perspective of “Internet Plus”, offers some proposals with the hope of helping advance its future development.

**1. Introduction**

According to latest statistics, total output within Chinese market grows by no less than 10% annually since 2015, and in 2018, it's worth 37,000 billion RMB. Thanks to the fast growing of Internet business, e-commerce shipping platforms are developing rapidly with COSCO shipping lines, E-shipping and ship-xy among the most successful. All these successful shipping platforms have contributed to the structural upgrade and reform in the shipping industry. Still, as a new type of business model lacking sufficient supervision for the reason that it hasn't been around for long, it's plagued with issues we cannot ignore like security concerns and lack of common standards. So, under such a context, looking into new strategies that can help

optimize stable and sustainable development of e-commerce shipping platforms has become critical.

**2. What an E-Commerce Shipping Platform Does In the Context of “Internet Plus”**

Roughly ten years on, since its birth, e-commerce shipping platforms have won wide approval in the shipping business, for below reasons: 1; business work in this industry, in traditional ways, is not only heavy and tiring, but also requires large quantities of workforce that need to carry out basic as well as repetitive work, although it is technically easy, causing huge labor cost. If e-commerce platform is applied, all those basic and repetitive work can be done easily on the platform, thus simplifying the business process and reducing labor cost

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significantly. 2; While many shipping companies operate big-valued orders that have stricter and higher requirements upon timing and speed, e-commerce shipping platforms make online communication & transaction possible, improving efficiency and creating more business opportunities. 3; on an e-commerce shipping platform, communication can be made in real time, so customers' needs can be feedback to shipping companies promptly. Therefore, in this sense, it is helpful in improving service quality and building up a stable cooperation.

### **3. Key Functions of an E-commerce Shipping Platform**

Although many platforms on current stage differ in types and structure, in essence, they all share something in common——common sharing of resources & information, a more simplified transaction process and ever-improving services being what all these platforms pursue. To put short, an e-commerce shipping platform is an integrated utility of information, transaction, and services.

#### **3.1 Platform of Information**

Supported by a powerful internet, e-commerce shipping platforms are capable of collecting any information related to shipping industry, and, through artificial filtering, compilation and re-classification, these information can be displayed on the platform and then shared among registered users. This has made it easier for shipping companies to look for their partners, secure a contract and better understand the business. All these related information can be classified into below two categories:

##### **3.1.1 Administrative Information**

This information are mostly published by government bodies like the Bureau of maritime affairs or the Port Authority, as regulative guidelines, even impacting future development of shipping industry at times. In this way, shipping companies can promptly adjust their strategies accordingly.

##### **3.1.2 Business Information**

Obviously, this information are about latest development in the industry or latest news, and information related to influential transactions. The advantage of e-commerce platforms in displaying this information is that all these information are of the latest. In a market getting more and more competitive, whoever holds critical information and resources wins.

#### **3.2 Platform of Transaction**

E-commerce shipping platform supports online transaction, playing the role as a middleman or arbitrator. Due to the authority of such a platform, most transactions are made with little difficulty. Compared to traditional face-to face transactions, the so-called B2B new model makes transactions faster and more efficient without being affected by time or distance. Besides, because many platforms provide guarantee services, customers should have no worry that their shipment or cash may go missing. What's more, dedicated to better services, many platforms have made a couple of options available in regards to how a transaction is to be done, for example, there are business negotiations, contract signing online, and others.

#### **3.3 Platform of Services**

As more and more such platforms are being built up, areas that management and maintenance covers are also extended from purely technical support to areas of technical support, services and management combined. There are three kinds of services that e-commerce shipping platforms provide: the first is business services, which are about transactions or latest developments in the industry, as well as inquiry service regarding vessel-lines and shipping-time. All these business information is sharable among registered users. Second is administrative services. Because there are procedures that have to be approved by government bodies, in the past, people of specialty are deployed by shipping companies to relevant government bodies to apply for a government approval. But now, this can be done online. The third kind of service is financial, which provide loans, mortgages and payment service.

### **4. Nature of E-commerce Shipping Platforms**

#### **4.1 Platforms Sponsored by Shipping Companies**

Companies mentioned here are mainly owners of vessels or containers, and platforms in this category can again be divided into two groups. One is developed by shipping company itself for business operation online; examples are Panalpina and COSCO shipping. Their business area covers online booking, vessel date inquiry, shipment tracking, and import & export documentation and bill of lading claim. Characteristics of the services are transparent prices, guaranteed vessel availability, standardized operational procedures. These shipping companies' direct-sale style platforms have been making full use of

their own resources to get closer with shipment owners and small-to-medium sized forwarding agents, creating better and better customer experiences.

#### **4.2 Platforms Sponsored by Logistics & Forwarder Agent Companies**

It's always the case that top-level forwarding agents can, with their better services and superior goods-collecting capability, secure more competitive prices from shipping lines. There's always a pre-signed agreement between a top-level forwarding agent and a shipping line that guarantees the availability of vessels and competitive prices. So, platforms of this category are more powerful, covering nearly all areas. On the one hand, it is in challenging a new environment in which information is getting more and more transparent that logistics & forwarding agent companies attempt to build up such platforms which are often considered as a measure of upgrading. On the other, such platforms can also be interpreted as a venture made by big and powerful enterprises beyond their traditional field. These platforms are yet another new direction of development.

#### **4.3 Platforms Sponsored by Internet Companies**

Due to the potential of shipping business and its high-valued transactions, some Internet companies are attracted into the field to build up their own platforms. Such platforms rely heavily on mother company's web-related technological capacity, and, if compared with former two types of platforms, this type of platforms share much more abundant and comprehensive information of all kinds, besides some online transaction service. But professionally, this type of platform is less powerful than the former two. The good news is that, thanks to the latest development of big-data technology, Internet companies can better support their platforms in technical ways like using integrated technology and data-analysis.

### **5. Perceived Issues in the Running of Current E-commerce Shipping Platforms**

Although more and more shipping companies are getting focused on the development of e-commerce shipping, platforms are still currently plagued with many concerning issues. 1. The operation of vessel-shipping business is still confined within the traditional thinking, contradicting actual needs on platforms and a constantly changing Internet environment. 2. Lack of price transparency on platforms, causing forwarding agent companies quoting different prices for the same shipping line and higher prices quoted online than offline. When the latter phenomenon

happens, customers will no longer have any willingness to book vessel and do any other transaction online. 3. The percentage of customers who make payment online is low. A lot more customers simply use its inquiry function and the worst case is that some platforms don't even support online payment.

### **6. Suggestions & Proposals for the Optimization and Improvement of E-Commerce Shipping Platforms in the Context of "Internet Plus"**

#### **6.1 Common Sharing Of Information Is the Foundation for the Growth of E-Commerce Shipping Platforms**

It is also a distinctive characteristic of such platforms integrating the Internet plus shipping, producing more valuable information for reference. It's worth noting that, thanks to the developing Internet networking, there have been rampant huge abundances of all sorts of shipping-related information on such platforms flooding in, rendering it difficult for shipping companies to distinguish truly valuable information from fake one. To tackle the issue, we need to concentrate more on the filtering, selection and re-compilation of information to make it easier for shipping companies to get their needed information as fast as possible. On the other hand, it is also suggested that such platforms invest more in cooperating with Customs and Border and Immigration Agency, where most relevant information comes from.

#### **6.2 Accelerate the Construction of Security System and Standardization System via Technological Methods**

Due to frequently high values and large quantities of goods that go on transaction in the shipping business, how to well protect the security of goods and payment becomes a common concern for businessmen and the platform itself. It's undeniable that, although most platforms have their edges on service qualities, they are falling far behind in terms of security protection. So it is strongly recommended that, in the following stage, more work should be done the management of security by upgrading the level of network security and strengthening present protective measures. Only by improving the network security environment, can we earnestly begin to win the approvals of shipping companies. From another perspective, this is also an effective measure to win over more customers and more orders. The other field where more work is required is standardization. More and more such platforms are

being set up and operated with their own set of standards which differ from each other's, which makes the common of information and regulation harder. To solve the problem, a set of commonly respected standards are expected to be drafted up for all platforms to observe.

### **6.3 Play Government Roles in Supervision & Regulation and Guidance**

The shipping business is widely considered a pillar industry in China, involving the transportation of fundamental commodities and goods, upon which national economy and people's livelihood are dependent. So in this regard, supervision and regulations by the government becomes a necessity. Governmental engagement in terms of supervision and regulatory measures, can not only help the industry as a whole develop in a healthy path, but also speed up the establishment of corresponding policies and regulatory laws. Finally, owners or the managing authority of such a platform also has a duty to be cooperative and assist in receiving governmental supervision or regulations, like, for example, by providing Customs and Board & Immigration Agency access to its database. Not only can this manner and attitude help build up a positive relationship between governing bodies and platforms themselves, but also creates an environment that is beneficial to the healthy development of e-commerce shipping platforms

## **7. Conclusion**

As the "Internet Plus traditional industries" is becoming more and more of a mainstream business model for the development of some national pillar industries especially the shipping industry, we surely should embrace and utilize the so-called "Internet Plus" based technologies, to push

forward the development of shipping industry. Although on the current stage, businesses on domestic e-commerce shipping platforms are growing into sizes of some significance and multiple models have been deployed, in practice, they still come with shortcomings and defects like, security problems and the lack of universally applicable standards, which are hindering the healthy growth of e-commerce shipping platforms. In the future, my suggestion is that a lot more extra work is needed to be done, technically, on the management level, and in the drawing up of new policies and regulatory measures, specifically for the creation of a healthy and positive environment, in which e-commerce shipping platforms can develop fast and grow into a momentum that drives the upgrading and transformation of the entire shipping industry.

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## ARTICLE

# Research on Government's Implementing Inclusive Financial Mechanism from the Perspective of Behavior Contract

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### ABSTRACT

By introducing reciprocal borrowers and lenders, positive social capital formed by reciprocal expectations can ease financing constraints. Information asymmetry has a significant impact on the relationship between reciprocal expectations and financing constraints. Lack of reciprocal expectation is a necessary condition for government intervention. The role of government is to promote the formation and growth of positive social capital, reduce negative social capital, activate favorable reference dependence and avoid adverse reference dependence. Specific measures are: direct investment, subsidy/ taxation, administrative orders, alleviation of information asymmetry in financial markets and moral education. Policy Suggestions: the government should pay attention to fostering reciprocal expectations. The development of Inclusive Finance mainly depends on market forces. An important part of it is the government lender who plays an active role in activating the favorable reference dependence. The government should alleviate the information asymmetry in financial markets, reduces the formation of negative social capital, and pays attention to the two sides and limitation of moral education.

## 1. Introduction

It has been three years since the State Council promulgated the "Promotion of inclusive financial development plan (2016-2020)" in 2016. During this period, Inclusive Finance has made great progress in China. However, the lack of inclusive financial theory contradicts the practical development. Most of the existing literatures on Inclusive Finance follow the research ideas of financial development and generally lack micro-foundation. The relationship between the development of Inclusive Finance and the alleviation of financing constraints of SMEs is still unclear. In reality, financial institutions rely too much

on government subsidies to carry out inclusive financial business, lacking sustainable business model.

The development of inclusive finance urgently needs to solve three major problems that plague borrowers, lenders and the government: how to alleviate the financing constraints of small and medium-sized enterprises; how to form a sustainable business model and how to promote, reject and push when the government intervenes in Inclusive Finance. This paper will construct a behavioral inclusive financial model under the background of incomplete contract, and analyze the mechanism of the government's implementation of Inclusive Finance.

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## 2. Literature Review

### 2.1 Literature Review on Inclusive Finance

Inclusive Finance and financial exclusion are two aspects of a problem. Shaw (1973) put forward the theory of financial repression when he studied the financial and economic relations of developing countries.<sup>[1]</sup> Scholars have studied Inclusive Finance from the perspective of the relationship between economic growth,<sup>[2]</sup> development degree measurement<sup>[3]</sup>, and influencing factors, among which the role of the government in the development of Inclusive Finance has aroused great interest.<sup>[4]</sup>

Inclusive Finance is also a corporate finance problem. Myers & Majluf (1984) put forward the theory of financing constraints under information asymmetry. Borrowers with weak financial strength usually cannot obtain financing.<sup>[5]</sup> Coleman (1988) first introduced the concept of social capital into economics.<sup>[6]</sup> Burt (2000) believes that social capital is a common asset in interpersonal communication.<sup>[7]</sup> Social structure can provide the constraints of reciprocal expectation and compulsory trust for actors. Actors can acquire membership in social organizations through embedding and thus have the ability to acquire the required resources.

This paper finds that introducing reciprocal borrowers and lenders can ease financing constraints by forming positive social capital with reciprocal expectations. When information asymmetry is serious, negative social capital with reciprocal expectations will aggravate the financing constraints of vulnerable groups because of loss aversion.

### 2.2 Literature Review on Behavior Contract Theory

Kahnema & Tversky (1979) put forward the reference dependence effect for the first time: utility depends on the relative return relative to wealth reference point.<sup>[8]</sup> Under the background of incomplete contract, Hart & Moore (2008) introduce the reference dependence effect and put forward the contract reference point theory: the contract drawn up by the contracting party under the pre-competitive condition will be the fair reference point for the post-transaction between the two parties.<sup>[9]</sup> Herweg & Schmidt (2014) emphasized the role of expectation, believing that the rational expectation of ex post transaction formed the reference dependence of the contracting party.<sup>[10]</sup> Herz & Taubinsky (2017) emphasize fairness preference, and think that the fairness preference of reference is endogenously determined by each party through different markets or bargaining.<sup>[11]</sup> Hart (2009,2017), Hart & Holmstrom (2010) use the contract reference point theory to

explain the employment contract, non-indexed contract, rip-off and firm boundary.<sup>[12-14]</sup>

Fehr, et al. (2009,2011,2015) supported contract reference point theory with experimental results.<sup>[15-17]</sup> Erlei & Reinhold (2012) focused their experiments on the interaction in the process of contracting, introducing reciprocity effect.<sup>[18]</sup>

As we can see, most of the current research on Inclusive Finance is concentrated in developing countries, and less attention has been paid to developed countries. In fact, the gap between rich and poor in developed countries is more serious, the allocation of financial resources is more unfair, and the developed countries need to develop Inclusive Finance more. Secondly, Inclusive Finance is mainly aimed at the disadvantaged groups excluded by the formal financial system, such as micro enterprises, but those who are not excluded also need better financial services. Thirdly, the study of government's role and market boundary lacks the analysis of government's specific responsibilities in the development of Inclusive Finance, and how to explain the success and failure of government's actions in the implementation of Inclusive Finance. Fourthly, it is still an academic blank to study Inclusive Finance from the perspective of behavioral finance. This paper is expected to make progress in this direction.

## 3. Theoretical Analysis

### 3.1 Definitions 3.1 Definition

#### 3.1.1 Definition of Social Capital

The definition of social capital is mainly from two perspectives. First, from the macro and micro perspectives, the macro-level mainly covers the content of social organization and institutional framework, while the micro-level mainly refers to those level organizations and social networks that contribute to development, as well as the values and behavioral norms hidden in these organizations and networks, and so on. Another aspect divides social capital into cognitive social capital and structural social capital. The former includes subjective and intangible factors, such as common acceptance attitude, values (trust, solidarity and reciprocity) and social norms (behavior and concepts), while the latter mainly refers to objective and specific organizations and networks.

In this paper, social capital refers to micro-cognitive social capital formed by both borrowers and lenders based on the expectations of the favorable and unfavorable reference dependence (hereinafter referred to as reciprocal expectations).

### 3.1.2 Definition of Inclusive Finance

This paper introduces reciprocal lending parties and social capital, and describes Inclusive Finance as two situations:

(1) The government activates the favorable reference dependence of both sides of reciprocal borrowing and lending, promotes the formation and growth of positive social capital, and alleviates the financing constraints of vulnerable borrowers;

(2) The government avoids the unfavorable reference dependence of both sides of reciprocal borrowing and lending, reduces the formation of negative social capital, and prevents it from aggravating the financing constraints of vulnerable borrowers.

## 3.2 Theoretical Basis

### 3.2.1 Introducing Reciprocal Preference

Yuan, et al. (2015) showed that the contractor was influenced by self-interest preference and altruism preference at the same time.<sup>[19]</sup> In her experiment, the buyer-seller reciprocity mechanism was added, and the reciprocity mechanism could significantly improve the cooperation efficiency of the contracting parties. Reciprocal preference indicates that people have the behavior of rewarding good and punishing evil.

### 3.2.2 Introducing Fairness Preference

In the past two decades, experimental economics, including ultimatum experiment,<sup>[20]</sup> gift exchange experiment<sup>[21]</sup> and dictator experiment,<sup>[22]</sup> has proved the existence of fairness preference in human decision-making. Yuan et al. (2015) showed that the Contractor would judge his actual income according to various reference points (endowment, vision and social comparison).<sup>[23]</sup> At the same time, the contractor had obvious fairness preference. Herz & Taubinsky (2017) believed that the fairness preference of reference was determined endogenously by different parties through different markets or bargaining.<sup>[24]</sup> Other differences between this paper and the contract reference point theory are shown in Table 1.

**Table1.** Differentiation between this paper and the contract reference point theory

	Contract reference point theory	This paper
Application area	Commodity market	Lending market
Irrational types	Contract Reference	Reciprocal type with contract reference

Proportion	100% of Contract Reference	$\phi$ of reciprocal type with contract reference, $1 - \phi$ of rational economic man
Irrational performance	Speculation	Speculation and reward
Reference point	Pre-competitive contract	Fair contract formed by many factors such as competition, endowment, vision, social comparison and market conditions
Anticipation	Not mentioned	Social capital based on reciprocal expectations

## 3.3 Basic Model

In an incomplete loan contract, this paper introduces a fixed investment model for reciprocal borrowers and lenders.<sup>[25]</sup>

(1) The borrower has a project which requires fixed investment  $I$  and initial assets of the borrower is  $A = 0$ . The probability of success of a borrower's project is  $P$ . When the project succeeds, it will generate observable and non-verifiable income  $R > 0$ .  $R_D (0 \leq R_D \leq R)$  belongs to the lender when the project succeeds which satisfies the zero profit condition of the lender  $pR_D = I$ , and the residual income belongs to the borrower. Without considering moral hazard, both borrowers and lenders are risk-neutral.

(2) The proportion of reciprocal borrowers and lenders is  $\phi$ . The remaining proportion  $1 - \phi$  is rational economic person, and its proportion is stable in a certain period of time. There is a fair preference between reciprocal borrowers and lenders, which measures gains and losses with fairness as a reference point, and produces two kinds of mentality: gratitude and dissatisfaction. Because of this mentality, they can make the reward and speculation in the process of implementing incomplete loan contracts, which affect the welfare of each other. Because of the incompleteness of contracts, the reward and speculation cannot be written in advance. Rational economic person do not have fair preferences, nor do they have irrational behaviors such as gratitude and speculation.

(3) When the fair reference point of reciprocal borrowers and lenders is less than their actual income, their psychological feeling is gratitude, which produces reward behavior in the process of incomplete contract implementation and brings benefits to the other party; when the fair reference point of reciprocal borrowers and lenders is greater than their actual income, their psychological feeling is dissatisfaction, which produces compensation speculation in the process of incomplete contract implementation, and bring welfare loss to the other party of the contract. At last, when the reference points of reciprocal borrowers and lenders are equal to their actual income,

their psychological feelings are calm, they neither reward nor speculate, so they do not have any impact on the other side of the contract, as shown in Table 2.

**Table2.** Logic of reciprocal behavior between reciprocal borrowers and lenders

	Reference dependence		Irrational performance	Influence
Reciprocal borrowers and lenders	Reference point-Actual income $= \varepsilon < 0$	gratitude	reward	welfare gain $\chi = -\theta\varepsilon$
	Reference point-Actual income $= \varepsilon > 0$	dissatisfaction	speculate	welfare loss $\sigma = \theta\varepsilon$
	Reference point-Actual income $= \varepsilon = 0$	calm	no action	no impact

Notes:

$\varepsilon$  : The difference between the fair reference point and the actual income.

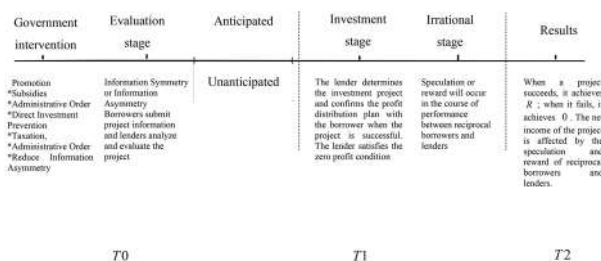
$\chi, \sigma$  : The influence of reference dependence can be favorable or unfavorable, the reward of reciprocal borrowers and lenders is favorable, and the speculation of reciprocal borrowers and lenders is unfavorable.

$\theta$  : The reward and speculation coefficient which respectively represents psychological will, practical ability.

People usually have loss aversion. So, speculation coefficient is bigger than reward coefficient. On average, speculation coefficient is twice as much as reward coefficient. But in the latter analysis, in order not to make the model too complicated, and to study the problem without losing the generality, this paper assumes that speculation and reward coefficient are equal. An analysis of loss aversion will follow.

## 4. Analysis of the Government's Promotion of Inclusive Financial Mechanism

Based on the basic model, under the conditions of different lending and reciprocal expectations, this paper discusses whether the government implements Inclusive Finance and the conditions of different modes of implementation in the case of information symmetry and asymmetry. The sequence chart is shown in Figure 1.



**Figure 1**

## 4.1 Information Symmetry

### 4.1.1 $pR \geq I$

The lender satisfies the zero profit condition, the actual income is  $pR_D - I = 0$ .

Reference dependence stage: According to the contract reference point theory, the profit distribution scheme is determined beforehand and meets the requirements of fairness, so the reference point of reciprocal lenders is  $pR_D - I = 0$ . The actual income of the borrower is the residual profit of the project  $p(R - R_D) = pR - I$ , and the reference point of the reciprocal borrower is  $p(R - R_D) = pR - I$ . At this time, the reference dependence of both sides has the same effect 0. Whether the two sides have reciprocal expectations does not affect their participation constraints and final results.

Government intervention stage: From the government's point of view, the premise of implementing Inclusive Finance is that the social welfare obtained is greater than the social cost. Because the borrowers and lenders satisfy the constraints of participation, the administrative order has no effect, and the government's direct investment will crowd out private lenders. Finally, the government will not subsidize lenders, because the government's subsidy is actually a transfer payment. In order to subsidize, tax must be levied, however the reduction of social welfare caused by the reference dependence of reciprocal borrowers and lenders caused by taxation is equal to the increase of social welfare caused by the reference dependence of reciprocal borrowers and lenders caused by subsidies.

Proof process: when the borrowers and lenders do not have reciprocal expectations, lenders meet the zero profit conditions after subsidies  $pR_D^{after} + C - I = 0$ . The fair reference point of both sides is still the reference point before subsidies, because subsidies are unexpected income and do not belong to normal income, which does not affect the fair reference point. Favorable reference dependence of reciprocal borrowers and lenders will increase social welfare, while subsidies are collected from other projects in the form of tax. Lenders from other projects satisfy zero profit conditions after tax  $pR_D^{after} - C - I = 0$ : the unfavorable reference dependence of reciprocal borrowers and lenders will reduce social welfare  $\phi\theta C$ .

Similarly, when there is reciprocal expectation between borrowers and lenders, lenders satisfy the zero profit condition after subsidies  $pR_D^{after} + C - I + \chi_B = 0$ .  $\chi_B$  is the effect of the favorable reference dependence of the reciprocal borrowers due to subsidies expected by lenders. The favorable reference dependence of the  $\phi$  of reciprocal borrowers will increase social welfare  $\phi\theta p(R_D - R_D^{after}) = \frac{\phi\theta C}{1 - \phi\theta}$ .



Correspondingly, The social welfare that the government reduces in order to subsidize is  $\phi\theta p(R_D^{\text{after}} - R_D) = \frac{\phi\theta C}{1 - \phi\theta}$ .

The economic intuition here is that the increased social welfare of subsidies is equivalent to the increased social costs of taxation, so the government has no incentive to subsidize. We have the following propositions:

Proposition 1: Under symmetrical information, when the NPV of the project is positive, the government has no incentive to promote inclusive finance.

The introduction of Inclusive Finance has no impact on positive NPV projects, which also explains why the focus of Inclusive Finance is on vulnerable groups such as small and micro enterprises, farmers, urban low-income groups, because the NPV of most projects of these vulnerable groups are non-positive and they have serious financing constraints.

#### 4.1.2 $pR < I$

##### (1) Reciprocal Expectations

Reference Dependence Stage: Lenders satisfy zero profit conditions  $pR_D + \chi_B = I$ . Borrowers' actual income is  $p(R - R_D)$ . The negative net present value of the project indicates that the project could not be financed, thus the borrower would have the loss  $W$  of being unable to finance, and the lenders would not be affected. Therefore, the fair feeling of both sides of the reciprocal lending is measured by the objective result of the original inability to obtain financing. The fair reference point of both sides is  $(-W, 0)$  and the total favorable reference dependence effect is  $\chi = \frac{\phi\theta(pR - I + W)}{1 - \phi\theta}$ . Net project income (taking

into account the favorable reference dependence effect)  $\mu = NPV + \chi = \frac{pR - I + \phi\theta W}{1 - \phi\theta}$ . Thus, the participation conditions of both borrowers and lenders can be obtained.

$$\phi\theta W > I - pR \quad (1)$$

Formula (1) shows that when the positive social capital generated by reciprocal expectation is greater than the net present value loss of the project, the project is feasible. At this time, even if the net present value of the project is negative, the borrower can still obtain financing, and the reciprocal expectation eases the borrower's financing constraints.

Government intervention stage: when the formula (1) is satisfied, the government has no incentive to implement inclusive finance; the analysis is the same as that of positive NPV. When formula (1) is not satisfied, the government has no incentive to implement Inclusive Finance either.

Proof process: Both administrative orders and government direct investment will make the actual income of lenders (private lenders and government lenders) negative, thus causing dissatisfaction of the psychological state of the reciprocal lenders, and then making them speculate, resulting in the loss of the welfare of borrowers, which in turn will reduce the actual income of reciprocal borrowers who can anticipate the influence of each other's reference dependence. Similarly, if the government subsidizes lenders, the increased social welfare of subsidies is equivalent to the increased social costs of taxation, which also cannot meet the conditions of government implementation. For a summary, see Table 3.

**Table 3.** Summary of government implementation

	Reciprocal expectations				No reciprocal expectations		
	$pR \geq I$		$pR < I$		$pR \geq I$		$pR < I$
	Borrower	Lender	Borrower	Lender	Borrower	Lender	Both
Reference point	$p(R - R_D)$	0	$-W$	0	$p(R - R_D)$	0	Not Satisfying Participation Constraints
Actual income	$p(R - R_D)$	$pR_D - I = 0$	$p(R - R_D)$	$pR_D - I + \chi_B = 0$	$p(R - R_D)$	$pR_D - I = 0$	
Mentality	calm	calm	gratitude $p(R - R_D) + W$	calm	calm	calm	
Effect	0	0	welfare gain $\frac{\phi\theta(pR - I + W)}{1 - \phi\theta}$	0	0	0	
Government	No implementation						Implementation



Proposition 2: Under symmetric information, when the NPV of a project is negative, the positive social capital formed by reciprocal expectation can effectively ease the borrower's financing constraints, the specific condition is  $\phi\theta W > I - pR$ .

The economic intuition is that Inclusive Finance is not charitable finance. Through proposition 2, we can see that Inclusive Finance has the conditions to become a sustainable business model. This also explains why Inclusive Finance was advocated by the United Nations Development Programme in 2005 and became a global movement.

Proposition 3: When there is a rational expectation of reciprocity between borrowers and lenders, the government's implementation of Inclusive Finance will be ineffective, but the government can still increase positive social capital by moral education to increase the proportion of reciprocal borrowers and lenders and increase reciprocal willingness.

The economic intuition is that the concept of rational expectation was first introduced by Lucas (1972) into macroeconomic analysis. The school of rational expectation believes that people's expectations should be accurate.<sup>[26]</sup> The school of rational expectation is concerned about the impact of the public response on the effectiveness of government policies. It holds that policymakers should not ignore the impact and oppose the macroeconomic policy of discretionary choice. Proposition 3 agrees with the central idea of rational expectation. When there are reciprocal expectations between borrowers and lenders, the government's implementation will become ineffective. However, it is undeniable that the government can adopt moral education to create a better environment for the formation of positive social capital.

#### (2) No Reciprocal Expectations

The initial participation constraints of both borrowers and lenders cannot be satisfied, which provides space for the government to implement Inclusive Finance. However, the purpose of the government's implementation of Inclusive Finance is not only to enable borrowers subject to financing constraints to obtain financing, but more importantly, to make the net income generated by inclusive financial projects positive.

Government intervention stage: government subsidies  $C$  to lenders, lenders meet the zero profit conditions after subsidies  $pR_d^{after} + C - I = 0$ . The fair reference point of reciprocal borrowers and lenders is still  $(-W, 0)$  which is the reference point before the subsidy, we can calculate the net project income generated by the government's subsidy to promote Inclusive Finance  $\mu^s = NPV + \chi_b - \phi\theta C = (1 + \phi\theta)(pR - I) + \phi\theta W$ ,  $\phi\theta C$  is the social cost of the subsidy, and thus we obtain the con-

ditions for the implementation of the subsidy.

$$\frac{\phi\theta W}{1 + \phi\theta} > I - pR \quad (2)$$

The net benefits generated by subsidies are on the left, and the net present value losses are on the right. When formula (2) is satisfied, the government has incentives to implement Inclusive Finance in the form of subsidies.

When adopting administrative orders, the government will ignore the constraints of lenders' initial participation, which will make the actual income of lenders become negative  $pR_d - I < 0$ . The fair reference point between reciprocal lenders and borrowers is  $[-W, 0]$ . At this time, the net project income generated by the implementation of Inclusive Finance by administrative orders can be obtained  $\mu^A = NPV + \chi_T = (1 + \phi\theta)(pR - I) + \phi\theta W$ , thus the conditions for the implementation of administrative orders can be obtained.

$$———— > I - p \quad (3)$$

Formula (3) is the same as Formula (2). Administrative orders and subsidies have the same conditions for implementation.

We assume that government lenders always have reciprocal expectations. The government lenders satisfy the zero profit condition  $pR_d - I + \chi_B = 0$ , we can calculate the net income of the project at this time  $= NPV + \frac{pR - I}{1 + \phi\theta}$ , so as to obtain the conditions for the implementation of direct investment.

$$I \quad R \quad (4)$$

Formula (4) is easier to be satisfied than formula (2) and formula (3) and equals formula (1), which means that direct investment, has more easily satisfying conditions than administrative orders and subsidies, and can be comparable to the anticipation situation, because government lenders with reciprocal expectations have replaced private lenders without reciprocal expectations. For a summary, see Table 4.

Proposition 4: Under the symmetry of information, when the NPV of a project is negative and there is no reciprocal expectation, the government can adopt the mode of direct investment, administrative orders and subsidies to promote Inclusive Finance and activate the favorable reference dependence of both sides, in which the conditions for the implementation of direct investment are easier to meet than administrative orders and subsidies. At the same time, the government can also supplement moral education to increase the proportion of reciprocal borrowers

**Table 4.** Summary of conditions for implementing inclusive finance

Mode	Subsidy		Administrative order		Direct investment	
	Borrower	Lender	Borrower	Lender	Borrower	Lender
Reference point	$-W$	0	$-W$	0	$-W$	0
Actual income	$p(R - R_D)$	$pR_D + C - I = 0$	$p(R - R_D)$	$pR_D - I$	$p(R - R_D)$	$pR_D - I + \chi_B = 0$
Mentality	gratitude $p(R - R_D) + W$	calm	gratitude $p(R - R_D) + W$	dissatisfaction $I - pR_D$	gratitude $p(R - R_D) + W$	calm
Effect	welfare gain $\phi\theta(pR - I + C + W)$	0	welfare gain $\chi_B = \phi\theta[p(R - R_D) + W]$	welfare loss $\sigma_L = \phi\theta(I - pR_D)$	welfare gain $\frac{\phi\theta(pR - I + W)}{1 - \phi\theta}$	0
Condition	$\frac{\phi\theta W}{1 + \phi\theta} > I - pR$		$\frac{\phi\theta W}{1 + \phi\theta} > I - pR$		$\phi\theta W > I - pR$	

and lenders, and increase the willingness to reciprocate, so as to make the conditions of implementation easier to meet.

The policy implication is that banks at the present stage rely too much on government subsidies and administrative orders to carry out inclusive financial business and lack the business sustainability. Judging from the conditions of activating the favorable reference dependence of reciprocal borrowers and lenders, the conditions of administrative orders and subsidies are more difficult to meet than the conditions of government direct investment, so they are more likely to lack the business sustainability. At that time, the government departments paid too much attention to the financing satisfaction, but neglected the financing risk and cost, which led to the wrong policy orientation. From proposition 4, it can be seen that the promotion of Inclusive Finance to activate the favorable reference dependence of both sides is conditional and must not be carried out blindly.

## 4.2 Information Asymmetry

On the basis of the borrower  $P$  whose project success probability is  $p$ , the borrower  $q$  whose project success probability is  $q$  ( $q \leq p$ ) is added. The probability of borrower  $P$  and borrower  $q$  appearing is  $\alpha$  and  $1 - \alpha$  respectively. Both types of borrowers and lenders are composed of  $\phi$  of reciprocal and  $1 - \phi$  of economic rational people. lenders don't know in advance whether the type of borrower is  $P$  or not. so the prior probability of the success of the borrower's project is  $m = \alpha p + (1 - \alpha)q$ , the lender satisfies the zero profit condition  $mR_D = I$ .

### 4.2.1 $mR \geq I$ and $pR \geq qR \geq I$

Reference Dependence Stage: Information symmetry environment is more objective and fair than information asymmetry environment, and the fair reference points of

reciprocal borrowers and lenders are the respective income that satisfies the zero profit conditions of lenders under information symmetry. For the reciprocal borrower  $P$ , the zero profit condition profit of the lender under information symmetry is  $pR_p - I = 0 \Rightarrow R_p = \frac{I}{p}$  and the fair

reference point is  $p(R - R_p) = p(R - \frac{I}{p}) = pR - I$ . In like manner, the fair reference point of the reciprocal borrower  $q$  is  $q(R - R_q) = q(R - \frac{I}{q}) = qR - I$ . Information asymmetry results in dissatisfaction and speculation of reciprocal borrowers  $P$  and gratitude and reward of reciprocal borrowers  $q$ . The speculation of reciprocal borrowers  $P$  and the reward of reciprocal borrowers  $q$  offset each other, and the reciprocal expectation forms zero social capital. The net income of the project is  $\mu = NPV = mR - I$ .

It can be seen that at this time, the government did not have the incentive to implement Inclusive Finance, and information asymmetry did not produce negative net social capital. The main reason is that the speculation of reciprocal borrowers  $P$  and the reward of reciprocal borrowers  $q$  offset each other. When loss aversion is considered, speculation of reciprocal borrowers  $P$  will exceed the reward of reciprocal borrowers  $q$ , thus generating negative net social capital, which will be discussed in detail in the third part about the discussion of loss aversion. Finally, the summary of whether the government implements Inclusive Finance under different lending conditions and expectations is shown in Table 5.

### 4.2.2 $mR \geq I$ and $pR \geq I > qR$

#### (1) No Reciprocal Expectations

Reference dependence stage: the reference point of reciprocal borrowers  $p$  under information asymmetry is  $p(R - \frac{I}{p}) = pR - I$ . For the reciprocal borrow-

**Table 5.** Summary of government implementation

	Reciprocal expectations								
	$mR \geq I$						$mR < I$		
	$pR \geq qR \geq I$			$pR \geq I > qR$			$pR \geq I > qR$		
	$q$ Borrower	$p$ Borrower	Lender	$q$ Borrower	$p$ Borrower	Lender	$q$ Borrower	$p$ Borrower	Lender
Reference point	$qR - I$	$pR - I$	0	$-W$	$pR - I$	0	$-W$	$pR - I$	
Actual income	$q(R - R_D)$	$p(R - R_D)$	$mR_D - I = 0$	$q(R - R_D)$	$p(R - R_D)$	$mR_D - I + \chi_B = 0$	$q(R - R_D)$	$p(R - R_D)$	$mR_D - I + \chi_B = 0$
Mentality	gratitude $I - qR_D$	dissatisfaction $pR_D - I$	calm	gratitude $q(R - R_D) + W$	dissatisfaction $pR_D - I$	calm	gratitude $q(R - R_D) + W$	dissatisfaction $pR_D - I$	calm
Effect	0		0	welfare gain $\chi_B = \frac{\phi\theta(1 - \alpha)(qR + W - I)}{1 - \phi\theta}$		0	welfare gain $\chi_B = \frac{\phi\theta(1 - \alpha)(qR + W - I)}{1 - \phi\theta}$		0
Government	No implementation								

**Table 5.** Continued (1)

	Reciprocal expectations			No reciprocal expectations					
	$mR < I$			$mR \geq I$					
	$pR \geq I > qR$			$pR \geq qR \geq I$			$pR \geq I > qR$		
	$q$ Borrower	$p$ Borrower	Lender	$q$ Bor- rower	$p$ Borrower	Lender	$q$ Borrower	$p$ Borrower	Lender
Reference point	$-W$	$-W$	0	$qR - I$	$pR - I$	0	$-W$	$pR - I$	0
Actual income	$q(R - R_D)$	$p(R - R_D)$	$mR_D - I + \chi_B = 0$	$q(R - R_D)$	$p(R - R_D)$	$mR_D - I = 0$	$q(R - R_D)$	$p(R - R_D)$	$mR_D - I = 0$
Mentality	gratitude $q(R - R_D) + W$	gratitude $p(R - R_D) + W$	calm	gratitude $I - qR_D$	dissatisfac- tion $pR_D - I$	calm	gratitude $q(R - R_D) + W$	dissatisfac- tion $pR_D - I$	calm
Effect	welfare gain $\chi_B = \frac{\phi\theta(mR + W - I)}{1 - \phi\theta}$		0	0		0	welfare gain $\chi_B = \phi\theta(1 - \alpha)(qR + W - I)$		0
Government	No implementation						$\mu_{no} \geq 0$ no implementation; $\mu_{no} < 0$ prevention		

**Table 5.** Continued (2)

	Reciprocal expectations			No reciprocal expectations					
	$mR < I$			$mR \geq I$					
	$pR \geq I > qR$			$pR \geq qR \geq I$			$pR \geq I > qR$		
	$q$ Borrower	$p$ Borrower	Lender	$q$ Borrow- er	$p$ Bor- rower	Lender	$q$ Borrower	$p$ Borrower	Lender
Reference point	$-W$	$-W$	0	$qR - I$	$pR - I$	0	$-W$	$pR - I$	0
Actual income	$q(R - R_D)$	$p(R - R_D)$	$mR_D - I + \chi_B = 0$	$q(R - R_D)$	$p(R - R_D)$	$mR_D - I = 0$	$q(R - R_D)$	$p(R - R_D)$	$mR_D - I = 0$
Mentality	gratitude $q(R - R_D) + W$	gratitude $p(R - R_D) + W$	calm	gratitude $I - qR_D$	dissatisfac- tion $pR_D - I$	calm	gratitude $q(R - R_D) + W$	dissatisfaction $pR_D - I$	calm
Effect	welfare gain $\chi_B = \frac{\phi\theta(mR + W - I)}{1 - \phi\theta}$		0	0		0	welfare gain $\chi_B = \phi\theta(1 - \alpha)(qR + W - I)$		0
Government	no implementation						$\mu_{no} \geq 0$ no implementation; $\mu_{no} < 0$ prevention		

ers  $q$ , the NPV is negative under information symmetry, and the fair reference point is  $-W$ , which the same as the analysis under information symmetry is. Through calculation, the net income of the project is  $\mu_{no} = NPV + \chi_B = mR - I + \phi\theta(1 - \alpha)(qR + W - I)$ .

Government intervention stage: when  $\mu_{no} \geq 0$ , the government has no incentive to intervene in the implementation. When  $\mu_{no} < 0$  From the government's point of view, although the borrowers and lenders meet the initial participation constraints, the government wants to avoid such projects. The government prevents the project from being invested by taxation  $C$ . When the condition  $mR_D - I - C \leq mR - I - C < 0 \Rightarrow C > mR - I$  is satisfied, the constraints of lender participation cannot be satisfied, and the project will not be invested. When the government takes the form of administrative order to prevent, however, private lenders are generally difficult to be fully constrained by the administrative order of the government. When the initial participation constraints are satisfied, they will still invest in such projects, and the administrative order cannot fully work.

#### (2) Reciprocal Expectations

When there is a reciprocal expectation, similar to the previous analysis, the government has no incentive to promote Inclusive Finance.

Proposition 5: When  $mR \geq I$  and  $pR \geq I > qR$ , and there is no reciprocal expectation between borrowers and lenders, information asymmetry may lead to speculation of reciprocal borrowers, which may lead to unfavorable reference dependence and make the net income of projects change from positive to negative. At this time, the government can use taxation to prevent this kind of situation.

The economic intuition is that the reciprocal borrower's reciprocal behavior may not only ease the financing constraints, but also aggravate the financing constraints, which depends on the development of the financial market and the degree of information asymmetry. When the reciprocal borrowers and lenders aggravate the financing constraints, moral education will increase the proportion and reciprocity level of the reciprocal borrowers and lenders. It can be seen that the development of financial ethics superstructure cannot be separated from the reality of financial and economic basis.

#### 4.2.3 $mR < I$

##### (1) Reciprocal Expectations

When expectations exist, the government will not implement Inclusive Finance.

##### (2) No Reciprocal Expectations

The initial participation constraints of both borrowers

and lenders cannot be satisfied. The conditions for the government to implement Inclusive Finance are discussed in two cases:  $pR \geq I > qR$  and  $I > pR \geq qR$ . The summary of the conditions for the government to implement Inclusive Finance is shown in Table 6.

### 4.3 The Discussion of Loss Aversion

Considering that the speculation coefficient is twice as much as the reward coefficient, when there is loss aversion between reciprocal borrowers and lenders, we repeat the above analysis and find that this does not change the core proposition of this paper. But there are some interesting changes: first, speculation caused by dissatisfaction between reciprocal borrowers and lenders is twice as much as before, which makes it harder for the government to meet the conditions of implementing Inclusive Finance. Secondly, due to loss aversion, the social welfare loss caused by the same amount of tax levied by subsidies is twice as much as that of the original, and the speculation of lenders caused by administrative orders is twice as much as that of the original, which will make the implementation of direct investment more popular.

The most noteworthy point is that under information asymmetry, reciprocal borrowers  $p$  will produce dissatisfaction, loss aversion will lead to more speculation, thus negative social capital will increase.

Proposition 6: In the case of loss aversion, the more asymmetric information in financial market is the more reciprocal borrowers and lenders, the more negative social capital they will generate, which will aggravate the financing constraints. The government can alleviate the degree of market information asymmetry by developing financial markets (financial science and technology, financial intermediation and legal environment), thus alleviating the dissatisfaction of borrowers and avoiding excessive negative social capital formation.

Economic intuition is that the relationship between inclusive financial development and financing constraints will be affected by the legal environment and economic development level. The fundamental solution that the government can solve is to alleviate the information asymmetry in the financial market.

## 5. Conclusions and Policy Suggestions

### 5.1 Main Conclusions

Reciprocal expectation forms social capital. Under the symmetry of information, when the net present value of the project is negative the positive social capital formed by reciprocal expectation helps to ease the financing constraints of borrowers. Information asymmetry will lead to

**Table 6.** Summary of conditions for implementing inclusive finance

	$pR \geq I > qR$								
Mode	Subsidy			Administrative order			Direct investment		
	$q$ Borrower	$p$ Borrower	Lender	$q$ Borrower	$p$ Borrower	Lender	$q$ Borrower	$p$ Borrower	Government lender
Reference point	$-W$	$pR - I$	0	$-W$	$pR - I$	0	$-W$	$pR - I$	0
Actual income	$q(R - R_D)$	$p(R - R_D)$	$mR_D - I + C = 0$	$q(R - R_D)$	$p(R - R_D)$	$mR_D - I$	$q(R - R_D)$	$p(R - R_D)$	$mR_D - I + \chi_B = 0$
Mentality	gratitude $q(R - R_D) + W$	dissatisfaction $pR_D - I$	calm	gratitude $q(R - R_D) + W$	dissatisfaction $pR_D - I$	dissatisfaction $I - mR_D$	gratitude $q(R - R_D) + W$	dissatisfaction $pR_D - I$	calm
Effect	welfare gain $\chi_B = \phi\theta[(1 - \alpha)(qR + W - I) + C]$		0	welfare gain $\chi_B = \phi\theta[(1 - \alpha)(qR + W) - mR_D + \alpha I]$		welfare loss $\sigma_L = \phi\theta(I - mR_D)$	welfare gain $\chi_B = \frac{\phi\theta(1 - \alpha)(qR + W - I)}{1 - \phi\theta}$		0
Condition	$\phi\theta(1 - \alpha)(qR + W - I) > I - mR$						$\frac{\phi\theta(1 - \alpha)(qR + W - I)}{1 - \phi\theta} > I - mR$		

**Table 6.** Continued

$I > pR \geq qR$									
Mode	Subsidy			Administrative order			Direct investment		
	$q$ Borrower	$p$ Borrow- er	Lender	$q$ Borrower	$p$ Borrow- er	Lender	$q$ Borrower	$p$ Borrow- er	Government lender
Reference point	$-W$	$-W$	0	$-W$	$-W$	0	$-W$	$-W$	0
Actual income	$q(R - R_D)$	$p(R - R_D)$	$mR_D - I + C = 0$	$q(R - R_D)$	$p(R - R_D)$	$mR_D - I$	$q(R - R_D)$	$p(R - R_D)$	$mR_D - I + \chi_B = 0$
Mentality	gratitude $q(R - R_D) + W$	gratitude $p(R - R_D) + W$	calm	gratitude $q(R - R_D) + W$	gratitude $p(R - R_D) + W$	dissatisfaction $I - mR_D$	gratitude $q(R - R_D) + W$	gratitude $p(R - R_D) + W$	calm
Effect	welfare gain $\chi_B = \phi\theta[(1 - \alpha)(qR + W - I) + C]$		0	welfare gain $\chi_B = \phi\theta(mR - mR_D + W)$		welfare loss $\sigma_L = \phi\theta(I - mR_D)$	welfare gain $\chi_B = \frac{\phi\theta(mR + W - I)}{1 - \phi\theta}$		0
Condition	$\phi\theta(mR - I + W) > I - mR$						$\frac{\phi\theta(mR + W - I)}{1 - \phi\theta} > I - mR$		

speculation of high-quality reciprocal borrowers, and loss aversion will aggravate dissatisfaction and speculation, so the reciprocal expectation may form negative net social capital, which will aggravate the financing constraints of borrowers. In reality, people often do not have rational expectations of reciprocity, which has become a necessary condition for government intervention. The government's role is mainly reflected in promoting the formation and growth of positive social capital, reducing the accumulation of negative social capital, activating the favorable reference dependence of both sides and avoiding the unfavorable reference dependence, which makes the net income of projects change from positive to negative. Specific interventions include direct investment, subsidy/taxation, administrative orders, alleviation of information asymmetry in financial markets and moral education.

Among the measures to activate the favorable reference dependence between reciprocal borrowers and lenders, the intervention conditions of direct investment are easier to be satisfied than subsidies and administrative orders, especially in the case of loss aversion. To reduce the accumulation of negative social capital from the root, it is necessary to intervene from the perspective of developing financial markets and alleviating information asymmetry in financial markets. Moral education enhances the proportion of reciprocal borrowers and the willingness to reciprocate. On the one hand, it can promote the development of positive social capital; on the other hand, negative social capital will grow with it. Therefore, we need to consider the information asymmetry in financial markets and the degree of people's loss aversion before implementing moral education.



## 5.2 Policy Recommendations

Firstly, we should pay attention to the role of rational expectation. Without reciprocal expectation, borrowers and lenders cannot effectively form social capital. The government should rationalize the reciprocal expectations of both borrowers and lenders. Especially when facing projects with negative net present value, it should make the channels of positive social capital formation unblocked and give play to its alleviating effect on financing constraints of vulnerable groups.

Secondly, in the way of government intervention, which activates the favorable reference dependence of both sides, the conditions for the implementation of direct investment are easier to meet than administrative orders and subsidies, especially in the case of loss aversion. This means that it is uneconomical for commercial banks to rely excessively on administrative orders and financial subsidies for the implementation of Inclusive Finance. It may also lead to unsatisfactory conditions for implementation and lack of commercial sustainability. The development of Inclusive Finance should mainly rely on market forces, of which a very important part is the government investment entity.

Thirdly, reducing information asymmetry in financial markets is the fundamental way to reduce the formation of negative social capital. These measures include the development of financial institutions, the construction of personal credit system, the use of big data to strengthen the construction of credit system for small and medium-sized enterprises, etc. Information asymmetry will lead to unfavorable speculation among high-quality reciprocal borrowers, and the loss aversion effect will aggravate unfavorable speculation, which will lead to the formation of a large number of negative social capital. Only by reducing the information asymmetry in financial markets, can we fundamentally reduce negative social capital.

Fourthly, we should pay attention to the two sides and limitations of moral education. Moral education is not a panacea for all. In the case of loss aversion and information asymmetry, moral education will cultivate more negative social capital. At the same time, moral education cannot improve reciprocal willingness without the actual reciprocal ability of both sides. The fundamental policy is to enhance the borrower's ability to repay outside the contract, strengthen the construction of the legal system environment, and reduce the risk of speculation outside the contract.

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## ARTICLE

# Discussion on Effective Strategies for Improving Enterprise Operation and Management Abilities

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### ABSTRACT

In the current socialist market economy, if an enterprise wants to grow and develop, it must do all kinds of management for its enterprise, and the most important thing for strengthening management of enterprises is to strengthen their own operation and management abilities. Whether it is financial management, management of personnel efficiency, or management of talents, it is necessary to protect from the infrastructure, so as to fundamentally improve the economic benefits of the enterprise, and vice versa if it is not properly managed, it will affect the development of the enterprise. Therefore, improving the operation and management abilities of enterprises at present is an important factor to promote the economic development of enterprises. This paper analyzes the management problems of enterprises and the definition of enterprise operation and management abilities, and analyzes how enterprises can reform and innovate, thus strengthening the operation and management abilities and economic benefits of enterprises.

## 1. Introduction

Nowadays, it is an era of globalized economy. The economies of all countries are developing very rapidly, and the degree of development of enterprises can highlight China's level of economic competitiveness, therefore, the enterprise is very important. The degree of operation and management of the enterprise directly affects the development of the enterprise. It is an important pillar of the development of the enterprise. In the new era, enterprises must strengthen their management abilities so that they can more effectively improve their economic efficiency.

## 2. Enterprise Operation and Management Abilities

### 2.1 The Definition of Enterprise Operation and Management Abilities

The main implementers of operation and management abilities are corporate leaders, enterprise operations and management abilities, which mainly refers to the management of the production activities and production processes of enterprises according to the requirements of the market economy, mainly in personnel, finance and talents. This management ability directly reflects the production level of enterprises. An enterprise's operation and management

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abilities include not only the internal construction facilities conditions but also the analysis of the enterprise's external business activities. It contains the production and operation activities of the whole enterprise, which can directly reflect the production strength of the enterprise. If properly managed, it can help enterprises achieve effective management, and can also help enterprises achieve rapid transformation, so as to adapt the enterprise to the requirements of social development.

## **2.2 The Importance and Significance of Improving Enterprise Operation and Management Abilities**

Enterprise operation and management abilities are of great significance in the transformation of modern enterprises, and are the fundamental guarantee for promoting the economic development and capacity improvement of enterprises. Enterprise operation and management abilities are not only the talents that enterprise managers need to have, but also the capabilities that internal talents need. For a qualified enterprise operation and management, it is necessary to have certain operation and management abilities, not only to have a risk-awareness assessment capability but also to lead the enterprise, only in this way can they develop steadily in their positions, lead enterprises, and enable them to grow and develop. For internal talents, they need to have the ability to help enterprises develop, and they require high comprehensive quality, strong management ability and high level of knowledge. Furthermore, with the integration and development of the global integrated economy, China's socialist market economy has also put forward higher development requirements for enterprises, and the requirements for managers are becoming stricter, which requires managers to improve their own operation and management level and innovate their development ideas and development plans based on the changing market situation. In response to the constant changes in the domestic and international market economy, the improvement of enterprise operation and management abilities is the fundamental means to effectively improve its economic efficiency, reduce costs and help enterprises transform, therefore, under the current economic development, enterprises can only continuously adapt to the requirements of social development, improve their competitiveness, and improve the overall strength of China's economy by continuously improving their operation and management abilities.

## **3. Development Status of Enterprise Operation and Management**

In recent years, with the rapid changes in the socialist

market economy, the problems of operation and management of some enterprises have gradually emerged. These problems include not only the personnel management system but also the financial management. There are more or less problems in the enterprise management system, and the overall quality of the responsible personnel in the management department is not high, therefore, enterprises should pay attention to the improvement of their operation abilities to gradually improve the level of enterprise operation and management. In recent years, China has gradually raised its awareness of the cultivation of corporate management talents, and enterprises have also exhausted their methods of attracting talents, however, due to the imperfect operation and management model and management system, and the uneven quality of management talents, the operation and management abilities of Chinese enterprises lag behind some developed countries.

### **3.1 The System of Enterprise Operation and Management Is Imperfect**

The concept of a leader directly affects the way enterprises operate, especially some relatively small and medium-sized enterprises. At present, many enterprises in China are old-age enterprises, and their management concepts and management models are relatively backward, which makes it difficult for enterprises to adapt to the requirements of the times and social development under the leadership of this backward concept, especially for some old-age managers, their management philosophy has a low level of cognition, lacking the institutional awareness and normative consciousness that modern society should have, and it is prone to the problem of imperfect enterprise management system. Some enterprises even completely copy the model of successful enterprises, regardless of the actual absorption of their management experience, all kinds of enterprise management is completely a form, lack of normative, managers and departmental staff is an eye Close your eyes. It is said that nothing can be accomplished without norms or standards. It is obvious that there is no institutional constraint, and the management of enterprise is in a state of disunity, which affects the economic development of the enterprise to the greatest extent.

### **3.2 Lack of Innovation in Enterprise Operation and Management**

At present, some small and medium-sized enterprises in China are still in the extensive management mode. In the development of China's economy, private enterprises are also the main source of economic development. However, this model does not adapt to the development of modern

market economy, which makes some traditional enterprises unable to keep up with the trend of the times due to imperfect management system and management concepts, thus reducing the overall competitiveness of enterprises. Many small enterprise management models are single and the level of innovation management is low, which is not conducive to the innovative development of enterprises.

### **3.3 The Overall Quality of Enterprise Operation and Management Personnel Is Uneven**

In the development of enterprises, the comprehensive quality of talents is an important aspect of reflecting the comprehensive capabilities of enterprises. Especially as the talents of management personnel, society and enterprises are stricter with them. The management personnel of many old-age enterprises are relatively old, the management level and management methods are not advanced and innovative, and they cannot absorb new things and new experiences very quickly. In China, many talents who have just graduated from the enterprise have lacked the corresponding social experience and ability to analyze the market, or these management talents lack the ability to actually manage the enterprise. Due to the large number of talents currently required in China, many enterprises are mainly engaged in the introduction of talents, and some of the talents attracted by some enterprises are not professional enough, they are not satisfied with the development of the enterprise, so the existence of these people has correspondingly restricted the development of the enterprise. In addition, the enterprise lacks a qualified and effective human resources management system, and the enterprise leaders lack the cultivation and training of talents, which makes it difficult for many talents to get the opportunity to exercise after they actually enter the enterprise. The enterprise lacks the corresponding incentive mechanism for talent training, and cannot let the talents get enough spiritual satisfaction. Therefore, the strong mobility of personnel and the low quality of personnel have affected the economic development of enterprises.

### **3.4 The Personnel Management of Enterprise Is Unreasonable**

Personnel management is also called staff management. To put it bluntly, it is a series of management, selection, use, training and assessment of a enterprise's staff, aiming at improving the efficiency and economic benefits of the enterprise. Personnel management is mainly a management-oriented work established by the state or enterprise to achieve its purpose. It mainly conducts a series of management activities such as selection, use, training and

assessment of its staff. The purpose of its implementation is to regulate the relationship between personnel through scientific and rational ways and management systems, to maintain the enterprise order, employees as the core strength of enterprise development, and its comprehensive quality level is directly related to the development of enterprises. With the development of the times, the traditional personnel management standards have not been able to adapt well to the development of enterprises, however, personnel management personnel are lazy to update, which makes this standard lack of innovation, and has not played its true role in the enterprise personnel training stage; without a standardized management leadership team, personnel management lacks macro guidance, which reduces the efficiency of personnel management and ultimately affects the level of operation and management.

### **3.5 There Are Drawbacks in Enterprise Financial Management**

The most important thing for an enterprise's operation and management is the management of corporate finance. Under the current development of the socialist market economy, if an enterprise wants to grow and develop, it must do a good job in its management, especially for the financial management of an enterprise, the financial funds of a enterprise can be said to be the foundation of enterprise development. Only when financial management is done well can the economic benefits of the enterprise be fundamentally improved, and vice versa will affect the development of the enterprise. Therefore, the financial management of enterprises has a very important influence on the economic development of enterprises, but many enterprises today recognize the importance of corporate financial management, however, there have been some problems in the process of reform, such as the vague financial management objectives, the lack of innovation in financial management concepts, and the lack of scientific investment decisions.

## **4. Effective Measures to Improve Enterprise Operation and Management Abilities**

In response to a series of problems in the current Chinese enterprise operation and management abilities training, some corresponding solutions should be proposed to meet the development of Chinese enterprises. An enterprise's operation and management abilities should not only take certain measures on the system, personnel training, operation and management of various production activities, but also improve the comprehensive operation and management abilities of the enterprise.



#### **4.1 Innovative Enterprise Operation and Management Concept and the Management Model**

The concept of a leader directly affects the way enterprise operate, especially some relatively small and medium-sized enterprises. Therefore, in a modern market economy, operations and management need to have an innovative spirit, not only to update their own management concepts, but also to innovate a management model that suits their own enterprise development. Only the one that suits them is the most correct. An enterprise's management personnel must always keep innovation, actively advance with the times, remove their own dilapidated ideas, and use the latest and most unique management concepts to guide the enterprise's production and management activities; enterprise managers must have a sense of social awareness, constantly paying attention to the new dynamics of social development, to bring more fresh elements to the enterprise, in order to keep up with the pace of reform in the era, thus helping to improve operation and management abilities, and promote enterprise development. In addition, enterprises must continue to innovate their management models, actively use science and technology, and develop qualified management models to help enterprises develop according to the changing conditions of the market and their own development.

#### **4.2 Improve the System of Operation and Management**

A job with standards and standards will only appear to be level, and many Chinese enterprises are lacking this system. Some traditional enterprises have a lot of problems in the transition period because they do not have a standardized management system. Therefore, having a scientific and reasonable operation and management system is the basic guarantee for improving the operation and management abilities of enterprises. A sound management system can not only restrain employees but also give the enterprise a clear direction and goal, therefore, when formulating an operation and management system, an enterprise must be formulated according to the actual development of the enterprise. It must not be unrealistic and cannot be overstated. Combining the development requirements of the enterprise with the requirements of the society and the enterprise, the transformation and management of the enterprise are all institutionally constrained, which brings a system guarantee to the development of the enterprise.

#### **4.3 Improve the Overall Quality of Operation and Management Personnel**

If an enterprise wants to achieve development, it is in-

separable from the management of human resources, so it is necessary to cultivate the quality of its management personnel. Although in recent years, Chinese enterprise managers have greatly improved their capabilities, but they still have a certain gap with some advanced enterprises. Therefore, we must pay attention to the training and training of talents on the road of enterprise development to meet their material needs while paying attention to their spiritual needs. We sometimes have to admit that many foreign management models are relatively advanced. With the advent of the era of global integration, we need to absorb advanced things to meet the needs of Chinese enterprises. Through the analysis of the management model of other countries, it absorbs the outstanding factors that are in line with the development of Chinese enterprises, takes its essence to abandon its dross, combines with the operation and management mode of Chinese enterprises, and walks out a road of enterprise operation and management with Chinese characteristics.

### **5. Improve Personnel Management Efficiency**

#### **5.1 Establish Appropriate Talent Reward and Punishment Mechanisms to Increase the Enthusiasm of Managers**

Enterprise employees are the frontline strength of enterprise development. Their comprehensive quality level is directly related to the smooth implementation of corporate tasks, directly linked to the economic development and operational efficiency of enterprises. In order to effectively mobilize the enthusiasm of employees, enterprises can establish appropriate reward and punishment mechanisms. In addition, when assessing personnel management personnel, it is necessary to avoid the occurrence of power and privacy, to maintain a fair and impartial attitude, and to take the comprehensive ability of employees as the assessment content. In order to effectively implement the performance appraisal policy, the enterprise personnel department can better implement the reward and punishment mechanism, maximize the enthusiasm of employees, and at the same time strengthen the application of modern technology to employees, and ensure the high efficiency of personnel management.

#### **5.2 Pay Attention to the Training of Employees and Increase Training Efforts**

Increase the training of employees, rational use of human resources, put the personnel management work into practice, and truly play its role in regulating the enterprise. And the enterprise's regular training of relevant skills on employees is also conducive to improving the overall

quality of personnel management personnel, improving their level of cognition, combining talents with talents, and maximizing the effectiveness of personnel management. Therefore, increasing the training of employees is the key to the long-term stable development of the enterprise.

### **5.3 Standardize Personnel Management and Strengthen the Use of Science and Technology**

With the development and progress of science and technology, in the personnel management work, the use of science and technology to solve many problems, the electronic information of employees, the implementation of electronic files, while ensuring the timeliness of employee files, but also improve the effectiveness of personnel management

## **6. Improve the Ability of the Financial Management Department**

### **6.1 Scientific and Innovative Financial Management Concept**

In the current development of the market economy, enterprises should actively change the management concept, take financial management as the main development content, innovate scientific financial management methods, actively participate in the market, and keep pace with the times; enterprises must also have a certain sense of risk, so as to ensure that enterprises can get more benefits when making investments.

### **6.2 Establish a Sound Financial Management System**

After recognizing the importance of financial management, it is necessary for enterprises to establish a sound financial management system to regulate the financial

management personnel of the enterprise, and gradually improve according to the changes in the market economy, so as to ensure that financial management personnel cannot rely on the system when doing management.

## **7. Conclusion**

In short, if enterprises want to develop steadily in today's market economy, they must actively improve their own operation and management abilities while recognizing their own development status, make great efforts in all aspects, innovate management concepts, establish a sound management system, formulate a sound management system, and improve the quality of employees. In summary, enterprises are the most important to improve the management of talents in the management and management abilities, so as to ultimately promote the development of enterprises and improve the comprehensive competitiveness of enterprises.

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**REVIEW**

# Application and Exploration of BPR Theory in Hospital Financial Management under Informatization

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**ABSTRACT**

In recent years, people's work and life have been unable to break away from the application of technology and information industry. However, the booming and huge influence of big data and information age has a greater impact on people. In this form, the traditional model of public hospitals has a huge collision with it, so it actively seeks a way out and actively develops it. In the subsequent development, it needs to abandon the financial management mode of inefficiency, energy consumption, etc., advanced financial management model to improve the financial management of public hospitals. This paper mainly studies the application and exploration of BPR theory in hospital financial management under the informatization. Firstly, it discusses and analyzes the BPR theory in detail. Secondly, it combines the status quo of public hospitals to reconstruct the information management financial management plan. Before and after the comparison, the application is applied to the daily financial management of the hospital according to the actual situation.

**1. Introduction**

As far as the modern era is concerned, the ultimate development trend of any industry and field will be combined with advanced management concepts, and a new working model will be formed. The development of hospitals is no exception. It is always the responsibility of the hospital to save the lives and responsibilities. In addition, the hospital's managers should also plan the management of the hospital's operating system so that it can develop in a better direction.<sup>[1]</sup> In the overall development process of the hospital, the most easily overlooked part is the financial management work. This paper will make a clear analysis of this problem. Through the analysis of BRP theory, combined with the current situation of public hospitals, it will further promote public hos-

pitals. The overall development of this paper has a guiding significance for the practical application of BPR theory in hospital financial management under informatization.

**2. BPR Theory**

BRP is the abbreviation of business process reorganization. It was jointly proposed by Michael Hammer and Jams Champy. In the 1990s, the theory reached the climax of application. In practical application, BRP theory mainly emphasizes business process as the main body of transformation. Its focus is on business process management and reorganization around business processes. The goal is to meet the actual needs of customers, and based on this, fundamental and thorough design and application, as well as the practicality of management tools, to max-

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imize the application of management models in various industries. Completely break the traditional organizational structure and create a new business model, which can be improved in many aspects such as service, cost and speed.

<sup>[2]</sup> In the development of BPR theory, its focus is on business process management, and can accurately predict the resistance and risks that will be encountered in the implementation of its future work, and build a more complete development platform for its development.<sup>[3]</sup>

In recent years, the Chinese government has increased the medical reform of public hospitals in major cities. The goal is to “build a new mechanism and build a new pattern so that people can gain more sense of gains.” This will break the public hospitals. The mechanism guarantees a sustainable new operation mechanism and a modern hospital management system, and changes the uneven distribution of resources in public hospitals. The concept of BPR theory is combined with resource integration and resource optimization to maximize the chain management system between hospitals and patients and suppliers. The purpose is to achieve significant results in terms of medical costs, and improve medical quality and medical service levels. As an important part of the hospital, financial management can not only improve the operational efficiency of the hospital, but also further improve the level of refined management.

### **3. The Case Analysis of Hospital Financial Management Work under the Information Management Mode**

#### **3.1 Management Mode of the Central Warehouse of the Hospital**

Nowadays, the development of the national economy and the development of modern science and technology bring not only the material and spiritual satisfaction, but also the adverse effects on bio-physiology, which has led to an increase in the demand for medical and health technology in public hospitals. Not only that, the consumption of sanitary materials and medicines in public hospitals has increased sharply. For example, the expenditure on health materials is high. According to incomplete statistics, the expenditure on health materials of 116 medical institutions in a city in April-December 2017 is higher than that of 2016. The increase in December was 12.3%. Among them, the tertiary general hospitals increased by 18% year-on-year, and the secondary general hospitals increased by 17%. 116 medical institutions from April to December 2017, 100 Yuan medical income (excluding drug income) consumed 36.24 Yuan of sanitary materials, and there is still a big gap between the target of 20 Yuan set by the

National Health and Family Planning Commission. For hospitals, the central warehouse (including: drug library, health material library, general affairs warehouse) is required to manage different sanitary materials according to different responsibilities, and can link suppliers, financial departments and related departments to communicate effectively and timely. In this process, combined with the BPR theory, the overall efficiency of the hospital can be further improved, and the integration of business and finance can be realized as soon as possible.<sup>[4]</sup>

The process that the hospital's central warehouse has undergone before the management optimization work is mainly: the clinical department submits the relevant procurement plan according to the actual needs of its own department, which is sorted and integrated by the central warehouse, and after the confirmation, the supplier's choice is made, and then, Through the procurement center, the model and specifications of the purchased items are determined with the supplier, and the warehousing information is recorded in detail and accurately. At the end of the month, the data is sorted, and the invoices and forms are delivered to the finance department, and the financial department is At the end of the month, verify one by one and prepare corresponding accounting vouchers. Although the working system of the process is relatively complete, there are still obvious problems in the actual operation process. The problems are mainly manifested in two aspects. On the one hand, the hospital has high management requirements in terms of sanitary materials. At present, a relatively common problem in the inventory management of tertiary hospitals is that they have “contracted sales”, which will lead to unrealistic warehouse and inventory data, which is not conducive to the management of the warehouse of the hospital, and at the same time, the inventory backlog has led to excessive capital investment; On the other hand, in recent years, with the continuous development of society, people gradually upgrade the expectations and requirements of the medical industry, and are affected by the environment and lifestyles, resulting in the continuous expansion of hospitals and the consumption of medical equipment. In the procurement process, the hospital does not allow the financial department to participate in the evaluation of economic benefits. Without comprehensive consideration of economic and social benefits, the number and variety of sanitary materials purchased by hospitals continue to grow, resulting in a large amount of warehouse management procurement and dispersal of funds.

In response to these problems, the hospital gradually applied the BPR theory under the informationization. After the completion of the management process reconstruc-



tion of the warehouse sanitary consumables, the hospital began to apply the information management platform, and the process has undergone a major transformation. First, combing The hospital cannot charge sanitary consumables, adjust according to the principle of meeting clinical needs and reduce procurement costs; strengthen the management of sanitary materials in the platform departments (such as supply rooms, operating rooms, etc.) and clinical departments, and conduct quality and cost demonstration on consumables used, and seek to reduce Cost route; organize medical staff in the hospital to carry out medical and nursing charge related policy training, so that clinical nurses do not overcharge when they enter the doctor's order, and do not miss it; some hospitals use the logistics management system, and set up the secondary library in the department, gradually Cancel the "Contracted Sales" mode. Most hospitals that have not yet been able to achieve full secondary library management will also strengthen the management of high-value consumables, and set up secondary warehouses in the departments with large usage (such as: central operating room) to ensure the use of high-value consumables. Tracking and control is available.

### 3.2 Expense Management of the Internal Scientific Research Department of the Hospital

With the development of the times, the advancement of science and technology, the needs of all aspects of people's lives have been comprehensively improved. For this reason, medical management and other related work also need to gradually optimize the overall state of its own development. Therefore, the corresponding research cost input is also comprehensively set. In the future development, how to apply scientifically and manage research funds is one of the important tasks of the hospital finance department. The data research of this paper is 2016; there are as many as 743 research projects within the hospital. Although the relevant expenses of medical research in China have been managed by relevant departments such as the Research Office at present, the Ministry of Finance still has an important management role in its actual working mode and overall development, and the simultaneous development of more than 700 scientific research projects is undoubted. Adding huge obstacles to financial management work.<sup>[5]</sup>

When the financial department conducts traditional forms of research funding management, the main work flow is: the hospital financial person in charge receives the medical research project and allocates the corresponding research costs, notifies the research office to allocate funds for autonomously, and funds the various projects. The

management carries out electronic and paper registration and registration. The paper reimbursement form needs to be reviewed, confirmed and signed by the various leadership levels within the hospital, and finally the procurement of experimental materials such as scientific reagents and configuration is completed, but in the workflow, there are also many problems. As far as this study is concerned, there are three main manifestations of the problem: First, the financial staff does not have budgetary control for the funds, and the general manager of each scientific research project is writing the project declaration. At the time, although the budget form will be filled out, in the subsequent actual work, it cannot be strictly carried out according to its plan, which makes the budget work formalized, and cannot strictly control the related expenses and make it seriously overspend; secondly, it wastes a lot of time. Research projects are generally carried out in hospitals, where the materials and equipment used can be borrowed from hospitals, but in the course of the work, they are purchased on their own, not only to a large extent, but also a series of demand approvals. It takes a minimum of one month.<sup>[6]</sup> Finally, the registration method is still mainly manual. As we all know, financial management needs to carry out report management, number verification, etc., but at this stage, the financial management of medical projects is still mainly manual, which reduces work efficiency and accuracy to a large extent.

In response to such problems, a good and effective solution can be obtained under the BPR theory under the application informationization. First of all, the hospital needs to construct a corresponding scientific research procurement system, and dock with the relevant systems of the research office and the central warehouse. The scientific research-related staff selects the required items on their platforms and generates orders. After the goods are accepted, a settlement statement is issued, and in the relevant management system for electronic approval, eliminating the leadership signing link, directly to the financial department for cashier audit.<sup>[7]</sup> This kind of method can comprehensively improve the management efficiency of research funds to a large extent.

## 4. The Application of BPR Theory in Hospital Financial Management under Informatization

### 4.1 Implementation of the Application of the Budget Management Process

The comprehensive budget system was proposed in recent years and will be piloted in a three-level public hospital nationwide starting from 2018. It is expected to be applied



in the reform of the “Government Accounting System” in 2019. This kind of budget mechanism can comprehensively deepen the hospital as a whole. Development mainly refers to all activities that can involve the economy in the process of working in a hospital. All employees need to participate and implement a full-scale supervision system. This approach challenges the traditional financial management mode of the hospital to a large extent. As far as the current budget platform of the hospital is concerned, the overall process lacks budgetary expenditures, release and other related work links, and to a large extent lacks supervision and management of departmental budget execution work, and the formalization is too serious. Therefore, in the subsequent management applications, the process should be redefined and innovated. After further optimization of the process, the reorganization work can be combined with the relevant systems of accounting and form a comprehensive budget management system.<sup>[8]</sup> When making budgets, it should be based on the completion of the budget for the previous year and the operation of the hospital this year, and the requirements are very accurate, so that each service project has a precise budget and has strong operability. Combine various types of costs with the specific tasks of relevant departments, departments, and teams, and use the budget as the standard for cost control, giving full play to the constraint role of the budget in cost control. The hospital should strengthen cost control during the implementation of the annual budget. Reason analysis of the deviation between actual execution and budget, correcting unreasonable expenditures, and conducting budget analysis and performance evaluation at the end of the period, the optimized budget management process is integrated with the accounting cost accounting system to make the hospital financial management clearer and the data more accurate.

#### **4.2 Resource Allocation to Improve Medical Environment and Optimize Hospital Operation Process**

Nowadays, patients have higher requirements for their medical environment, family wards, super-advanced medical facilities, and garden-like hospital environments. This is probably the most ideal medical environment for patients. For such requirements, public hospitals must continue seeking development in innovation, improving the medical environment as much as possible to meet the needs of patients, thus greatly improving the patient's happiness index. However, for domestic public hospitals, it is far from the requirements in the above content. If you want to gradually complete its development, it is impossible to rely solely on the hospital's own strength.

Therefore, it is necessary to rationalize the allocation of resources. From the hospital perspective, public hospitals need to improve from the medical treatment process, medical services, medical environment, etc. For the financial department, optimize the allocation of funds according to the requirements of the hospital, and purchase medical equipment. Engineering construction and other aspects can follow the principle of seeking truth from facts, and sign specific and effective implementation plans with the cooperation units, which play a corresponding management and supervision role. Taking the hospital's comprehensive budget management system as the main body, the hospital's scientific research management, warehouse management, and manpower management are gradually optimized, and a flow chart of hospital operation management is drawn. Create an information management hospital operation management platform with information tools. The hospital operation management platform will break the management mode of the traditional financial department and monitor the whole process of hospital management. Through the data collection and analysis of the hospital operation management platform, it makes powerful decisions for the hospital's strategic plan and provides reasonable data for the allocation of funds, providing a scientific basis for the development of the hospital.

#### **4.3 Strengthening the Risk Management and Control Function of the Hospital's Financial Department**

Under the support of BPR theory, the relevant personnel and leadership of the hospital's financial management work gradually realized the identification of risk points in the financial department, the importance of risk management and control, and under the influence of BPR theory, operated the work <sup>[9]</sup>. The financial revenue and expenditure situation is the basis for strengthening the risk management and control of the hospital as a whole. It can compare the data analysis of medical services and medical consumption, and can provide a more correct business philosophy for the operation of the hospital, so that it can be gradually improved. Develop, correctly guide and help the hospital leadership's management behavior, and strengthen its basic management to a large extent, improve the overall economic benefits, and further improve and promote the development of public health care in public hospitals. In this application, first of all, the relevant financial personnel need to gradually strengthen the awareness of the risk points of the public hospital financial system, can accurately grasp the risk points, and build a more scientific and comprehensive risk management mechanism to

effectively prevent and resolve Relevant risks will eventually realize the gradual growth of the hospital. Secondly, risk management and control requires financial personnel to be realistic and follow the facts-based work principles to carry out corresponding scientific and reasonable work, and in the follow-up work, Enhance personal work skills and legal awareness, so that they can play their own functions to a greater extent, and provide greater help for hospital financial development.

## 5. Conclusion

In summary, applying the concept of BPR theory under informatization to the financial management of public hospitals can better optimize financial processes and standardize financial systems, effectively improve the level of financial management and work efficiency, optimize resource integration, and reduce Work intensity and work error rate can provide a basis for the overall development and harmonious economic development of the hospital. It is hoped that the research of this paper can further improve the financial management level of hospitals and provide important theoretical and practical value for the development of public hospitals.

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## REVIEW

# Existing Problems and Countermeasures in Financial Securities Market Regulation

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### ABSTRACT

At the present stage, with the continuous development of social economy and science and technology, China's financial and securities industry has gradually developed. As an important part of China's socialist economic market, including the financial and securities industry, therefore, to a certain extent, the development of the financial securities industry has promoted the prosperity and development of China's economy. In other words, strengthening the management of financial securities market regulation can promote the sustainable development of the securities industry, thereby promoting the rapid development of China's economy. This paper mainly discusses and expounds some problems existing in the current process of financial securities market regulation, and proposes solutions to it, hoping to be helpful to the financial securities industry.

## 1. Introduction

At this stage, with the continuous development of China's social economy and science and technology, especially since the reform and opening up, the hot topics that the public has been paying close attention to have gradually shifted to the economic situation of the financial securities market. Fundamentally strengthening financial securities market regulation can protect the fundamental interests of investors in the financial securities market, and thus promote the development of China's social economy. As everyone knows, the operation of the financial securities market itself is a complicated process. Therefore, there are inevitably some problems in the process of financial securities market regulation. It is particu-

larly important to thoroughly study the existing problems in the process of financial securities market regulation, so as to better promote the prosperity and development of China's financial securities market.

## 2. The Important Significance of Strengthening Financial Securities Market Regulation

### 2.1 It Can Protect the Fundamental Legitimate Rights and Interests of Financial Investors

As everyone knows, the financial securities market is prone to monopoly. It is an incomplete competitive market. Some investors can manipulate the market price of stocks by their own ability when financial securities do not reach a certain size. For example, for state-owned shares

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in listed companies, the company will have a more serious market manipulation when it adopts non-listed circulation, which is not conducive to the income of investors in the secondary market.

## **2.2 It Can Protect the Fundamental Interests of the Investment Market Participants**

As everyone knows, the capital market is composed of various securities institutions, listed companies, insurance companies, banks and investors. In the process of financial securities market regulation, if the investment market participants do not restrain and regulate the market, it may cause market failure, thereby causing investors to have conflicts in interests; in serious cases, the interests of both parties will be infringed, resulting in huge losses in the overall interests of the capital market.

## **2.3 It Can Guarantee the Sustainable and Stable Development of Financial Securities Market**

At this stage, there are many shortcomings in the financial securities market, such as manipulating stock prices, internal trading, and raising stock prices, therefore, we should fully understand the risks in the financial securities market, insist on eliminating the occurrence of criminal acts, strictly enforce the law, strictly prevent and control various risks, and regulate the development of financial securities market activities. Once illegal securities trading activities are discovered, they must be severely investigated and dealt with immediately, thereby maintaining a stable order in the financial securities market and promoting the sustainable development of the financial securities market.<sup>[1]</sup>

## **3. Existing Problems in the Process of Financial Securities Market Regulation in China**

The rapid development of the financial and securities industry has enabled the optimal allocation of securities market resources, and has also promoted the continuous development of China's social economy. However, many problems have arisen in the development of the financial securities market, which has affected the healthy and stable development of the financial securities market.

### **3.1 Financial Securities Regulators Are Unable to Exercise Regulatory Function**

As we all know, in the financial regulation system of our country, the main role is the CSRC (China Securities Regulatory Commission). At the same time, it is also the most important regulator in China's compatible securi-

ties regulation system. However, in practice, there are many regulatory entities in the financial securities market, which makes it impossible for each subject to effectively exercise its regulatory power when conducting regulation work, and the regulatory duties are rather vague. If there are too many regulatory entities in the financial securities regulation system, the efficiency of regulation will be relatively low, which is not conducive to the rapid development of the financial securities market. In the process of the development of listed companies in China, since each process of securities transaction itself is an organization with self-discipline nature, for listed companies, financial securities transactions themselves play a role of review and regulation, but in securities financial institutions. In the actual process of regulation, because the securities trading units are subject to many restrictions, they are unable to effectively exercise their rights for regulation, resulting in many problems.<sup>[2]</sup>

### **3.2 Lack of Supporting Securities Market Legal System**

At this stage, in the process of China's financial securities market operation, from a holistic point of view, the legal system is relatively simple and cannot support the effective operation of the securities market. In other words, there is no sound legal system to solve the problems that arise in the operation of the financial securities market. Because in the process of the financial securities market regulation, the supporting market legal system is relatively lacking, so there are many legal loopholes.<sup>[3]</sup> At this stage, because China's securities market does not have sound regulatory market laws and regulations, and many investors do not have the legal awareness they deserve, thereby bringing great pressure on the securities regulatory agencies, which has led to a decline in the self-regulating ability of the securities market, which ultimately led to a lack of vitality in China's securities regulatory market and a single regulatory approach. Therefore, in order to make China's relevant legal provisions play their legal effects when applied, relevant departments should improve the supporting regulatory legal system.<sup>[4]</sup>

### **3.3 Financial Securities Market Activities Are Relatively Simple**

As everyone knows, China is an industrial power. In the market of commodities, even if China is still in the stage of development, it is still in a leading position. However, for the financial securities industry, due to the relatively late start of China, the development speed is relatively slow, which leads to the relatively small scale of China's



financial market at this stage.<sup>[5]</sup> The root cause of this phenomenon is that most enterprises rely excessively on bank loans due to problems such as the financing system, leading to a series of problems in the internal financing system, which ultimately led to a relatively single scope of activities in the financial securities market, which could not expand the size of China's securities market.<sup>[6]</sup>

## **4. Effective Countermeasures for Financial Securities Market Regulation**

### **4.1 Clarify the Relevant Responsibilities of the Regulators**

In the process of financial securities regulation, many regulatory units will be involved, and many regulatory bodies will appear, which will result in unclear and unclear duties of various regulatory bodies, therefore, in this process, in order to protect the authority of the regulatory authorities in the market, the relevant government departments should clearly allocate the regulatory obligations and rights of each regulatory unit, and give the regulation committee the rights it deserves to establish a sound market regulation system, thereby achieving the sustainable development of the financial securities market and protecting the interests of investors from damage. It should be noted that in the operation of the financial securities market, the regulatory committee should appropriately weaken its participation, reduce the degree of intervention in the securities market, appropriately increase its administrative power, strengthen macro regulation, and simplify the approval process. In addition, regulators in the securities market should also improve their work skills and comprehensive quality. Because with the continuous development of China's science and technology, a large number of financial instruments and regulatory operations have emerged in the financial securities market, which has raised the need for higher levels of work and professionalism for regulators in the financial securities market. Therefore, relevant departments should increase the training of regulator personnel, thus laying the foundation for the sustainable development of China's securities industry.<sup>[7]</sup>

### **4.2 Establish a Sound Financial Securities Market Regulation System**

With the continuous development of social economy, the financial securities market has also developed rapidly. In this process, relevant departments of our country have gradually improved the corresponding laws and regulations. In order to obtain effective and detailed laws and regulations, the financial securities market needs to wait for other laws and regulations to be gradually improved

before it can improve the relevant laws of the financial securities regulatory system, so that there can be laws to abide by securities institutions during working process. Previously, the regulatory measures used by China's regulatory agencies were relatively simple, and the regulatory system was not sound. In order to effectively solve these two problems, relevant financial and securities departments should cooperate with government departments to formulate sound laws and regulations and supporting financial market regulation systems, so that China's financial securities can be effectively protected by law after problems occur in the course of operation. In addition, in the process of the development of the securities market, the government departments should change their dominant optimization position, reduce their own intervention level, and cooperate with relevant securities institutions to carry out their work. In the process, relevant securities institutions may use economic means and legal means to carry out their work when necessary. For the regulatory staff in the securities market, the sound securities market regulation system has a certain influence. Because it enables relevant staff to regulate own behaviors and improve their work efficiency, so as to exert the enthusiasm of all departments and employees. In the process of establishing a regulatory system, relevant personnel in each securities market are required to make concerted efforts to put forward opinions, so that the regulatory system can exert its greatest advantage, so that the subsequent regulation work can be carried out efficiently and smoothly.<sup>[8]</sup>

### **4.3 Strengthen the Effective Combination of the Internet and Financial Markets**

At this stage, with the continuous development of social economy and science and technology, China's Internet technology has also developed rapidly. At present, many enterprises are exploring ways to effectively integrate with the Internet, and some industries have been effectively integrated with the Internet. For the financial securities industry, it is necessary to thoroughly study how to effectively integrate with the Internet, so that China's securities industry can develop rapidly and be recognized in the international financial market.<sup>[9]</sup> With the continuous development of modern science and technology, a large number of advanced communication technologies have appeared in China's securities market, making it possible for some transactions that cannot be carried out in the traditional financial securities trading market. In the actual financial securities trading market, there is a saying called financing toolbox, that is, the more asymmetric the securities trading parties are in all aspects, the greater the chance of successful trading. In order to effectively avoid



the bond or stock market to bring certain investment risks, some enterprises can complete financing directly through the crowdfunding financing platform when the cost in the market is relatively low and the information is relatively transparent, thereby achieving a unified management of the securities market.<sup>[10]</sup>

## 5. Conclusion

In summary, although China's financial securities industry has some problems in the process of development, however, as long as the relevant departments carry out a series of related measures on these issues, it will enable China's securities market to achieve sustainable development, thereby promoting the continuous development of China's social economy.

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## REVIEW

# Adapt to the New Height of Audit Status, and Deepen Audit Reform

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### ABSTRACT

The Central Audit Committee held its first meeting. Comrade Xi Jinping, on behalf of the Central Committee, raised China's new era audit work to a new height, and put forward new requirements and new directions for China's audit system reform, which indicates that China's audit work will usher in a new historical stage. How to adapt to the new height of China's audit work, and strengthen the deepening reform of China's audit system is an urgent task facing auditors.

## 1. The New Height of China's Audit Status

Before the reform and opening up, China's planned economy with a highly unified human and financial assets had almost no audit work. After the reform and opening up, in order to adapt to the expansion of the independent management rights of enterprises under the conditions of market economy, the audit work was begun to carry out and implement, and China's audit system and audit institutions were built. Due to limitations on the understanding of audit work, the initial stage of audit development is limited to the audit of the company's financial situation. As the content of the audit continued to expand, the audit work gradually extended to the public institutions and all departments that use financial funds.

However, many people only think that auditing is only a financial management tool, and it is only a kind of management method for funds or property that monitors the truthfulness, legality and effectiveness of fund revenue

and expenditure.

At the first meeting of the Central Audit Committee held on May 23, 2018, Comrade Xi Jinping made a statement on behalf of the Central Committee that, the audit work has the function of promoting the prohibition of the party Central Committee, safeguarding the national economic security, promoting comprehensive and deepening reform, promoting the rule of law, and promoting the building of a clean government. It is an important part of the Communist Party of China and the Chinese supervision system, which marks that China's audit work, will enter a new historical stage.<sup>[1]</sup>

The Central Audit Committee's new orientation of China's audit work is based on the practice of China's political and economic construction since the reform and opening up, as well as the new requirements of China's social and economic development in the new era. China's audit work will now examine the microfinance of an enterprise or institution and extend it to the entire macro-national

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economy; from pure management to the fields of people's livelihood, social development, and clean government; from partial economic issues to the overall situation of the Communist Party of China's ruling style and China's strategy of governing the country. China's auditors have a long way to go and will be competent to escort China's economic and social development in auditing supervision.

On the one hand, the practice of reform and opening up for forty years strongly suggests that the principle of governing the country centered on economic construction must be matched by a powerful supervision system. Audit work is an "immune system" that has the function of preventing, revealing and resisting in this powerful supervision system. Without this "immune system", or if the "immune system" is not powerful, it will breed tumors and endanger the health.

On the other hand, with the continuous development of China's social economy, China's economy is getting bigger and bigger, and the social and economic phenomena are becoming more and more varied. As China's international status and economic strength continue to increase, the political and economic uncertainties it faces are also increasing, which requires us to enhance the flexibility of timely, flexible and changeable, and to match this need to enhance audit supervision.

In line with the central government's new height and new requirements for auditing, the intensity and breadth of China's auditing supervision must be strengthened. The first is to strengthen the intensity of auditing and monitoring, to take strong medicine to treat the severe illness, to rectify the chaos, and to achieve the "strong audit" requirements of the central government to "be as audited as possible, the audit must be strict, and take accountability Serious"; the second is to achieve full coverage of the audit. Full coverage must eliminate the blind area of audit and supervision, and conduct a comprehensive audit of public funds, state-owned assets, state-owned resources, and leading cadres to fulfill their economic responsibilities. Not only the full coverage of all departments within the scope of the original audit, but also the full coverage of all departments, fields, and related personnel related to the use of funds, and the full coverage of the entire process from fund budget and approval to use, so as to ensure that audit supervision does not leave blanks and dead ends. Only in this way can the audit work not only ensure the effective use of funds for enterprises and institutions, but also the safety of the entire national economy. Moreover, it can play an important role in "guaranteeing the implementation of major national decision-making arrangements," "tracking and auditing the implementation of major policy measures of the Party Central Commit-

tee", and "promoting comprehensive deepening of reforms and promoting law-based governance of the country."

## **2. Strengthen the Deepening Reform of the Audit System**

In line with the new functions and requirements of China's audit work; it is necessary to strengthen the deepening reform of the audit system. The reform of the audit system involves many aspects such as system, mechanism, organization, personnel, etc. The key must be made more in line with China's national conditions and the nature, laws and characteristics of auditing.

### **2.1 Strengthen the Leadership of the Communist Party of China on Auditing**

Adhering to the socialist ideology with Chinese characteristics in the new era as the guide, comprehensively implement the spirit of the Communist Party of China's 19th National Congress is the general requirement of the audit work conference for audit work, and is also the general principle for deepening audit reform. Strengthening the leadership of the Communist Party of China on auditing at all levels is a fundamental reform of the audit system. Different from the West, first, the main body and foundation of China's audit object is the socialist public economy, and the second is the socialist market economy implemented by China. The country's regulation of the market is not only stronger than the West, but also needs to conform to the overall direction of the socialist economy. China's auditing system is different from the United States' subordinate to Congress, and it is different from some similar judicial structures in Europe, and has its own distinctive characteristics.

The Communist Party of China is the core force that leads our cause. As an important part of the Communist Party of China and China's supervisory system, we cannot leave the absolute leadership of the Communist Party of China.<sup>[2]</sup>

Firstly, the establishment of the Central Audit Committee is the final implementation of the audit leadership of the Communist Party of China. The Central Audit Committee is positioned at the decision-making and deliberation body of the Central Party's central audit work. The specific functions are "to steer the direction, seek the overall situation, set policies, and promote reforms", which mainly provides political guidance, top-level design, institutional policies, and coordination and other major auditing policies for audit work. The leadership and management of specific audit work is the responsibility of the State Council Audit Office.

Secondly, local auditing units at all levels must obey

the leadership of the higher-level auditing units. On the other hand, through the political responsibility of the Communist Party of China at all levels of the auditing organization, the Communist Party of China is responsible for the auditing work.

Thirdly, enterprises, enterprises and social organizations, on the one hand, all audits involving relevant parts of state funds, audited by state auditing agencies or auditing agencies entrusted by state auditing agencies, and accepted by the auditing organs at all levels; on the other hand, the internal audit work of enterprises and institutions, audit institutions at all levels have the responsibility and obligation to guide and supervise their work. Among the state-owned enterprises and institutions, the party organizations have the power to implement the line, principles, and policies of the Communist Party of China, to ensure supervision of the implementation of the line, principles, and policies of the Communist Party of China and to participate in major issues. Large state-owned enterprises are directly dispatched by the SASAC to the audit supervision team, which also reflects the leadership of the Communist Party of China in auditing supervision.

## **2.2 Restrict Power by Right**

China's audit work has not been effective enough for quite a long time, and even the audit supervision is ineffective for combating corruption and promoting honesty. Even if the audit department requires the auditee to provide relevant information, there will be intentional obstacles and delays. There is only one reason: the right of audit department is not big enough, strictly speaking, the power of the auditee is greater than the audit department. Auditing is not just a formal examination of financial processing and its accounting, but a compliant, legal, and effective review of the funds and property use of those who are entitled to the accounts. If the audit encounters a non-compliant and illegal user, it may conflict with the auditor, and the outcome will be the winner of big power, which will result in the failure of the audit project. Because the audit is under the supervision of the same body, the auditor is administratively obeyed by the auditee, and it is difficult to form the authority and deterrent of the audit supervision. The only way is to separate the auditing organization from the previous responsible body and give independence to the authority. Even internal audits should not become subordinate organizations of the operating entities. For example, the auditing departments of enterprises and institutions should not become subordinates of management leadership, but should be the institutions under the leadership of party committee or the board of directors with the participation of party committee.

## **3. Put All the Measures for Audit Reform into Practice**

### **3.1 Implement “Audit Integration” to Achieve National Unified Management of Audit Work**

After the basic system of auditing is clarified, the implementation of the national unified management of audit work is solved. Firstly, it is necessary to strengthen the leadership of the higher-level auditing organs to the lower-level auditing organs, and highlight the independence of the auditing; secondly, it is necessary to merge the individual audit functions of various government departments into the audit department to form a joint force for audit work; thirdly strengthen the guidance and supervision of the internal audit work, and incorporate the internal audit of the basic unit into the National unified management of audit work; fourthly, mobilize the power of social auditing, and encourage some of the social auditing specialization, and enhance the level of auditing supervision and specialization.

### **3.2 Take the Intensive Point of Capital and Wealth as the Entry Point for Reform**

The essence of the audit work is to audit and supervise the financial power. The financial powers that operate irregularly are often concentrated in funds and financial power. Large sums of money, such as major projects, key projects, and key people's livelihood; Decision-making procedures for the advance and final accounts of the use of funds; Leading cadres with large capital decisions... should be the targets of audit coverage and audit reform.

### **3.3 Improve Audit Effectiveness, with Science and Technology “Strong Audit” as the Main Path**

Strengthening the intensity of auditing will inevitably increase the input of manpower and financial resources. However, it is necessary to improve audit effectiveness and take science and technology innovation as the main path to achieve the goal of reducing audit costs and strengthening auditing.

Firstly, through auditing scientific innovation, constantly innovate the auditing concept, and deeply understanding and summarizing the laws and characteristics of various risks and hidden dangers in economic and social operations; secondly, use the latest technology to achieve innovation in auditing methods. That is to make full use of the Internet, big data technology, construction of data systems and digital auditing platforms, to achieve new forms of auditing, such as big data analysis of audit data, synchronization of financial operations and audit supervision.

### **3.4 Strengthen the Construction of Auditing Talents and Improve the Quality of Auditors**

In order to adapt to the new functions and requirements of China's audit work, auditors should not only be familiar with economic management knowledge such as financial management principles, accounting principles, auditing standards, but also familiar with practical aspects such as engineering technology; not only can the auditors evaluate the error correction, but also provide consulting and services in terms of management functions from the perspective of capital operation.<sup>[3]</sup>

At present, most of the audit staff is transferred to financial positions, and the knowledge is too focused on financial accounting. In order to meet the needs of the new situation, we must expand the knowledge of competent positions and improve our business capabilities and standards. Encourage auditors to increase their knowledge of economic management, law, and engineering through on-the-job learning. Consciously supplement young people with legal and engineering backgrounds to enter the audit team, and hire social experts to serve as part-time auditors according to the characteristics of different projects.

### **3.5 Strengthen Self-construction of Audit Institutions**

Follow the requirements of the central authorities to strengthen the construction of the auditing institutions

itself, "establishing the spirit of auditing, establishing a career with innovation and standardization, and building Integrity with self-construction." The auditors must strengthen their convictions and consciously fulfill the political requirements of "administering the party's political responsibility for the party" and keep consistent with the central government's policy. Not afraid of evil, not afraid of pressure, standing in the spirit of auditing, has a high sense of responsibility and dedication to the maintenance of state funds and property; Connect with the reality, keep pace with the times, keep learning, and establishing a career with innovation and standardization; With the requirements of "firm belief, professional proficiency, pragmatic and practical, and upright and honest", do a good job in building a team of professional auditors.

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## REVIEW

# Discussion on the Logical Coordination between Legal Theory and Legal Practice——from the Perspective of the Legal Basis of NPC’s Discussion and Decision-making Power on Major Issues

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### ABSTRACT

The decision of local people's congresses to discuss major issues is a basic right granted to local people's congresses by the Chinese Constitution and laws. However, in practice, the implementation of the power of deliberation of major issues by local people's congresses is worrying. By applying the theory of Chinese traditionalism and unity in the theory of law, the theory of “sovereignty in the people” in the social contract theory of Western natural law school, Austin's “legal command theory” in Western positivist law and Hart's “recognition” “Rules theory” to argue that the integrity of rights necessarily involves the dual factors of decision-making and execution. At the same time, the existence and operation of the law always reflects the development of the political system. The realistic political situation requires us to make more precise and meticulous refinement of the external form and specific technical links of the legal system, and to coordinate the rules to make up the legal theory and Conflicts and conflicts in legal practice help to reform social institutions.

## 1. Introduction

The NPC discussion decided that major issues belonged to the national political system, and the use of legal theory to explain its dual structure of politics and law has important practical significance. Since the 18th National Party Congress, General Secretary Xi Jinping attaches great importance to the important role of the Constitution in governing the country, and has repeatedly stated the essence of the Constitution. “The full implementation of the Constitution is the primary task and basic work for building a socialist country ruled by law.” At the same time, he stressed that “in order to govern the country according to

law, we must first adhere to the principle of governing the country according to the constitution, and insisting on

governing the country according to law must first be governed by the constitution.”<sup>[1]</sup> Following the constitutional rules is the highest principle and essence of legal practice. However, the concept of legislative reform in the real state tends to contradict the trend of Western equity and the political system under the guidance of Chinese Marxist theory, which makes the spiritual essence of the constitution encounter an enforcement barrier at the judicial practice level, and reflects similar problems in the legal practice level in a series of judicial reforms.

As we all know, our era is an era of moving towards

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the rule of law, and an era in which the rule of law has received much attention and respect. In all political life and institution building, we are becoming more and more accustomed to understanding and solving social problems from the perspective of the rule of law.<sup>[2]</sup> At the same time, the close connection between law and politics in fact and internal logic is objective existence rather than artificial construction. The common ground of their logic is that they all face the responsibility of establishing and maintaining a common social order in the face of common social public interest requirements.<sup>[3]</sup> On the one hand, the existence and operation of socialist Chinese law always reflects the political development of the country. On the other hand, politics has a decisive role in the de facto and logical aspects of the law. Therefore, the study of the NPC's rights system still needs to find its theoretical basis at the legal level to guide practical application.

Specifically, the decision of the local people's congress to discuss major issues is taken as an example. The decision of the people's congress to discuss the decision on major matters is a basic right granted by the Constitution and the law to the local people's congresses and their standing committees. However, in practice, the implementation of the decision-making power of major issues is the most important issue facing now. Through the study of the theory of regression law, using the "people's sovereignty theory" in the traditional theory and the social contract theory of Rousseau in the Western natural law school and the western positivist law school, the English jurist Austin's "order theory of sovereigns" The multi-dimensional analysis of Hart's "recognition rule theory" of the new analytic school, to explain the legal theoretical basis for the decision of the NPC to discuss major issues, can provide theoretical guidance for the implementation of the decision-making power of major matters, and realize the value dimension of the theory of legal function. At the same time, to some extent, to resolve the tension between the decision-making power of major issues and the actual mechanism.

## **2. Legal Explanation of NPC's Discussion and Decision-making Power on Major Issues**

As the basic form of the Chinese political power and the fundamental political system, the people's congress system is China's most important form of political democracy and the fundamental way to realize political power. As early as the 1980s, the

theoretical and practical departments formed a general consensus on the "four powers" endowed by the Constitution and the law by the local people's congress and its

standing committee. These four rights are: (1) legislative power, formulation and Promulgate local laws and regulations; (2) Determine the power of major matters, discuss and decide on major issues of political, economic, cultural, educational, health, civil affairs, and ethnic work in the local area; (3) Personnel appointment and dismissal, including decision-making, Approve the three categories of appointment, dismissal, appointment and dismissal; (4) Supervise the power to supervise the work of the government at the same level and the courts and procuratorates.<sup>[4]</sup> That is, the local people's congress's decision-making power to discuss major issues (hereinafter referred to as "the decision-making power of major matters") becomes a separate authority other than legislation, personnel appointment and dismissal, and supervision, that is, the decision-making power of major decisions of local people's congresses.

As a separate power of local people's congresses, the decision-making power of major matters is mainly based on the relevant provisions of the Constitution and the Local Organization Law, and gives local people's congress deputies the right to discuss major issues and make relevant decisions. The local government accepts the decision of the National People's Congress. It is also responsible for implementation, with a view to complying with and giving back to the people's wishes. The essence is the sovereignty of the people and the people being the masters of the country. The implementation steps of the decision-making power of major matters in specific procedures can be summarized as follows: "one government and two Supremes"(the Central People's Government, the Supreme People's Court and the Supreme People's Procuratorate) are invited to the local people's congress for discussion and decision-making according to major events in the region. The NPC discusses and decides on major issues before handing it over to the specific government. The department goes to perform. In the process, due to the imperfect existing mechanism and power allocation, the following problems occurred in the actual situation, and concentrated in three situations: (1) The ambiguity of rights, the government departments cannot effectively implement the discussion of major issues in local people's congresses. Deciding to make major matters determine the ambiguity of rights; (2) the concept is unclear, the concept of "major matters" is too general, and no scientific standard has been found to refine major issues except for example and generalization. The arbitrariness of the proposals for major issues has been raised in the "one house, two houses", but in reality, due to conflicts of interest in the department, the major incidents that need to be resolved are brought to a halt. (3) The implementation is weak, and

there is no specific operability requirement for how the local people's congress initiates the proceedings.

Furthermore, a result in the logical chain of “draft-resolution discussion-specific implementation” can be summarized as follows: its theoretical logic is feasible, but if a certain link is not strictly implemented, it will make a major decision. It is theoretically feasible and difficult to practice. In view of the above three specific

problems, it can be concluded that although the three issues have different focuses, they all have one common feature—That is to say, the decision-making power of major matters of local people's congresses has been blurred, and people's sovereignty has not been properly expressed and implemented. Furthermore, the falsification of the decision-making power of the NPC to discuss major events essentially weakens the people's sovereignty, thus making it lose its foothold in theoretical guidance and practice. In order to solve this problem, we need to re-examine the legal basis for the decision-making power of major decisions of the NPC, establish a theoretical framework for the application of rights, and better guide the practice from it.

### 3. The Legal Basis of Decision-making Power on Major Issues

According to the above analysis, the decision of the local people's congress on the discussion of major events is essentially the sovereignty of the people and the people being the masters of the country. Furthermore, the theoretical basis for the decision-making power of major events can be explained from the three dimensions of Chinese traditional political theory, legal theory, Western natural law school and Western analytical positivist law school. See Table 1:

**Table 1.** The Legal Basis of Decision-making Power on Major Issues of Local People's Congress

Theoretical School	Specific Doctrine	Relevant insights
Traditional Chinese Theory	Combination of Legislative and Executive Powers	Under the central monopoly system, the decision and implementation of the work of state organs is highly coordinated.
Western Natural Law School	Popular Sovereignty Theory	Rousseau elaborated on “sovereignty in the people and democratic centralism” in his “social contract theory”. All power of the government comes from the people, and the government is the agent of the people.

Western Positivist Law school	Legal Order Theory	Austin believes that “the behavior of the legislator is regarded as the behavior of the sovereign and the law is defined as a command of the sovereign” is realistically targeted. The claim of “law is power” has its staged historical correctness, because such a “legal command theory” contains the elements of the will of the sovereign and execution.
Western Positivist Law School	Recognition Rule Theory	Hart believes that the recognition rule is not stated, but that its existence is manifested by a court or other power organization in a certain behavior, and its existence is a matter of fact. Is a measure of whether other rules have legal force.

Firstly, in the traditional Chinese legal theory, the theoretical basis for the NPC's decision-making power to discuss major issues can generally be found in the principle of “combination of legislative and executive powers”. The so-called “combination of legislative and executive powers” means that the decision and implementation of the work of the state organs are highly coordinated.<sup>[5]</sup> Since the National People's Congress is the highest authority, there is only one center in the power structure, the National People's Congress. The NPC is absolutely absolute in the legislative power, the decision-making power, the personnel appointment and dismissal power and the supervision, and has the centralized characteristics of the exercise of rights. Therefore, through the “combination of legislative and executive powers”, the NPC can explain the series of rights such as the decision-making power of major matters. The integrity and necessity of both the decision and implementation elements should be available. Make the local people's congress unified in power and responsibility in decision-making and policy implementation.

Secondly, from the perspective of “social contract theory”, theoretical traceability can also be found. The theoretical basis of China's “reunification and parliament” system is: “people's sovereignty and democratic centralism”. The master of the people's sovereignty theory is the modern French enlightenment thinker Rousseau. He advocates that sovereignty belongs to the people and the government's power comes from the people. The government is the agent of the people. Under all circumstances, the people have the highest authority. Rousseau's thoughts on the sovereignty of the people are relatively thorough and have a great influence, even affecting Marx's early ideas.<sup>[6]</sup> Thus, depending on the research path, this theory can also be traced back to the Western natural law school's position on the social contract theory: “Sovereignty is in the

people”, public opinion is indestructible, and the people should assume an active role in the government. From the will of the citizen—the sovereign will—the general will, the common interests and the common interests are common prosperity. This is the cornerstone of the modern democratic system and one of the theoretical traces of the idea of sovereignty in the people's thoughts to the people's sovereignty. From this standpoint, the NPC represents the will of the people in discussing major issues, reflecting the public opinion of the people, and the nature of the matter belongs to the broad and deeper people's livelihoods in the region from a vertical and horizontal perspective. Another key point of sovereignty in the people is that the government is the agent of the people and the power of the government comes from the people. The ultimate basis for the government to carry out various organizational activities is to complete the people's will decision. If the government's decision-making basis does not belong to this power traceability, then its legitimacy needs to be investigated, and its government's logic deviates from the national legal mechanism and government mechanism. The normal operation track, the government's discretion on social management functions is actually the neglect of the constitution and legal authority. In the long run, it is not conducive to the long-term stability of the country. Furthermore, from this perspective, the sovereignty of the people is at the highest level of power, and its effectiveness is extended to the

functional organs at all levels. Therefore, in order to transfer individual rights in exchange for public rights, the people can form a social community of “sovereignty in the people” according to the model of social contract.

Thirdly, the analysis of the positivist legal school Austin's interpretation of the law as “the order of the sovereign” can also support the mandatory and necessity of the decision-making power of the decision-making and enforcement of major matters, he believes that “the behavior of the legislator is regarded as the behavior of the sovereign and the law is defined as a command of the sovereign” is realistically targeted. The proposition that “law is power” has a staged historical correctness, because such a “legal command theory” contains elements such as the will and execution of sovereigns.<sup>[7]</sup> Austin's argument for “the law is the order of the sovereign” revolves around the protection of human rights and the supremacy of the law, which is consistent with the principle of the sovereignty of the people and the spirit of governing the country according to law.

At the same time, the analysis of the positivist jurist Hart's “recognition rule theory” also has a certain persuasive power. He believes that “recognition rules refer to the

specific indication of one or some characteristics. These rules possess these characteristics and can be decisively certified as the rules of this group backed by the social pressure exerted by it.”<sup>[8]</sup> Recognition rules themselves is not a specific legal rule. It is only a measure of whether other rules have legal effect. The recognition rule is not stated, but its existence is manifested by a court or other power organization in a certain behavior, and its existence is a matter of fact. Therefore, if the NPC discusses the right to decide on a major matter, its rights are only stated and not implemented by the government, then the law ends with the declaration and is not recognized as a rule. This right is not a right of fact. Furthermore, on the other hand, if the NPC discusses the decision-making power of a major matter as a legitimate right criterion, then it needs to be established by the fact that the government organization consciously implements it.

#### 4. Exploration and Analysis on the Contradiction between Current Law and Political Operation

Through the above discussion, we understand two persuasive aspects at the theoretical level: First, under the theoretical perspective of the Western natural law school, the decision-making power of major decisions of the National People's Congress has theoretical support points in decision-making and execution, and at the same time it can be in the natural law school. The theoretical source is found in the positivist law school; the second is that it can be interpreted in the traditional Chinese legal theory through the theoretical perspective of “reunification and deliberation” to explain the necessity of implementing its rights. However, back to the reality level, the current situation of the NPC's discussion on the implementation of the decision-making power of major issues makes us reflect on the logical integration of the theoretical level, which is difficult to implement in the practical level. The reason for this can be considered two points: First, in terms of theoretical ideology, China is not much different from the West in terms of legal education and theory. Most scholars also cite Western theoretical views to reshape the theoretical insights of law; second, in the practice of judicial reform, the principle and form of the judicial reform system centered on trials are more inclined to the western equity model, and many problems in the field of Chinese law are similar to this trend. However, the fundamental contradiction of Chinese law at the practical level is that most of the theories have a reference to the status quo in the West, but China's political system still maintains Marxist ideology and there is no substantive reform in the political system.



This makes China's existing political system and ideology conflict with the former, thus reflecting that it will encounter obstacles that are difficult to advance in the level of legal practice. Due to the existence of this fundamental reason, the current law and political system have formed a dislocation pattern, which is the main reason why many new types of legislation and reforms cannot be smoothly implemented in China's judicial reform. The advancement of various reforms may face the possibility of full bankruptcy in practice. The ambiguity of the decision-making power of major events of the National People's Congress is only a kind of phenomenon reflected under this fundamental reason. Individuals as problems are individually sorted out for interpretation. To repair this problem, we can only make up for this shortcoming through various conflicts coordination rules while maintaining the existing political system, which requires us to understand the constitutional spirit and to be more thorough and precise in the legitimacy of legislative technology.

## **5. Conflict Coordination between Legal Theory and Legal Practice**

Take the practical logic of law as the research path and return to the essence of the problem through the phenomenon. Hegel believes that law as a discipline, its main nature and development source comes from its logical complement to philosophy. The theoretical logic and practical logic of the law itself need to find a unique law of operation in the space of the specific political system. The seemingly divided Chinese and Western methodological theories based on the "people's sovereignty theory", "relationship between the people and the government", "sovereignty in the people", "legal order theory" and "recognition rule theory" based on the major issues discussed by the National People's Congress It reveals a common legal logic: the sovereignty of the people is the ladder of the highest effectiveness, and all the people are the masters of the country as the fundamental purpose of the operation of the state machine. At the same time, as a legally determined rights system, it must contain the dual elements of "decision-execution", otherwise it cannot be called a right alone. Understanding the spiritual essence of the constitution and the legal system of China's constitution as the supreme legal principle cannot be separated from the analysis and guidance of the

traditional legal level; this is the argument support and logic law we found on the theoretical level of jurisprudence, and most of them still come from the traditional views of Rousseau, Austin, and Hart and other jurists in the Western natural law school and the positivist law school. However, at the level of legal practice, the power

of the NPC to discuss the power of decision-making on major issues makes this constitutional regulation difficult to advance. China's existing political system requires that the current judicial reform should have more precise and perfect coordination rules to make up for the dislocation gap and dislocation pattern at the practical and theoretical levels.

Furthermore, through theoretical analysis and argumentation, the practical problems faced by the local people's congresses in deciding the important decisions of major issues are the research opportunities. The legal basis is introduced to explain and answer this question, and the application of the rights attribute guidance is clarified. It can be countered to the general view of the dialectical logic between the current political system and the legal system: the political system as the purpose and practice background of the realization of the law, there is always a repeated game relationship between the two. This point also shows that the actual political situation has always had an important impact on the substantive content and implementation of the law. Therefore, we are more required to make more intensive and meticulous refinement of the external form of the legal system and specific technical links, such as improving the proposed procedure from a technical perspective, clarifying the scope of major issues, strengthening enforcement and strictly implementing the decision-making power of the National People's Congress. Therefore, the legal basis behind the institutional rights should also be more technical and functional to express and reflect the practical needs of real political wisdom. Politics, as a practical background of law, is almost always a common problem faced by law and politics. Both are the basic means and methods for the governance and disposal of social affairs by society and the state. The law can be regarded as the people. An expression and means of nomination of will, however, it cannot completely shake off the norms of the national political system. It is the legislative expression of the sovereign will of the people and also a unique political practice.

## **6. Conclusion**

Therefore, the implementation of the decision-making power of the National People's Congress to decide on major issues needs to be improved in terms of execution and the standardization of the system. On the other hand, starting from the source, we need to find the root cause of the tension between "decision-making" and "execution", which is related to all aspects of social manpower, material resources, financial resources and checks and balances of rights. Therefore, in the internal links of the NPC decision-making, we need to determine the scope of



scientific rules of procedure and major issues. In order to implement the “Political Effects, Social Effects, and Legal Effects” on the issue of implementing the decision-making power of major issues of local people's congresses, we will achieve a high degree of unity.

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## REVIEW

# Government Subsidies and Enterprise Innovation: Moderation Effect of Absorbed Slack

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### ABSTRACT

It is worth studying whether enterprises receiving government subsidies can transform them into innovative achievements under the constraints of enterprise resources. The data from the three industries of electronics, pharmaceuticals, and information technology during 2013-2016 were empirically tested to verify the moderating effect of the absorbed slack on the relationship between government subsidies and enterprise innovation. The results show that government subsidies can promote enterprise innovation; absorbed slack promotes enterprise innovation; the absorbed slack of enterprises plays a positive moderation role in the relationship between government subsidy and enterprise innovation. In other words, the enterprises with high absorbed slack can promote the innovation of enterprises by government subsidies. The conclusions provide theoretical guidance for government departments to select the most suitable enterprises which accept innovative subsidies.

## 1. Introduction

The report of the 19th National Congress pointed out that innovation is the primary driving force of development. Chinese development is in transitional period, and there is a gradual establishment and enhancement process for the main position of technological innovation of enterprises<sup>[1]</sup>. In this process, the market cannot provide sufficient innovation power for enterprises, so the government needs to intervene<sup>[2]</sup>. In order to effectively guide enterprises to change their business con-

cepts and focus on independent innovation, governments at all levels are consciously striving to build innovative platforms and provide supporting innovative resources, such as providing corresponding government subsidies for specific industries and enterprises. From the figures, in 2005-2017, China's fiscal expenditure on science and technology increased from 133.5 billion Yuan to 729.6 billion Yuan, which can also indirectly prove the fact that government subsidies are increasing.

On the one hand, Government subsidies provide incentives, and on the other hand, they alleviate the financing

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difficulties of enterprises and make up for the imperfections in the external financing market. However, whether government subsidies can certainly promote enterprise innovation remains to be further analyzed. After combing the existing research results, scholars mainly analyze from three perspectives. First, from the perspective of enterprises themselves, to analyze the role of government subsidies on enterprise innovation, that is, from the innovation conditions of enterprises<sup>[3,4]</sup>; the second is to analyze the relationship between government subsidies and enterprise innovation from the perspective of the government itself, that is, from the perspective of quantity and strength of government subsidies<sup>[5,6]</sup>; the third is to study government subsidies and enterprise innovation from the perspective of external environment, that is, in the whole social environment<sup>[7,8]</sup>. There is an inconsistency in the conclusion. Some studies have found that the government promotes enterprise innovation, and government subsidies have an “Incentive Effect” on enterprise innovation. It will greatly encourage enterprises to increase R&D investment and drive innovation output<sup>[9]</sup>; or government subsidies directly promote enterprise innovation<sup>[10-11]</sup>; or government subsidies can attract more investment, and then promote enterprise innovation<sup>[12]</sup>. Another part of the studies found that government subsidies inhibit enterprise innovation, and the government’s R&D subsidies have “crowding out effects” or “substitute effects”, which will crowd out the company’s own R&D investment<sup>[13-16]</sup>, thereby reducing enterprise innovation resources; or when government officials have paying more attention to local GDP and employment, government subsidies are more likely to flow to less productive enterprises, it makes government subsidies to be less effective than expected<sup>[17]</sup>. The inconsistency of the research conclusions shifts the attention of the research to other influencing factors, that is, considering the internal factors of the enterprise.

Redundant resources belong to the internal factors of enterprises. There are different levels of redundant resources in the enterprise, such as redundant cash, idle production equipment, etc. According to flexibility and mobility, they can be divided into absorbed slack and unabsorbed slack<sup>[18]</sup>. For example, redundant cash is unabsorbed slack, while idle production equipment is absorbed slack. These redundant resources can play a buffer role to help enterprises adapt to internal and external pressures<sup>[19]</sup>. Although unabsorbed slack has strong mobility and flexibility, it is not related to the key business of the enterprise<sup>[20]</sup>, it cannot provide help when the enterprise is facing changes in an increasingly dynamic environment. Unabsorbed slack must be transformed into absorbed slack in order to play its role<sup>[21]</sup>. Redundant resources can

support enterprise innovation, reduce internal pressure, relieve external shocks, and ensure the stability of the enterprise<sup>[22]</sup>. Therefore, in view of the instability of the relationship between government subsidy and enterprise innovation, this paper introduces absorbed slack as moderate variables to test the changes of the relationship between government subsidy and enterprise innovation, so as to clarify the research boundary of the model.

## 2. Literature and Hypothesis

Enterprise innovation refers to the change of products, production technology or management methods<sup>[23]</sup>, which is the inevitable choice for enterprises to seek long-term development. Innovation is the driving force of sustained economic growth, while resources do not always flow smoothly to innovation, especially when the leading force of enterprises supports the normal business activities<sup>[24]</sup>. Therefore, the effective solution to the problem of resource supply has become the primary issue of successful implementation of enterprise innovation<sup>[25]</sup>. Government subsidy relieves the financing difficulties of enterprises to a great extent, but whether government subsidy promotes enterprise innovation remains to be further studied. This paper holds that although the way and intensity of government subsidies have a great impact on innovation, the key factors affecting innovation are the conditions of enterprises themselves and the external environment. On the one hand, redundant resources are inherent to every enterprise, which are the characteristics of the enterprise. Whether redundant enterprises can easily convert government subsidies into enterprise innovation resources is worth studying; On the other hand, the external environment of enterprises has changed dramatically. It is worth exploring whether the high uncertainty of the environment hinders enterprises from transforming government subsidy into innovation. Further analysis, for enterprises, it is worth to analyze and test whether the internal and external factors will overlap and act together on the transformation of government subsidies into innovation process.

### 2.1 The Relationship between Government Subsidies and Enterprise Innovation

The operation and investment activities of enterprises need corresponding resources as support. Resources are an important source for enterprises to build and maintain their competitive advantages<sup>[22]</sup>. Especially for enterprise innovation, more resources are needed, such as sufficient funds, high-quality equipment, innovative decision makers, etc. Among them, financial support is the most basic driving force. Only when enterprises have sufficient funds,

can they invest in R&D and then innovate, in the case of maintaining normal operation. Enterprise investment is the main source of funds for R&D activities, but the actual R&D investment of enterprises is often lower than the optimal level. This is because the high risk of R&D investment exists, and the knowledge spillover in R&D investment enables other competitors to share knowledge, thus enhancing the innovation capability of enterprises without any additional costs<sup>[26]</sup>. In this case, government subsidies are needed to guide enterprises to invest in R&D. Government subsidies can effectively reduce the investment cost and risk of enterprises, stimulate R&D investment of enterprises, give full play to the positive externalities of R&D investment of enterprises, and promote the upgrading of innovation ability of the whole industrial chain<sup>[27]</sup>. From the perspective of factor endowment, the production function composed of different factor inputs has an important impact on enterprise's profit and competition. Technological input and innovation have multiplier effect, but it is a high-risk and high-cost activity. In order to avoid risks and reduce costs, many enterprises often choose cheap and sufficient factors of production, which is not conducive to the considerable progress of enterprises. However, government subsidy can reduce the risk of technological investment of enterprises, which is conducive to technological investment and innovation, transformation of production mode and stimulation of multiplier effect of technological innovation<sup>[28]</sup>. From the perspective of information asymmetry, Keynesian economics believes that the market is not omnipotent, free market is prone to market failure. When enterprises need R&D investment, it is difficult to obtain external investment because of information asymmetry. At this time, government subsidies act as a visible hand in the market. Government subsidies disseminate a favorable signal<sup>[29-30]</sup>, which means that the enterprise project is focused by the government and has huge market potential. At the same time, it also reveals that the enterprise has good reputation and makes it easier for enterprises to obtain bank loans and outside investment. While financing pressure decreases, enterprises obtain more funds for R&D investment and promote enterprise innovation.

**Hypothesis 1: government subsidies can promote enterprise innovation.**

## 2.2 The Relationship between Absorbed Slack and Enterprise Innovation

Cyert and Arch (1963) first put forward the concept of redundant resources, that is, resources beyond the actual needs of the organization are redundant resources<sup>[31]</sup>, that is to say, an excessive but freely available resource

is a redundant resource<sup>[19]</sup>. Redundant resources are the inevitable result of the production and operation of enterprises, which can help enterprises resist foreign risks and accidents, and ensure the normal operation and development of enterprises. The existence of redundant resources gives managers more choices when facing innovative projects<sup>[32]</sup>. When facing financing constraints, the role of redundant resources is unprecedentedly important<sup>[31]</sup>. If enterprises can make rational use of redundant resources, on the one hand, it eases the financing pressure of enterprises, enterprises can try more innovative projects, which is conducive to the innovation and development of enterprises; on the other hand, the rational utilization of redundant resources enhances the ability and confidence of enterprises to resist innovation risks, while other enterprises will not easily try the high cost and risk innovation. Redundant resources can reduce enterprises' fear of innovation failure, and help to form an innovative culture and create an innovative atmosphere.

Further subdividing the redundant resources, unabsorbed slack has strong flexibility, such as cash or cash equivalents, but it is not oriented to the specific situation of enterprises, and the process of transforming into innovative resources is long. Therefore, unabsorbed slack is difficult to help enterprises form special advantages in the field of innovation. Comparatively speaking, absorbed slack is more closely related to enterprises. Absorbed slack includes machinery, equipment, human resources and knowledge reserve, which are embedded in a specific situation and cannot be used arbitrarily. Research and development on the basis of these proprietary resources (patented technology, skilled experts) can greatly save the time of equipment acquisition and personnel selection and improve the efficiency of innovation. Once the enterprise's surplus management ability is in line with the reality, it will provide a more relaxed and powerful R&D environment for enterprise innovation. Absorbed slack exists as a key innovation factor to directly support product innovation<sup>[21]</sup>. Specific redundancy also promotes enterprise progressive innovation<sup>[33]</sup>. There are some risks in enterprise innovation, the effect will be discounted if there is not enough resources to support enterprise innovation<sup>[31]</sup>, redundant resources enhance the ability of enterprises to resist risks, so enterprises dare to carry out various innovation experiments<sup>[34]</sup>.

**Hypothesis 2: Absorbed slack promotes enterprise innovation.**

## 2.3 The Impact of Absorbed Slack on the Relationship between Government Subsidies and Enterprise Innovation

Enterprises seek innovative developments, which need not only sufficient funds, but also other resources, such as idle machinery and equipment, skilled workers and so on. If enterprises have these absorbed slack resources, enterprises will be more likely to use government subsidies for R&D investment faster and more effectively, when enterprises get government subsidies. Because the idle machinery and equipment, skilled workers and other factors of production can be put into production quickly to shorten the innovation time, on the other hand, reduce the expenditure of re-purchasing machinery and equipment and training skilled workers, and the management costs and staff salaries owned by enterprises themselves can also reduce the extra expenditure of enterprises, so that government subsidies can be spent on innovation as fast as possible. Resources do not always flow smoothly to innovation<sup>[35]</sup>, and the process of innovation needs to consume resources, so redundant resources are very important<sup>[36]</sup>. Redundant resources help enterprises to explore innovative projects, especially for those enterprises facing financing constraints<sup>[31]</sup>. Redundant resources can provide strong support for enterprises to develop new products or enter new markets<sup>[36]</sup>. Redundancy provides some resources for enterprises to innovate and change, so it improves the ability of enterprises to cope with environmental changes<sup>[37]</sup>. When there is less redundancy in an enterprise, management is not inclined to take strategic measures to improve performance, but rather to improve the internal environment, reduce costs and improve performance<sup>[38]</sup>. That is to say, when a company has scarce absorbed slack, government subsidies cannot greatly promote the R&D investment of enterprises, because such enterprises have a greater risk of R&D investment, which requires a lot of R&D preparation, including the purchase of machinery and equipment, factory buildings, hiring skilled workers and so on, all of which need to spend a certain amount of money, to a large extent, it will weaken the financing space brought about by government subsidies.

**Hypothesis 3: The absorbed slack moderate the relationship between government subsidies and enterprise innovation. When enterprises have more absorbed slacks, government subsidies play a stronger role in promoting enterprise innovation.**

### 3. Research Design

#### 3.1 Data Sources

The empirical analysis is based on China's High-tech industries. Data from enterprises listed in China in three industries of electronics, pharmaceuticals and information technology from 2013 to 2016 are collected. In order to

investigate the sustainability of the effect of government subsidies, t+1 year innovation data (2014-2017) are used to test t year innovation. These three industries belong to the field of high-tech, focusing on R&D and innovation. After data processing, 199 enterprises can be studied and 796 observation values are obtained. Relevant data are from CSMAR database and enterprise annual reports.

#### 3.2 Measurement

The dependent variables are enterprise innovation (Inno). The common variables to measure enterprise innovation are: R&D cost, number of inventions and patents, and number of new products<sup>[23]</sup>. The number of inventions, patents and new products is usually used to measure the innovation output of enterprises, but not all invention patents can be converted into products and put into the market to play their value. In addition, the awareness of patent protection of enterprises in China is not strong, and there are some limitations in using the number of patents to measure enterprise innovation. Therefore, this paper chooses the ratio of R&D investment to total assets to measure enterprise innovation.

The independent variable is government subsidies (Sub). The government subsidy index are measured as the part of government funds of all funding for scientific and technological activities of enterprise

The moderating variable is absorbed slack (As). According to the previous literatures, the ratio of management cost to sales revenue is used to measure the absorbed slack of enterprises<sup>[38]</sup>.

Control variables. Enterprise size (Size), debt pressure (Debt), development ability (Dep), profitability (Profit) and cash flow (Cf) may have an impact on enterprise innovation. Therefore, these variables are put into the model as control variables. The logarithm of the number of employees is used to measure the scale of the enterprise, the asset-liability ratio of the enterprise is used to measure the debt pressure of the enterprise, the ratio of the total operating income of the current year minus the total operating income of the previous year to the total operating income of the previous year is used to measure development ability, the ratio of net profit to the shareholder equity balance is used to measure the enterprise's profitability, The ratio of cash flow to business income at the end of each year is used to measure the enterprise's cash flow.

#### 3.3 Method Selection

From the data we can see, it has both cross-sectional dimension and time dimension, which is a panel data. The time dimension of the data is 4, the cross-sectional dimen-



sion is 199, and the time dimension is obviously smaller than the cross-sectional dimension, so this is a short panel data. In order to ensure the rigor of the study, Hausman test was used to determine whether to use short panel fixed effect regression or random effect regression. The test results showed that the P value was 0.2492, which accepted the original hypothesis, so the random effect model was adopted.

### 3.4 Hypothesis Model

According to the variable selection and research content of this paper, the following models are set to test the hypothesis:

$$\text{Innot}+1 = \beta_0 + \beta_1 \text{Subt} + \alpha_1 \text{Sizet} + \alpha_2 \text{Debtt} + \alpha_3 \text{Dept} + \alpha_4 \text{Profitt} + \alpha_5 \text{Cft} + \varepsilon$$

$$\text{Innot}+1 = \beta_0 + \beta_1 \text{Ast} + \alpha_1 \text{Sizet} + \alpha_2 \text{Debtt} + \alpha_3 \text{Dept} + \alpha_4 \text{Profitt} + \alpha_5 \text{Cft} + \varepsilon$$

$$\text{Innot}+1 = \beta_0 + \beta_1 \text{Subt} + \beta_2 \text{Ast} + \beta_3 \text{Subt} * \text{Ast} + \alpha_1 \text{Sizet} + \alpha_2 \text{Debtt} + \alpha_3 \text{Dept} + \alpha_4 \text{Profitt} + \alpha_5 \text{Cft} + \varepsilon$$

## 4. Results and Analysis

### 4.1 Descriptive Statistics and Correlation Analysis

From Table 1, there are descriptive statistics of main variables and correlation analysis among variables, including mean, standard deviation and correlation coefficient of variables. The correlation coefficient between government subsidy and enterprise innovation is 0.231 ( $p < 0.001$ ), which indicates that there is a positive correlation between government subsidy and enterprise innovation. The more subsidies the government provides the more innovations the enterprise will have in the future. Overall, the correlation coefficient between independent variables is not very

high. Furthermore, the VIF value shows that the maximum VIF value is 1.76, it means all of them are less than 2. It can be seen that multiple collinearity does not exist in this paper.

### 4.2 Empirical Results

In this paper, stratified regression method is used to test the main effect and moderation effect. In order to reduce the multi-collinearity, the government subsidies, absorbed slack should be centralized. The results are shown in Table 2. There is only control variables and dependent variables in Model 1; then government subsidies is added on the basis of Model 1 to build Model 2; absorbed slack is added on the basis of Model 1 to build Model 3; Model 4 is a complete model, which includes control variables, government subsidies, absorbed slack and their interactions.

From Table 2, we can see that the regression coefficient of government subsidy in model 2 is positive and significant at the level of  $P < 0.001$ . That is, the more subsidies the government provides, the more innovations the enterprise makes, so Hypothesis 1 is verified. The results of model 3 show that the regression coefficient of absorbed slack is positive and significant at the level of  $P < 0.001$ . It can be seen that the more absorbed slack the enterprise owns, the better innovation enterprise makes. Hypothesis 2 is verified. From model 4, we can see that the coefficient of interaction between government subsidy and absorbed slack is positive and significant at the level of  $P < 0.01$ . Hypothesis 3 is verified, the moderating effect exists, that is, absorbed slack has a positive moderating effect on the relationship between government subsidy and enterprise innovation. Among the control variables, corporate debt is

**Table 1.** Descriptive statistics and correlation analysis of variables

	Mean	SD	Inno	Sub	As	Ch	Lnsiz	Debt	Dep	Profit	Cf
Inno	0.035	0.046	1.000								
Sub	15.898	1.248	0.231***	1.000							
As	0.156	0.108	0.222***	0.177***	1.000						
Ch	0.024	0.116	0.124***	-0.049	0.406***	1.000					
Lnsiz	7.311	0.963	0.062	0.281***	-0.251***	-0.156***	1.000				
Debt	0.288	0.386	-0.041	0.174***	-0.226***	-0.066***	0.255***	1.000			
Dep	0.276	0.542	-0.011	-0.023	-0.180***	-0.068	0.149***	0.109***	1.000		
Profit	0.070	0.321	0.006	-0.095***	-0.066	-0.065	0.067	0.087*	0.253***	1.000	
Cf	0.700	0.972	0.001	-0.025	0.554***	0.307***	-0.315***	-0.398***	-0.156***	-0.032	1.000

Notes: \*\*\* (\*\*, \*) indicate a significance level of 1% (5%, 10%)

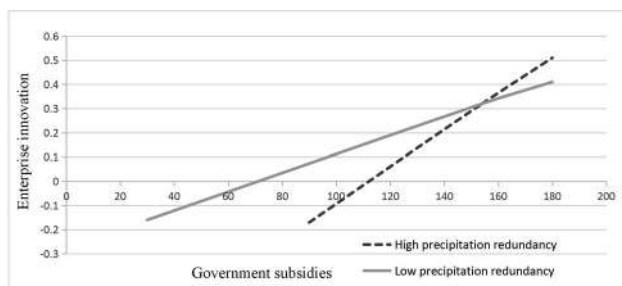
negatively correlated with innovation capability.

**Table 2.** The regression results of enterprise innovation

	M1	M2	M3	M4
C	0.036* (1.71)	-0.052* (-1.73)	0.017 (0.79)	-0.061** (-1.98)
Sub		0.006*** (2.94)		0.006*** (2.68)
As			0.106*** (3.69)	0.086*** (4.12)
Sub×As				0.034** (2.06)
Size	0.001 (0.23)	-0.0003 (-0.10)	0.001 (0.55)	0.001 (0.21)
Debt	-0.012** (-2.53)	-0.015** (-2.41)	-0.015** (-2.41)	-0.024*** (-3.13)
Dep	-0.003 (-1.37)	-0.001 (-0.44)	-0.001 (-0.44)	-0.001 (-0.47)
Profit	0.001 (0.59)	-0.002 (0.93)	0.002 (0.93)	0.001 (0.62)
Cf	-0.002 (-1.31)	-0.006** (-2.32)	-0.006** (-2.32)	-0.061** (-3.40)

Notes: \*\*\* (\*\*, \*) indicate a significance level of 1% (5%, 10%)

In order to further verify moderation effect of absorbed slack, the figure is drawn. As shown in Figure 1, the horizontal axis is government subsidies; the vertical axis is enterprise innovation. Solid lines indicate low absorbed slack and dotted lines indicate high absorbed slack. It can be found that in the case of absorbed slack (high or low absorbed slack), enterprise innovation increases with the increase of government subsidies. And in the case of low absorbed slack, the increase of enterprise innovation with the increase of government subsidies is smaller. While absorbed slack is higher, the increase of enterprise innovation with government subsidies is larger. It can be seen that absorbed slack has a positive moderation effect on the relationship between government subsidies and enterprise innovation, that is, the more absorbed slack enterprises have, the more obvious the role of government subsidies in promoting enterprise innovation.



**Figure 1.** The moderation effect of absorbed slack

## 5. Conclusion

This paper estimates the relationship between government subsidies and enterprise innovation under the constraints of enterprise resources. The results show that government subsidies can promote enterprise innovation; absorbed slack promotes enterprise innovation; the absorbed slack of enterprises plays a positive moderation role in the relationship between government subsidy and enterprise innovation. In other words, the enterprises with high absorbed slack can promote the innovation of enterprises by government subsidies. Comparing the research results of this paper with the old studies, we can find the market for acquiring external resources owned by Chinese companies is relatively imperfect; in some extent, government subsidies can alleviate the current lack of resources. This is also consistent with one of the conclusions drawn in this paper. Government subsidies can promote enterprise innovation. However, government subsidies cannot be completely innovated, which has a certain relationship with the company's own redundant resources. Previous studies, especially domestic researches, have neglected the impact of redundant resources on enterprise innovation. This paper proves that the absorbed slacks play a positive role in regulating the relationship between government subsidies and enterprise innovation through empirical research. When the company's absorbed slacks are abundant, the innovation cost of enterprises is relatively low, and government subsidies can flow to innovation more easily. On the contrary, the effect of government subsidies on enterprise innovation will be weakened to some extent.

The conclusions can help the government to throw in innovation subsidies effectively. In the case of selecting enterprises, government prefers those enterprises with redundant absorbed slack, which can convert government subsidies into innovative and effective resources faster and better. The conclusion provides theoretical guidance for government departments to select and subsidize innovative subsidized enterprises in different situations.

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