International Comparison, Regional Characteristics and Regulatory Management of Structural Rise in the Prices of Chinese Industrial and Agricultural Products

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Abstract China's price fluctuations increasingly exhibit significant structural characteristics, and since 2003, there have been several rounds of significant structural price rise. The degree of structural rise in the prices of industrial and agricultural products in China is not only higher than in the general developed countries and developing countries, but also more prominent than in other transition economies. And the structural rise in the prices of Chinese industrial and agricultural products exhibits significant economic zone differences: the structural fluctuations are the greatest in the central and western regions, significantly higher than in the eastern regions as well as the national average. From the perspective of causes of structural rise in the prices of Chinese industrial and agricultural products, the government must aim to coordinate the industrial and agricultural investments and bridge the gap in the industrial and agricultural technologies and supply capacity.

Key words The prices of industrial and agricultural products, Structural rise, Regional characteristics, International comparison, Regulatory management

1 Introduction

30 years of China's rapid economic growth accompanied by all sorts of thought-provoking macroeconomic phenomena, has captured the attention of most decision-makers and the public. One of the focuses of contention in the academic world is the issue concerning price fluctuations in China. As a developing country in the course of accelerated opening up, China has experienced several rounds of sharp price fluctuations in the context of internal complex environment and external market impact. Moreover, there are significant sector differences in almost each round of price changes. One important manifestation is that the price changes of industrial goods are relatively moderate while the prices of agricultural products have undergone prominent upward trend, and this feature was particularly evident after 2003.

The rise in the prices of agricultural products tends to become the most significant manifestation of inflation, and the price fluctuations in China have increasing exhibited the significant structural characteristics. To more vividly portray this structural feature, there is a need to quantify the degree of manifestation of structural rise in the prices of Chinese industrial and agricultural products, and measure the degree of differences between the two, namely the degree of structural rise in the prices of Chinese industrial and agricultural products.

A simple method is to directly use the growth rate of the prices of agricultural products to subtract the growth rate of the prices of industrial goods. This method was employed by Yuan Jiang (2009). This study will also use this intuitive method to measure the degree of structural rise in the prices of Chinese industrial and agricultural products.

The results are shown in Fig. 1. Fig. 1 shows that the prices of industrial and agricultural products experienced several rounds of structural rise, and there were significant structural fluctuations in the prices of industrial and agricultural products from 2003 to 2012. Especially during the periods 2003 q1 – 2004q2, 2005q3 – 2007q4 and 2009q1 – 2011q3, there was significant structural rise in the prices of industrial and agricultural products.

2 International comparison of structural rise in the prices of industrial and agricultural products

In terms of practice, there are differences more or less in the price fluctuations between the sectors, and the short dramatic price differences have repeatedly appeared in the history of inflation of various countries.

But for now, there has been continuous structural price rise with a specific manifestation in China, and in the context of relatively stable prices of industrial goods, the prices of agricultural products rise sharply several times. The structural rise in the prices of industrial and agricultural products suddenly becomes the important manifestation of inflation, which is different from the case of other countries.

Table 1 reports the comparison of the structural rise in the prices of industrial and agricultural products between China and 17 other major countries in the world during the period 2007 – 2011. As can be seen from Table 1, since 2007, the price rise of agricultural products beyond that of industrial goods has become regular in China which is the only country with positive degree of structural price rise during the study period; there are fluctuations

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in 17 other countries, and the price rise of agricultural products and industrial goods takes turns to lead.

From the average, the degree of structural rise in the prices of industrial and agricultural products is the highest in China, not only higher than in some developed countries such as the United States, Britain, Germany, Japan, Canada, South Korea, Australia and New Zealand, but also significantly higher than in some developing countries such as India, Pakistan, Iran, Turkey, Thailand and Argentina.

In addition, compared with other transition economies such as the Czech Republic, Russia and Ukraine, the structural rise in the prices of industrial and agricultural products is also more prominent in China.

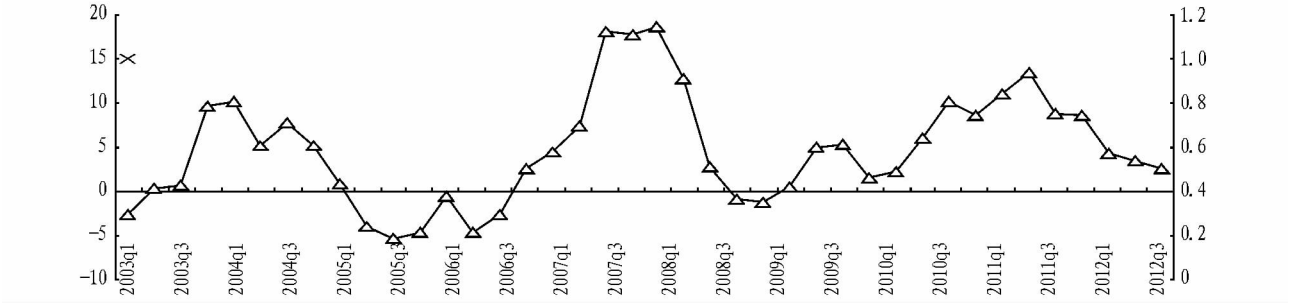

Fig. 1 The trend of structural rise in the prices of Chinese industrial and agricultural products

Table 1 The degree of structural rise in the prices of industrial and agricultural products in the representative countries

		2007	2008	2009	2010	2011	Average
China		15.4	7.2	3.0	5.4	10.5	8.3
Developed countries	The United States	18.6	2.7	−7.5	5.2	15.6	6.9
	Britain	8.9	13.9	−5.5	−0.1	4.4	4.3
	Germany	7.0	−0.9	−14.8	12.5	8.1	2.4
	Japan	−2.6	−3.1	2.5	6.8	−8.7	−1.0
	Canada	7.2	8.2	−3.4	−1.3	9.5	4.0
	South Korea	2.4	−12.4	7.7	6.0	0.4	0.8
	Australia	−4.3	3.0	−2.8	1.8	6.9	0.9
	New Zealand	1.8	−1.9	6.1	3.8	4.6	2.9
Developing countries	India	−6.0	0.4	11.0	12.3	1.7	3.9
	Pakistan	3.4	15.5	−38.7	6.2	−	−3.4
	Iran	3.9	2.6	8.8	−9.7	−	1.4
	Turkey	−7.3	−0.4	1.3	13.8	−7.0	0.1
	Thailand	−	9.4	11.4	15.6	−10.1	6.6
	Argentina	−	−19.2	−4.9	16.6	1.9	−1.4
Transition countries	The Czech Republic	−	4.7	−21.9	4.0	13.9	0.2
	Russia	1.9	3.4	4.4	−5.9	−1.5	0.5
	Ukraine	−	−28.0	4.7	15.1	−1.0	−2.3

Note: Data are *from International Statistical Yearbook*; " − " represents the missing data.

3 Regional characteristics of the structural rise in the prices of Chinese industrial and agricultural products

Due to the differences in geographical location, resource endowments, technology conditions, historical background and other aspects, the differences in regional economic development in China existed in the early time; since the reform and opening up, the regional differences in the advance of reform and the level of opening up have made the regional economic differences continue to exist and develop.

The differences in the level of development between various regions, especially economic development zones, result in different regional economic structure and different levels of marketization. The eastern regions have initially established industrialized economic system; the central and western regions are accelerating the industrial transfer, but there is still a large rural population to be employed, and the dual structural contradictions are still outstanding.

The commercial tradition and the implementation of reform and opening up in the eastern regions help well nurture the market system; for the central and western regions, the market system has just taken shape, and there is still a large gap compared to the eastern regions. Taking the prices of agricultural products for example, Table 2 reports the price index of agricultural production in all regions and the interperiod average in the period 2003 − 2012, and all regions are sequenced in descending order according to the interperiod average.

Table 2 shows that the trend of changes in the prices of agricultural products in various regions is basically the same. There was a significant rise in the period 2003 − 2004, 2007 − 2008, and 2011. However, there are significant differences in the rise between various regions.

From the average, the rise is the highest in Hunan Province, reaching 111.9%, while the rise in the lowest in Tianjin City, on-

ly reaching 105.8%, with a difference of more than 6 percentage points.

In addition, the table also reveals that the prices of agricultural products show significant regional differences. The top ten regions (Hunan, Jilin, Qinghai, Xinjiang, Heilongjiang, Yunnan, Henan, Sichuan, Liaoning and Ningxia) are all the central and western regions; except for Shanxi (in the central regions), the bottom eight regions are all in the eastern regions; the most economically developed regions such as Shanghai, Guangdong, Beijing and Tianjin are at the bottom of the ranking.

This indicates that the fluctuations in the prices of agricultural products show significant regional distribution characteristics, resulting in the economic zone differences in the degree of structural rise in the prices of Chinese industrial and agricultural products.

Fig. 2 reports the degree of structural rise in the prices of Chinese industrial and agricultural products in the entire country, eastern, central and western regions from the first quarter of 2004 to the fourth quarter of 2012. As can be seen from Fig. 2, in the several rounds of price fluctuations from 2004, the structural fluctuations were the greatest in the central and western regions, significantly higher than in the eastern regions and the national average.

Table 1 Inter-provincial and regional characteristics of fluctuations in the prices of agricultural products

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Average
Hunan Province (Central Region)	111.7	127.3	99.5	100.7	130.6	126.7	90.6	109.9	121.9	100.2	111.9
Jilin Province (Central Region)	136.9	118.1	100.3	104.6	114.0	104.5	103.8	111.8	116.8	105.1	111.6
Qinghai Province(Western Region)	105.7	108.8	103.3	104.5	119.0	114.9	94.6	124.3	117.3	108.2	110.0
Xinjiang Uygur Autonomous Region	126.2	100.8	108.3	98.4	114.7	119.8	92.9	131.5	103.7	103.2	109.9
Heilongjiang Province (Central Region)	110.2	117.3	101.0	100.0	119.9	117.0	98.1	109.2	116.5	105.9	109.5
Yunnan Province (Western Region)	100.3	112.9	104.0	106.6	117.5	115.5	96.5	112.5	117.9	110.7	109.4
Henan Province (Central Region)	111.8	121.9	100.7	100.9	117.7	115.0	99.1	112.5	111.5	102.9	109.4
Sichuan Province (Western Region)	103.5	120.4	103.2	102.7	120.8	118.4	96.9	105.9	117.8	104.0	109.4
Liaoning Province (Central Region)	103.3	120.4	101.5	105.8	116.6	109.8	102.9	110.6	114.2	106.6	109.2
Ningxia Province (Western Region)	104.4	114.2	103.3	101.2	115.0	118.7	99.4	117.0	111.3	103.6	108.8
Hubei Province (Central Region)	106.9	121.7	100.3	99.5	117.0	117.0	96.3	112.3	111.7	103.3	108.6
Shaanxi Province (Western Region)	105.5	111.7	104.9	103.2	115.4	111.2	95.8	121.7	113.8	102.6	108.6
Shandong Province(Eastern Region)	108.5	112.3	102.9	103.4	114.0	112.5	101.2	118.8	109.7	102.5	108.6
Guangxi Autonomous Region (Western Region)	104.5	118.9	100.0	106.8	121.5	113.0	89.3	107.6	124.5	99.4	108.5
Chongqing City (Western Region)	103.8	125.5	100.0	93.6	121.8	120.2	89.0	103.2	120.2	104.6	108.2
Zhejiang Province (Eastern Region)	101.9	116.8	105.9	102.7	108.6	112.9	100.3	114.8	113.6	104.3	108.2
Jiangsu Province (Eastern Region)	107.2	122.7	100.3	99.9	112.6	114.3	99.9	108.8	112.1	103.7	108.2
Inner Mongolia Autonomous Region (Western Region)	106.5	112.0	103.2	103.6	114.9	111.0	99.8	111.4	112.8	104.7	108.0
Gansu Province (Western Region)	103.4	113.1	103.1	102.6	111.4	114.0	100.2	113.8	111.3	105.9	107.9
Jiangxi Province (Central Region)	105.1	119.5	100.5	101.4	115.0	114.2	96.8	107.5	114.3	103.5	107.8
Anhui Province (Central Region)	106.4	117.8	98.7	99.3	114.1	114.7	99.1	110.8	112.8	102.9	107.7
Guizhou Province (Western Region)	101.9	111.1	101.8	101.4	113.0	115.5	96.1	106.7	120.3	104.3	107.2
Hebei Province (Eastern Region)	107.5	110.1	102.5	100.2	116.2	109.0	99.7	115.1	110.9	100.7	107.2
Hainan Province (Eastern Region)	104.3	106.4	102.2	105.6	104.7	112.5	101.9	107.9	115.3	103.3	106.4
Fujian Province (Eastern Region)	101.7	106.8	103.9	102.7	112.6	110.7	98.0	111.5	113.3	102.7	106.4
Shanxi Province (Central Region)	103.9	110.6	103.5	100.2	113.0	109.2	100.4	110.2	111.0	101.3	106.3
Shanghai City (Eastern Region)	102.1	110.8	105.7	101.9	110.2	109.7	102.2	107.1	110.9	101.4	106.2
Guangdong Province (Eastern Region)	101.3	110.7	103.5	102.6	109.7	113.9	95.0	107.6	112.4	103.4	106.0
Beijing City (Eastern Region)	102.5	105.8	103.5	99.1	114.4	112.3	98.3	106.5	110.7	104.7	105.8
Tianjin City (Eastern Region)	104.4	108.1	103.4	103.4	107.8	107.1	103.0	110.2	105.0	105.3	105.8

Note: The data on the period 2003 – 2011 are from China Statistical Yearbook; the data on 2012 are from China Statistical Abstract 2013; the regions are sequenced in descending order according to the interperiod average.

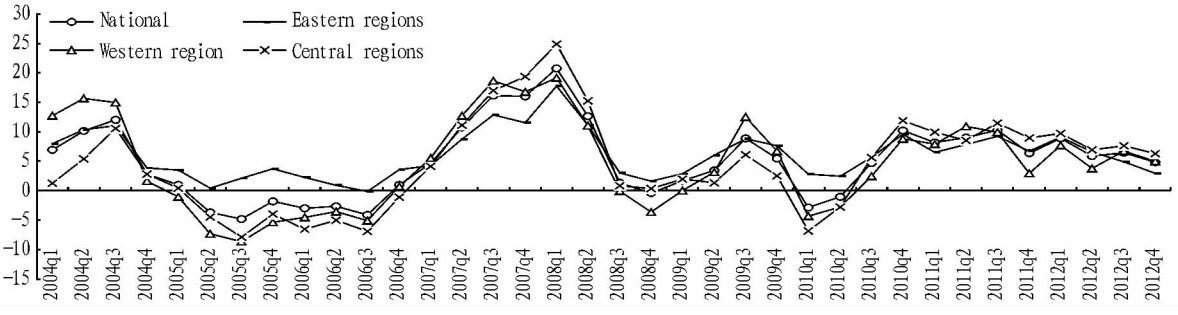

Fig. 2 Regional differences in the structural price rise of Chinese industrial and agricultural products

4 The management policy for the structural rise in the prices of Chinese industrial and agricultural products

As an emerging fast-growing economy, China is faced with the task of boosting the economy and promoting the national income. China uses the late-development advantages and the favorable conditions of economic globalization to achieve economic catch-up.

It chooses the industrialization development strategy, and through the preferential financial and monetary policies for the city, it leads to the imbalance in the industrial and agricultural investments. The unbalanced growth of investment also directly contributes to the significant differences in the productivity between industrial and agricultural sectors in China.

For the developing countries, technological advances are often hidden in considerable capital investment (Acemoglu et al, 2006), and capital and technology are dynamically integrated (Zhao Zhiyun et al, 2007; Yuan Jiang, 2009; Wang Linhui and Dong Zhiqing, 2012), so the investment differences between industrial and agricultural sectors results in the productivity and supply capacity differences between the two sectors. This is the fundamental reason for the structural rise in the prices of Chinese industrial and agricultural products.

This structural price rise is difficult to reverse the investment imbalance by the regulating role of price, and the resulting inflation effects and welfare losses are more worrying. Therefore, the coordination of the proportion of industrial investment to agricultural investment is not only able to meet the needs for coordinating urban-rural economic development, but also able to prevent inflation and welfare losses through the management of structural rise in the prices of Chinese industrial and agricultural products. Government must propose practical means of operation and powerful policy tools for scientific and rational policy guidance and management.

4.1 Timely adjusting the direction and proportion of government's investment in agriculture and industry and reducing inefficient investment in industrial sector to turn to agricultural sector According to the traditional path of economic growth in developing countries, China has chosen the industrial sector as the leading industry, so a lot of investment flows into the industrial sector while the investment is relatively barren in the agricultural sector. This investment model not only leads to the inefficiency of Chinese industrial investment (Zheng Jinghai, Hu Angang and Bigsten, 2008), but also leads to the long-term backward agricultural development.

Thus, in the context of current widening income gap and significant differences in the degree of modernization between industrial and agricultural production systems, the government should timely adjust the direction and proportion of industrial and agricultural investment, reduce inefficient investment in the industrial sector to turn to the agricultural sector, give full play to the role of national finance in guiding the industrial structure, and adopt a number of ways such as national direct support and typical demonstration, to drive the growth of agricultural investment. This will not only help to improve the joint development of industry and agriculture, but also plays an important role in improving the economic efficiency.

4.2 Giving financial subsidies to agriculture, levying taxes on industrial enterprises and guiding the investment in agriculture As agriculture is weak industry with strong production periodicity and higher risks, even if there is government's guidance and typical demonstration, it is difficult to attract a lot of market capital to flow into the agricultural investment.

Thus, on the one hand, government needs to adopt various channels to attract farmers' investment and social capital by way of financial subsidies. For example, continuing to implement and increase subsidies to agricultural machinery purchase is an important channel. The agricultural machinery purchase subsidy policy was started in 2004, and as of August 30, 2012, the central fiscal subsidies to agricultural machinery purchase reached 14.29 billion yuan, 4.052 million farm machines were subsidized, and 3.117 million farmers benefit from it.

Since the implementation of agricultural machinery purchase subsidy policy, it has promoted the rapid growth of the total national agricultural machinery, effectively improved the level of agricultural mechanization, and driven the rapid growth of investment in agriculture.

On the other hand, government can levy heavy taxes on the industrial enterprises, especially the monopoly industrial enterprises to provide practical financial support to agriculture.

Through the two aspects, the investment-profit ratio of industry and agriculture can be adjusted, to effectively guide inefficient industrial investment into agriculture.

4.3 Giving play to the role of financial markets to provide financial support, spread agricultural risks and support agricultural investment Agricultural markets are particularly vulnerable to the impact of natural disasters. For this external risks, government not only needs to adopt the fiscal means to subsidize disaster losses, but also needs to give full play to the role of the market to use credit, insurance, futures and other modern financial instruments to avoid risks, and utilize the favorable conditions of market economy to spread the industrial risks and guide the agricultural investment.

In terms of the current situation of China, although the financial markets boom owing to the government's guidance, the current financial market development shows a significant dual structure. Relative to the city's developed financial system, the rural financial development has lagged, which not only restricts the financing capacity of farmers, but also makes the agricultural investment lack suitable risk confrontation tools.

Therefore, there is an urgent need the government's guidance, to establish the urban-rural coordinated financial service system.

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surance company will be responsible for the losses, thereby reducing the input to pest control and natural disaster prevention, and reducing the forest farmers' enthusiasm for forest culture and management.

(iv) The monetary and fiscal policies on the forest tenure reform have an impact on forest farmers' enthusiasm for forest culture and management. Whether the forest tenure reform brings benefits to the family, and whether the tax burden is significantly reduced, are significant at the 10% level, and the coefficient is positive. It is consistent with the hypothesis.

The tax relief, seed subsidies and tending fund for forest farmers can bring them more economic benefits, and they have more funds for forestry production activities, thereby enhancing the enthusiasm for forest culture and management.

(v) Whether to expand the scale of forest operation is significant at the 10% level, indicating that the forest farmers have high enthusiasm for forest culture and management after expanding the scale of forest operation, which is consistent with our common sense.

5 Conclusions

Survey results and empirical analysis show that the reform of collective forest right subject in Jiangshan City has been completed, it has entered a deepening stage of reform of supporting policies and measures, and forest farmers' enthusiasm for forest culture and management has been greatly improved.

Regression model shows that whether there is a stable and clear property right of forest land is the primary factor influencing farmers' enthusiasm for forest culture and management. When the property rights are stable, the supporting monetary policy becomes an important factor restricting farmers' enthusiasm for forest culture and management.

According to the research results, in order to further improve forest farmers' enthusiasm for forestry production and increase forest farmers' income after the reform of collective forest right system, we put forth the following recommendations:

(i) Further improving and implementing the forest ecological benefit compensation fund system. It is necessary to conduct the classification and compensation work of ecological welfare forest; establish a sound organizational security system for the key ecological welfare forest, to ensure the improvement of construction effectiveness of welfare forest; strengthen forest ecosystem security measures, and improve forest ecosystem benefit monitoring and forest disaster monitoring and forecasting system.

(ii) Reforming the felling management mode and gradually establishing the sustainable forest management system based on forest management plan. It is necessary to innovate upon the felling management mode, improve the felling quota management system, and realize the sustainable forest operation and multi-objective management. By felling management, forest managers are guided to implement the felling and achieve sustainable forest management based on the forest operation plan.

(iii) Improving the technology, market and information services to strengthen the forestry science and technology support. It is necessary to establish forest rights information management system, to promote the modernization of forest rights management; enhance the forestry science and technology promotion system, and fully rely on the technology and talent advantages of forestry universities and forestry institutions, to carry out introduce the latest technology, knowledge and ideas.

(iv) Developing the specialty industries such as the bamboo industry and oil-tea camellia industry. It is necessary to use location advantages to expand the scale of specialty industries, in order to explore new ways for forest farmers to increase income.

(v) Developing the under-forest economy and cultivating the under-forest industries with characteristics based on the local circumstances. In short, establishing a forestry property rights system, with clear property ownership, clear division of responsibilities and rights and smooth circulation, is the most fundamental goal. There is an urgent need to establish the supporting policy systems (ecological compensation system, felling system, forest rights transfer system, and forestry financing system) for the forest farmers after the forest tenure reform.

References

[1] JIA ZB. Promoting collective forest reform, comprehensively releasing rural productive forces[OL]. http://www.hnly.gov.cn. (in Chinese).
[2] SUN Y, XU JT, LI L. On the influence of tenure reform to forest land's management model—Investigation report of Jiang Xi Province's tenure reform [J]. Forestry Economics, 2006(8): 7-11. (in Chinese).
[3] QIU J, SUN Y, LI L, *et al*. Impact of tenure reform on forest management model:the case of Fujian Province[J]. Forestry Economics, 2007(1): 23-27. (in Chinese).
[4] XU JT, SUN Y, JIANG XM, *et al*. Collective forest tenure reform in China: Analysis of pattern and performance[J]. Forestry Economics, 2008(9): 27-38. (in Chinese).

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References

[1] Acemoglu D, Aghion Philippe, Zilibotti Fabrizio. Distance to frontier, selection and economic growth[J]. Journal of the European Economic Association. 2006(4): 37-74.
[2] WANG LH, DONG ZQ. Capital embodied technical change, technical optimal structure and origin of productivity growth in China[J]. The Journal of Quantitative & Technical Economics, 2012, 29(5): 3-18. (in Chinese).
[3] YUAN J. Compelled technical change price bifurcation and a model of Chinese inflation[J]. Management World, 2009(3): 9-20. (in Chinese).
[4] ZHAO ZG, LV BY, GUO QW, *et al*. On the dynamic integration of capital accumulation a stylized fact in China's economic growth[J]. Economic Research Journal, 2007, 42(11): 18-31. (in Chinese).
[5] ZHENG JH, HU AG, Bigsten A. Can China's growth be sustained? ——A productivity perspective[J]. China Economic Quarterly, 2008, 7(3): 777-808. (in Chinese).