Introduction

Increasing Pork Prices and the Disappearance of China's "Abundant Labor Surplus" - The Shift Towards a Developed Economy -

1. Why Choose the Hog Industry?

This report has chosen to focus on the hog industry because among agricultural industries, hog production represents the best case study for examining the impact of labor shortages at a Lewis turning point. This is a symbolic phenomenon that depicts China as proceeding a step further toward becoming a developed economy. As the Lewis theory predicted, rising labor costs and its inherent opportunity costs are forcing a substantial structural change in the whole agriculture sector. However, many parts of the agricultural sector can adjust to this problem by increasing capital investment. Farmers can plant crops in spring, go to the cities to work, and then return to the villages in autumn for harvesting. If a farmer has enough machinery, such as a cultivator or harvesting machinery, the farmer can maintain the same production volume even while working in the city for parts of the year. In staple farming, machinery can substitute labor relatively easily. Efficiency improvements by expanding the size of production in the situations where land, not labor, is the key factor can also be pursued.

On the contrary, hog production is a heavily labor intensive industry. Machines generally cannot substitute labor and the proportion of labor remains unchanged with farm expansion. Thus, impacts of labor shortages and rapid price increases prominently appear in the hog industry. Increases in pork prices have also become a social problem in China. From 2007 to 2008, pork price hikes have grown into a contentious social and political issue. This is primarily because pork is an indispensable food for daily life in China. Pork comprises 60% to 70% of meat production, with poultry following at 20%. In terms of consumption patterns, there are no regional differences across China, where pork is the national food.

This report is divided into five chapters, each of which will address aspects of hog production's profiles, cost structure, problems it is facing, industry level surveys undertaken by the authors, and relationships with financial institutions who support the industry's development. Our report is a case study of the industry, exploring an effective way to smoothly pass a substantial structural change in the development process of an economy.

Following the introduction, which initially details the price increase phenomenon in China and theory of the Lewis Turning Point, Chapter 1 addresses the development and changes in hog production in China. After describing the development paths of hog production, it provides an analysis of production costs and factors that have influenced these costs. Chapter 1 also discusses recommendations for the necessary change or development direction of the industry. Unlike investing in machinery or land as the staple food industry has done, this chapter asserts that rearrangement of the hog production process is the way to improve efficiency in a heavily labor intensive industry. Hog production consists of the breeding, slaughtering, processing, and distribution of hog products to consumers. Rearrangement of production modes, such as the integration of producers and slaughtering facilities, processing plants, or contract farming, is the only effective and feasible way to improve efficiency.

Chapter 2 analyzes the behavior of hog slaughtering and processing firms in the market. Our research project undertook a survey of hog slaughtering and processing firms who are the direct intermediary between consumers and farmers. These firms set the consumer prices of pork and this chapter, therefore, focuses on the analysis of firms' pricing behavior. Observations from the surveyed data and institutions indicated that the hog slaughtering and processing industry produces less differentiated products and has developed spatial competition. Also, most of the firms, particularly smaller ones, were originally set up with the objective of securing the social welfare of consumers. A mixed oligopoly model provides a theory that explains a market where participating firms have heterogeneous objectives. The result is an endogenous cost difference between the profit maximizer and social welfare maximizer and an increase in selling price by the social welfare maximizer. Cost reduction by the profit maximizer is pursued by rearrangement of production modes, particularly procurement methods, such as expanding volumes with middleman or contract farming with farmers.

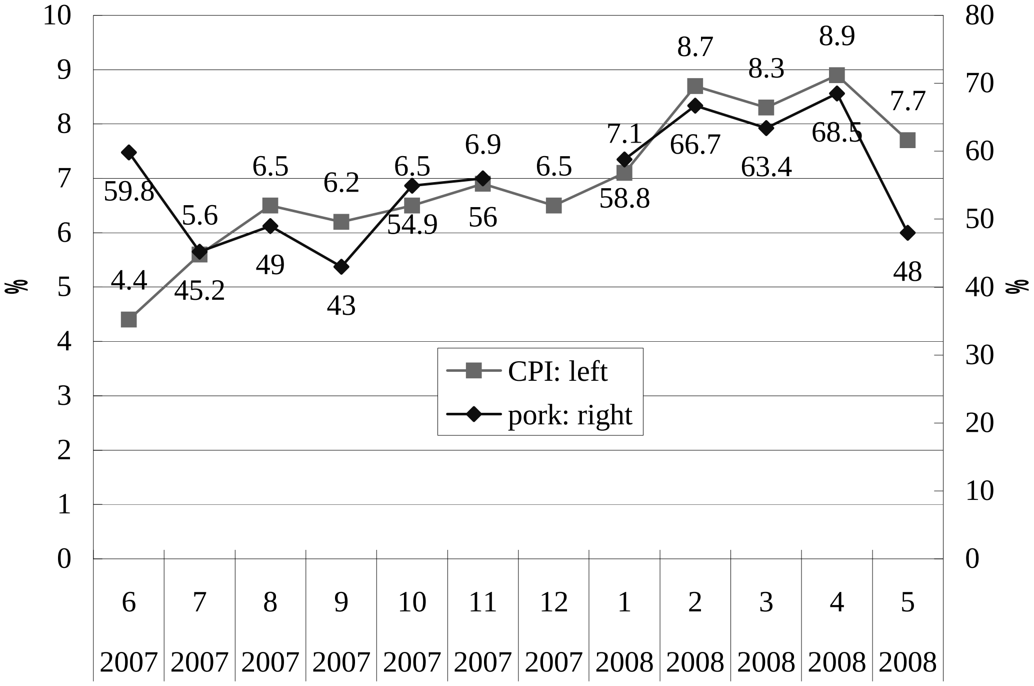
Chapter 3 focuses on contract farming, surveying experiences in the both developing and developed economies and arguing the conditions necessary for successful firm-farmer relationships. Among several patterns of production mode rearrangement, contract farming has received more attention recently. A review of previous studies stresses that coordination, motivation, and transaction costs are the tree pillars of an effective contract arrangement. It also points out that contract farming could be less prevalent in a developing economy, where labor is abundant and firms' opportunity costs related to breaking contract conditions are small and the cost of contract enforcement is high. Our survey data shows that contract farming in hog industry is more widespread in regions where the hog industry has a long history of experiences and larger-scale firms.

Chapter 4 describes the policies of financial institutions toward agricultural development in China. Demands for financial services in rural areas, which is the target area of Three Agro Policy in China, are huge. The area needs money for the modernization of the industrial structure, infrastructure, logistics, and integration of urban and rural areas. Demands for several financial services such as remittance and transfer, foreign exchange, insurance, and investment are also expected to increase. However, supply of these financial services to the rural areas is insufficient due to imperfect collateral systems and inadequate regulations. In order to upgrade financial service supply in the rural area, regulatory reforms for banks and collateral and guarantee systems are necessary and must be consistent with real business demands in the rural areas. Utilizing insurance functions and setting up insurance systems so as to diversify risk, which is now concentrated in the banking sector and building up financial service platforms in the rural area are other essential steps needed to be taken. The final chapter, Chapter 5, summarizes the main findings of our firm level survey of the hog industry in China.

2. Pork price increases since 2007

In January 2008, the State Development and Reform Committee of China announced a consumer price controlling policy where major food processing and supply companies were instructed to limit their price increases after prices had surpassed a certain level. As shown in Figure 1 below, the CPI in China has been rising since June 2007. This trend continued through 2008, climbing as high as 8.9% in April and then slowing to 7.7% in May. The reasons behind these increases in CPI mainly stemmed from inflated food prices, particularly pork prices, which grew rapidly at 66.7% in March and 68.5% in April against the same periods of the previous year.

Figure 1: CPI and Pork Prices 2007-2008



(Source) State Statistical Bureau, Peoples Republic of China

The threat of inflation has become a main economic problem since 2007 in conjuncture with the asset "bubble" issues since 2006. In order to address these inflationary pressures, an appropriate monetary policy is necessary at least in the short term in order to control demand. However, administrative control over prices is not effective. An appropriate policy against inflation needs to understand why this supply-induced inflation has taken place. Supply-induced inflation implies a structural problem in the supply side equilibrium, thus a policy to stimulate production expansion and improve efficiency is more effective in overcoming the problem.

3. Economic Development with Unlimited Supply of Labor

3.1 What caused the increases in pork prices?

To address this question of why pork prices have increased so rapidly, we look at a variety of factors. It is our hypothesis that these pricing increases were not simply the result of cyclical or purely monetary actions, but were brought about by a significant historical structural change during the economic development of the country and the industry. This structural change is marked by a transition from an unlimited supply labor to that of a limited labor sphere.

In China, 60% to 80% of the total hog production has been by small farmers as a side business to other agricultural products. However, household level hog production has become less profitable compared to higher potential outside income-earning opportunities. This has resulted in hog production by small farmer households being decreased drastically. The supply strains arise here because other production methods have not yet emerged substantially enough to substitute household production. These effects on supply shortages of hogs in China have been amplified by other one-time shocks, such as epidemics or forage price inflation due to global shortages of crops. Improvement of hog production efficiency is necessary to secure sufficient hog production. Specifically, improvements are needed through investments promoting a transformation of hog production methods from households to large-scale farming or contract farming operations. These phenomenon and insights are consistent with the decrease of agricultural products as predicted in the Lewis Model's Proposition II-2, the "Starving Point", which will be taken up in further detail later in this introduction.

3.2 Disappearance of an "Unlimited Supply of Labor"

Evidence of the end to China's period of an unlimited labor supply can be seen on a number of fronts. In 2004, the Chinese Ministry of Labor and Social Welfare published a report on the shortage of manual labor (Project Team of Ministry of Labor and Social Security, 2004). Furthermore, factories in the coastal areas have begun to complain about a shortage of labor arriving from the inland areas. Another indicator has become evident through the conducting of social economic surveys. Recently, it has become a common perception that survey teams in rural areas may find few middle age farmers or laborers, with only elderly and grandchildren remaining. Similarly, demographic studies have forecast that the younger members of the labor force will decrease in the near future.

These labor shortages are expected to bring about an increase in worker wages. If the corporate sector fails to increase productivity, then the price of goods will also be expected to follow this rise. It is becoming evident that when an economy grows from a period of an unlimited labor supply as a developing economy to that of a "limited supply of labor," wages will inevitably rise, perhaps permanently. Faced with a potentially permanent rise in wages, improving supply side productivity becomes the most important issue for an economy in order to enable compatibility between economic growth and price stability. Arthur Lewis first arrived at this same conclusion in his 1954 paper on economic development (Lewis, 1954). The implications of these findings on the fundamentals of the Chinese economy are that it is transforming into a developed economy. China will no longer be able to enjoy the advantage of an unlimited supply of labor.

4.3 Turning Point in Development by Lewis (1954)

Lewis (1954) described one key of his "turning point" theory based on a model under the following conditions. Economic development starts when the economy is divided into two sectors, the substance sector and the capital sector. The capital sector grows faster, employing the abundant labor of the substance sector at a minimal wage. When capital formation catches up with the population, a surplus of labor will cease to exist.

> "Now if the capitalist sector produces no food, its expansion increases demand for food, raises the price of food in terms of capitalist products, and so reduces its profit (of the capitalist sector). This is one of the senses in which industrialization is dependent upon agricultural development" (Lewis, 1954:20-21).

The whole picture of Lewis' propositions can be described through a number of stages. During the initial stage, prior to starting industrialization, a developing economy typically has only a sustainable sector, which is based solely on agriculture and where members of the community live off shared economic profits. Under these conditions, labor is so abundant that unemployment is commonplace. When a capital sector develops, investing in manufacturing, these manufacturing firms start to absorb surplus laborers. Here, wages will not rise initially even though there is an increase in employment opportunities. This capital sector investing in manufacturing can enjoy the advantage of a minimal sustainable wage and therefore gains larger profits. High profits in turn induce more investment in the economy and the manufacturing sector continues to grow.

In the second stage, the expansion of the economy will reach a limit. As the capital sector continues investing and expanding, the economy will reach a point where all residual labor is absorbed and wages start to rise. This is called the "Turning (or Transformation) Point". Simultaneously, agricultural production will decrease as the manufacturing sector grows, absorbing labor so that the labor force available for the agricultural sector is reduced. Unless the agriculture sector in the economy succeeds in improving productivity, or imports sufficient replacement products for the economy, the economy will fall short on food. This is called the "Starving Point".

After passing the turning point, worker wages in both the agriculture and manufacturing sectors will inevitably keep rising. To overcome this problem and make profit, both sectors need additional investment or innovation to improve efficiency or productivity. Once the economy proceeds beyond the turning point, both the agriculture and manufacturing sectors are required to eternally keep on innovating and raising productivity.

4. New Development Mechanism in the "No Surplus Labor Era"

4.1 Source of Firms' Competitive Edge sShould Change

A post-turning point period requires a substantial change in business strategies of firms or production sectors. A strategy dependent on a human-wave type business model may lose competitiveness as a minimal substantial wage disappears. To counter this, gains through improved productivity could be realized through increased human capital development of the labor force. This is not an exogenous condition, but a condition generated by the transformation of the economic system itself.

4.2 Inflationary Pressure

Inflation and recession have become the main issues of economic policy in China for 2008. With the asset inflation in 2006 to 2007 being followed by monetary inflation, Chinese policy makers and media have begun debating whether China may follow the Japanese-style bubble burst and economic stagnation of the 1990s. The inflation in China, however, is the result of a supply side bottleneck problem in the agricultural sector, evidence of which can be seen in the pork price increases. If, as we proposed in the previous sections and rest of this report, the current inflationary situation, particularly food price increases, is the result of China transitioning a Lewis turning point, productivity improvements in agriculture and investments for supply expansion will secure sufficient food supplies and prices will stabilize.

With the agricultural labor force declining and no foreseeable change in that trend, investments in agricultural machines have been increasing to substitute where labor has become too costly. The speed of this investment, however, currently lags behind the high pace of declining agricultural production, which is particularly visible in the hog industry in 2007. If this is proven to be a mechanism of current inflation, then financial factors alone are not sufficient in explaining the causes of this inflation. Policy measures are needed to induce investment and improve efficiency and productivity in agriculture and other industries, not to control retail prices of food at the micro level or austerity measures at the macro level.

In Japan, panic shopping over toilet paper swept whole country in the 1970s. The panic was triggered by a rumor that an oil price hike would bring about a shortage of toilet paper, as Japan substantially lacks natural resources. It was then that the Japanese people seemed to have sensed the uncertainty of a substantial structural change in economy taking place. Until then, their economic growth also depended on cheap labor, but Japanese wages had just started to rise and people were not certain that they could adapt to the new circumstances. However, the corporate sector changed their strategies, focusing on improved productivity and efficiency in response to the high oil prices and labor costs. Through this change they were able to sustain high economic growth until the bubble economy burst in the late 1980s. Current, China is at a similar development stage as Japan was in the late 1970's, but has not yet arrived at a bubble period similar to that of Japan in the 1980s.

References

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