Changes of Food Supply & Demand in Rural China and Their Implication in Policy

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ABBREVIATIONS AND ACRONYMS

CAY	China Agricultural Yearbook
CSY	China Statistical Yearbook
DPS	Department of Population Statistics, SSB
EC	Engel's Coefficient
FAO	Food and Agriculture Organization of the United Nations
HRS	The Household Responsibility System
IE	Income Elasticities
MAFFJ	The Ministry of Agriculture Forestry and Fisheries of Japan
OECF	Overseas Economic Cooperation Fund Japan
PCO	Population Census Office
PE	Price Elasticities
PSYC	Price Statistical Yearbook of China
RDI	Rural Development Institute
RMB	"Ren Min Bi" means Chinese currency cash
RSEST	Rural Social Economic Survey Team, SSB
RSYC	Rural Statistical Yearbook of China
S&D	Supply and Demand
SSB	State Statistical Bureau, People's Republic of China
TRQs	Tariff Rate Quota System
WTO	World Trade Organization

ABSTRACT OF THE THESIS

China's economy reforms, initiated in the late 1970s, have brought about significant changes in household income and consumption. Food consumption structure and pattern are affected indirectly by income growth and related market's price change. As per capita income in China continues to increase, economic structure and food consumption pattern change. These changes, in turn, bring about changes of the domestic demand and supply in both food grain and animal protein food, as well as adjustments of agricultural and trade policy in order to respond to these changes. However, economy and income growth in rural China has slowed down since 1984. This phenomenon was considered due to government's policy change (Carter, 1997). Taking this background into consideration, the present study aims to evaluate the relationships between incomes and consumptions across different income groups in rural China.

On the other hand, Chinese farm production is facing quite serious challenges. A key concern is whether China—with 22 per cent of the world's population yet only 7 per cent of arable land—will be able to meet this huge demand for grain. There have been serious losses of arable land to non-farm uses in recent years; environmental degradation of land and shortages of water are becoming increasingly critical.

The thesis is composed of three parts and eight chapters. Part one: an overview of the study; part two: rural reforms and their effects on Chinese food supply and demand; and part three—analyses and discussions: an Engel's theory approach.

Study findings of each chapter are summarized as follows:

The chapter one and two are designed specially to provide the essential factors, principal theories, the organization of the thesis, and the background of the subject and the purpose of the study. Economy reforms and the changes in related polices, market and income are major premises for this study. Under this background, we attempt to find out factors of changes of food supply and demand in rural China.

A review of researches on China's food demand and supply is illustrated in chapter 3. It is not only to evaluate the outlook of demand for grain and grain-based food in China, but also to identify the sensitivities of the projections of China's grain demand to key parameters. This chapter includes: ① a review of various projections of food demand and supply; ② an examination of major factors affecting food demand in China; ③ suggestions of trade and production policy issues, based on a new projection.

In the review of China's food demand and supply, we have presented the outlook for China's demand for grain and grain-based food and discussed the sensitivity of the projections to changes in income growth and the feeding efficiency. Compared to other studies, our projections not only incorporate more accurate assessment of population growth, but also take the changes of the age structure in population into account.

A new projection for food demand has been built in the third chapter. The projection brings out the following characterstics: ① the projection of demand for grain in China appears to be coincidence with most studies made outside China, e.g. with an income growth rate of 8 per cent and in the low feeding efficiency scenario, demand for total grain will be 585 mmt a year by 2010 and 643 mmt a year by 2020; ② the results show that demand for feed grain will be the only major driving force in the growth of demand for grain in China from the year 2000 onwards; ③ the combined effects of income growth and change in population structure lead to a fall in the demand for food grain; ④ the pace of the increase in demand for feed grain and the decline in demand for food

grain is very sensitive to the rate of income growth; ⑤ it is expected that a change in feeding efficiency would make a significant difference to China's demand for feed grain.

Chapter 4 provides a view of the process of rural reforms in China and evolution of policy change affecting China's grain production. It demonstrates how the introduction of household farming (HRS), limited free markets and adjusting price system had a profound impact on the structure of rural economy. We at first review the introduction of rural reforms, which forms the basis for all other aspects of the reform process. Then we examine the evolution of market and price reform and their effects on grain production. Finally, we discuss the current progress in China's entry into WTO which has aroused more concerns for the further development of farming production in China.

The HRS led to the collapse of collective farming, triggered the upswing of free markets that challenged both the state price structure and state controls over the distribution of agricultural products. Prosperity of the free markets influenced agricultural production structure by encouraging specialization and forward to distribution by generating wholesale trade.

The implications of policy changes heralded China's development from the pure agriculture and local self-sufficiency toward a diversification of production based on regional comparative advantage, and relying on the market as resource allocation mechanism. Needless to say, they have entailed major political and institutional adjustments.

Facing global trade liberation, Chinese economy will be increasingly affected regardless of its membership in WTO. There are some important implications for agricultural sectors: first, China will have to face stronger competitions from other countries; second, the impacts on different agricultural products will be quite different; third, the farmers' welfare will be affected quite differently. Generally speaking, the structural impacts on agriculture will be greater than that on the overall. Therefore, policy measures to meet the chal-

lenges of the entry to WTO should be taken with special attention to the structural issues. With these conclusions in mind, our policy suggestions for China's agricultural development facing the entry to WTO are as following:

①The government should make policies to increase its investments in agriculture to expand the comprehensive capacity of agriculture and strengthen the competing power of the agricultural sectors.

②Policies should be made to encourage the agricultural specialization and spread the innovation improving quality of farming products.

It is wise of policy makers to be fully aware of the seriousness of the negative impacts of China's accession to WTO and to take some concrete policy measures.

The objective of chapter 5 is to get it understood how economy reforms affect the behavior of food consumption in rural China. Especially, the chapter reviews food consumption patterns in rural China during the economy reforms beginning in the late 1970s.

The discussion in the chapter has shown important trends and patterns of food consumption in rural China. Significant changes of food consumption patterns in rural China have been discerned in the economy reforms. Food grain behaved quite differently from non-staple food items in the 1980s and the mid 1990s. There is a close relationship between income level and the consumption of animal products. Food grain consumption per capita stagnated in per capita terms after an initial surge, but demand for meat, eggs, fish and liquor grew sharply as living standard rose.

The study also pays special attention to the role of changes of price in food consumption. The findings present that the rural reforms did not have a directly significant effect on the rural residence's consumption patterns, but indirectly through income and related price changes.

It is clarified that rural and urban food consumption patterns differ, with urban households' consumption of non-grain foodstuffs much greater than that of

rural households. The opposite applies to food grain consumption. However, these average city-rural consumption differences do not hold across all regions: there are substantial and persistent variations in food consumption patterns. In fact, the per capita consumption level of non-staple food by rural households in the rapidly growing and richer coastal provinces is often close to the national average city level and much higher than that of some inland urban residents.

The study also identifies major factors in China's food consumption pattern. Stagnation of food grain and high growth in non-staple consumption have been intimately associated with rapid economic growth since the 1980s. Serious price distortions and subsidies, as well as gradual price liberalization have an important effect on food demand in China. The strong momentum of industrialization and urbanization can be expected over time to break the urban – rural economic gaps in food consumption.

In chapter 6, we use Engel's theory to approach food consumption in rural China. This chapter aims at analyzing the correlations of Engel's coefficient with various inherent factors through setting up a model of multiple regression function.

The results indicate that changes of consumption in grain food and non – staple food are clearly the positive stronger predictors, i.e., an expanding share of grain food and non-staple food consumption incurs rises in Engel's coefficients, even with big income increase during 1984 – 1999 in rural China. The rapid increase of non-staple food consumption influences on Engel's coefficient more than that of grain food consumption. Change in clothing and residential expenditure causes negative and the more marginal influence on Engel's coefficient.

Purchasing price index of farm products, consumption share of commercial living goods, expenditure for clothing and housing are negative in direction to Engel's coefficient. The change of purchasing price index of farm products is strong enough to have an effect on Engel's coefficient. The change of share in

commercial living goods and the change of the clothing and residence expenditure are more marginal.

The policy and market factors also affect the fluctuation of Engel's coefficient. It implied that improving government polices, enhancing market orientation for food consumption are important ways to drop Engel's coefficient in rural households and to improve the living standard of people in rural China.

Chapter 7 aims at revealing influences of income change on food consumption of households sorted by income in rural China. Employing the double-log Engel function, income and price elasticities for food consumption are estimated for each income group.

In light of analysis of Engel function and Engel curves, the study findings indicate that income for grain consumption is very different between various income groups: for the most prosperous group, grain goods has become inferior goods; but it is still normal goods for other groups. Price elasticities for grains are very low for each income group. Grain consumption, therefore, is price inelastic. Both analyses of time series and sections across point out that income and price are no longer main factors influencing grain consumption.

Decline of income elasticities for meat by section across and diversification of that by time series stressed that demand for meat no longer increases much more in rural households with income's increase. For three out of four groups, meat has become necessary goods, but for the poorest group, meat still belongs to luxury food. It also appears that demand for meat is rather diversified in rural households. Income elasticities for luxury foods estimated both by time series and by sections across have been very high, thus the change in consumption of luxury foods depends strongly on income change. This also shows the trend that Chinese rural households will continue to expand the expenditure share of luxury foods as income increases.

In light of analysis of Engel curves, it is also confirmed that different income classification indeed brought about discrepancy in food consumption.

Though relationship of income and consumption shows only slight change on analysis of Engel curve for time series, it is obviously different in various income groups in analysis of Engel curve for sections across.

In a word, the food demand in rural China will be confronted with consumption increase of luxury foods and meat. It is also proved by both estimated income elasticities and analysis of Engel curves. The great income gap among various groups influence demand for food. Considering the estimated elasticity for various income groups, it is possible to use the current trend of food consumption in higher income groups as a guide for future trends of other lower income groups.

Finally, some study findings, limitations and policy implications are summarized in chapter 8.

These study limitations are due to limited data resources for per capita income and consumption: analyses upon figures collected from aggregate provincial per capita data from publications of Chinese government discarded some effects of diet habits and cultures on food consumption pattern. To some special regions, thus, the study findings may be inapplicable.

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Linhai Mei

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CONTENTS

PART ONE
An Overview of the Study

PART TWO

Rural Reforms and Their Effects on Chinese Food Supply and Demand