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by

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**California Agricultural Experiment Station
Giannini Foundation for Agricultural Economics**

June 2001

**Trade and Investment Liberalization and China's Rural Economy:
Impacts and Policy Responses**

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Report for OECD

Trade and Investment Liberalization and China's Rural Economy: Impacts and Policy Responses

China's rural economy is experiencing the best of times and the worst of times. Rural incomes have grown steadily for the last two decades, and millions have moved out of poverty. However, rural incomes are in general lower than those in urban areas and millions more remain at or below the poverty line. A growing share of rural incomes originates from non-agricultural activities, some locally, others in nearby rural factories, and others in faraway cities and suburbs. At the same time, some farmers in China's poor areas are subsistence, while others who interact with markets frequently face high transaction costs. Markets have emerged in many parts of rural China, providing access of an unprecedented number of farmers channel for purchasing inputs and consumer goods and for selling their output. However, the household registration system, dividing all households into two categories--rural and urban, artificially fragments China's economy, putting those who live in rural areas at a strong disadvantage in having access to high-paying job opportunities and China's welfare system. In fact, it is estimated by about 90 percent of rural population has no access to any formal welfare system.

While the forces of development and transition have been in part responsible for generating the progress that rural China has experienced during the past 20 years as well as being responsible for some of the remaining barriers, the nation's efforts at pushing ambitious Trade and Investment Liberalization (TIL) policies threaten to further accentuate the trends in rural China. Surprisingly, however, even though the potential for gain and for damage is great, almost no literature exists to answer some of the most basic questions about the proposed efforts to push TIL. On balance, will TIL policies help or hurt rural residents? How will they affect rural incomes? How will they affect rural employment in the agricultural and non-agricultural sectors? What policies can the government adopt to reduce the harmful effects and enhance the positive benefits?

The general goal of my essay will be to begin the discussion of these critical questions. In particular, I will attempt to meet this broad goal by pursuing four objectives: First, I will review the rural economy's record on income generation. Second, I will review the rural economy's record on employment. Third, I will attempt to assess the net results of the positive and negative impacts that TIL policies may have on rural incomes and employment. Finally, I will discuss a number of alternative policies that leaders may consider adopting to reduce TIL's costs and increase its benefits.

To meet this goal, I will organize the rest of this paper as follows. In the first section, I will first review China's macro setting and discuss a number of the important macro-forces that may have important impacts on rural incomes. I then trace out the record of rural incomes during the reform era. In the second section, I examine in more detail the record on employment in the rural economy during the past two decades. The purpose of the first two sections will be to motivate the third section: a discussion of how TIL policies may help and hurt incomes and employment in rural China. Finally, the last section concludes with a discussion of policies that may assist policy makers in dealing with the cost and benefits of TIL policies.

1. Rural Incomes

In this section, the overall goal is to briefly review the trends and determinants of rural income in China during the past 2 decades. To meet this goal, I have two primary objectives. First, I want to briefly review some of the major macro-economic forces that are shaping the rural economy, in some cases facilitating its growth, in others constraining it. It may be that many of the most important impacts of TIL will be indirect in the sense that they will affect some of these macro-forces, which in turn will affect rural incomes.¹ Second, I will review the record of rural income during the 1980s and 1990s.

Domestic Macroeconomic Dimensions

The rural and urban sectors are dualistic and poorly integrated. China's rural sector has continuously transferred resources to the urban-industrial sector, including capital, wage goods (food), industrial inputs, and to a lesser extent, labor. Constrained labor flows have contributed to the large differential in rural and urban labor productivity and income. The rural sector has also served to buffer the impact of macroeconomic shocks on the urban economy. The spread of market forces and increased reliance on competitive prices has tended to increase the flow of labor and other resources and improve integration in recent years. Unless labor movement constraints are lifted the dualistic nature will remain.

As China has moved from a planned to a more market-oriented economy, balanced sectoral growth and integration have become more important. The urban-industrial sector provides the demand for the rural sector's marketed surplus, and as the agricultural economy becomes an increasingly smaller component of the national economy, changes in growth rates of the industrial and service sectors strongly affect the agricultural and rural economy.

Domestic Terms of Trade

In most countries growth in the total productivity of all production factors (land, labor and capital)—total factor productivity, or TFP—has led to declining rural terms of trade—despite various price support and subsidy programs. In China, however, rising domestic demand, the phasing out of administered pricing, and the adoption of market prices improved farmer terms of trade over 1990–97, as reflected in the ratio of prices received by farmers to prices paid by farmers. Domestic commodity prices are now similar to international border-price equivalents, thus China's trade policy decisions will influence in determining future trends in terms of trade. If China liberalizes its trade, domestic terms of trade should decline over the near term consistent with international expectations. If not, demand will likely rise faster than supply in the near term, meaning prices will rise unless imports are expanded. Other national policies and events not effectively captured in terms of trade calculations, such as output planning and quota procurement, enforce both implicit and explicit transfers from rural to urban sectors. In addition, national credit policies generally favor urban investors and discriminate against rural borrowers. Rural residents, on the other hand, have benefited from lower increases in consumer prices relative to urban residents over the past decade and rising opportunities to remit wages.

¹ In this section, I draw heavily on my work from Nyberg and Rozelle (1999).

Resource Flows: Impacts of Fiscal and Financial Reforms

Over the reform period direct budgetary expenditures to agricultural activities have been greater than tax receipts from agriculture, but the net *fiscal flow* to agriculture declined during the 1990s. Fiscal expenditures include allocations for investments in irrigation, land improvement, specialty crop production bases, etc. However, a net outflow from the rural economy has occurred as taxes from rural-based industries have been considerably greater than the net flow to agriculture. The net annual rural-to-urban flow averaged about Y113 billion (constant 1995) over the 1994–96 period (Table 1.1). Large amounts of off-budget funds (not included in Table 2.1) are generated in the rural sector through various fees and unofficial taxes—levied particularly on TVEs. To the extent that these resources are *not* spent in rural areas, additional outflow of rural resources may occur through unofficial channels that are not captured in the consolidated fiscal statements.

Investments in land and water resources are obviously necessary for continued sector growth, but investments in energy (electricity), transport (road, rail, waterway and port), and other infrastructure which reduces marketing costs are equally important for promoting rural-sector growth. Analysis by World Bank staff indicates that the infrastructure investment elasticity in East Asia is 1.0, implying that for every 1 percent of per capita growth, infrastructure stock needs to increase by 1 percent of GDP. Therefore, if applicable to China, infrastructure investment will need to be 6 to 7 percent of GDP if GDP growth goals are to be achieved (World Bank, 1995).

To stimulate domestic demand and develop infrastructure, the government has embarked on a three-year \$1.2 trillion infrastructure investment program. A recent component is a Y100 billion bond issue that will finance investments beginning in the fourth quarter of 1998. Much of the investment will focus on rural infrastructure that employs rural labor for irrigation, road, and rail construction and on rehabilitation of the rural electrical grid.

The investment program described above may be having an impact—fixed-asset investment rose 28 percent in the third quarter (year-on-year basis). However, the composition of the investment effort remains a concern as investments during the first nine months of 1998 rose by 20 and 19 percent, respectively, for SOEs and property development. Thus a real risk remains that investments may be diverted from financing public goods to SOEs, where overcapacity is already serious and returns are low.

China's financial sector, like those in other Asian economies, has not evolved in parallel with real sector performance, remains structurally weak and potentially puts rural growth and development at risk. Government intervention, in the form of policy lending, pervades the banking system; and government remains involved with SOE investment in nonpublic goods. Lardy (1998) reports that, if properly accounted for, the banking system's non-performing loans would be 30 to 40 percent of GDP. Stock and commodity futures markets remain underdeveloped and underregulated, and many have been closed or consolidated.

Analysis of data from the banking system, indicate a net transfer of financial resources from agriculture to industry throughout the reform period, although such findings need to be interpreted with caution because of concerns on the coverage of the available statistics (Park, Brandt, and Giles, 2000). Consolidated data on rural savings and loans exclude transactions of Rural Credit Foundations (RCFs), the smallest of the rural credit institutions, and results in a modest understatement of the *financial flows*. Conversely the inclusion of Agricultural Development Bank (ADB) data contributes to overstating financial flows, as its lending is almost exclusively for agricultural procurement by government marketing agencies. Many deposits in the Agricultural Bank of China (ABCs) are by urban residents. After making allowances for these shortcomings, it is clear that although rural industries (TVEs) absorb a portion of these transfers of agriculture to industry, a significant rural-to-urban financial flow (Y30 billion per year in 1995 real terms) remains during the 1994-96 period. Whether the financial flows reflect the response of rational investors moving funds from low-return to high-return sectors or whether they result from distortions in the financial and fiscal system is undetermined, but the massive movement of funds out of agriculture and the rural economy highlights the importance of the sector and emphasizes the importance of keeping it healthy.

About 40 percent of the SOEs incur losses and survive on subsidies and bank overdrafts—which then become nonperforming loans of the banking system. A government priority is SOE restructuring, of which a major element is employment rationalization. This, combined with downsizing the civil and military services, will move large numbers of workers to the ranks of the unemployed. Labor reductions should improve SOE performance, but the reduced labor income will certainly erode demand and emphasizes the need for rapid growth to create new jobs for redundant labor. This overhang of unemployed urban-industrial workers will have priority for employment in newly created jobs and make it difficult for rural workers to stay and work in urban enterprises. To mitigate the impact of income losses, government has budgeted 1.5 billion yuan for a new welfare program to assist laid-off, retired, and disable workers.

Tight credit which has hampered growth and expansion of small and medium enterprises (SMEs)—which account for 60 percent of industrial output—has been relaxed, although new banking regulations are making the future of lending to the rural sector uncertain (Shen, 2001). Lending by state owned commercial banks to SMEs, including TVEs, has been increased by several billion yuan. This should bode well for expansion and employment; however, it is equally important to ensure the borrowing proposals and loans meet appropriate financial and economic efficiency criteria. Al

Rural Income Trends

While the growth of the national economy and the rise of the middle class in China's cities have attracted the most attention by outside observers, the strong and steady growth of real per capita rural incomes should be highlighted as one of the great achievements of the China's first two decades of reform (Table 1.2). Real rural income rose by 249 percent between 1980 and 1999 (column 1). The rise from 616 yuan per capita in 1980 to 2210 in 1999 produced an annual rate of increase of 7 percent (column 4).

The rate of increase, however, has not been the same across time or among all of the sub-groups in China (Table 1.2, columns 1 and 4). After rising by 14 percent annually in the early reform years (1980 to 1985), the growth of rural incomes slowed in the late 1980s to only 3 percent annually. Since then income growth rates have gradually accelerated, rising by 5 percent annually between 1990 and 1995 and then by 6 percent annually in the late 1990s.

The rates in China's poor areas (from those living in the 600+ counties designated by national authorities as being in China's most poverty stricken regions), while still positive and quite rapid in some periods, have lagged behind those of the rest of the economy during most of the reform era until recently (Table 1.2, columns 2 and 5). Overall, real incomes per capita in poor areas increased by 152 percent between 1980 and 1999, a rise of 5 percent per year. Although during each 5-year period between 1980 and 1995, the annual growth rates of rural incomes in poor areas were lower than those in non-poor counties, between 1995 and 1999 incomes in poor areas (7 percent) slightly exceeded those in non-poor ones (6 percent).

The divergence between richer and poorer areas during the most of the reform era have led to the steady widening of inequality among those in the rural economy (Table 1.2, column 3). Gini ratios of rural incomes (measures of inequality) rose from 0.24 in the early 1980s to more than 0.35 in 1999. Although in part because of the robust performance of those in poor areas, the rate of increase of the Gini ratios slowed in the 1990s.

The steady rise of incomes in rural areas, especially those in poor areas, has led to historic rates of poverty alleviation during the reform era, although China's poor still remain at very low levels of income (Table 1.3). Using China's own poverty lines, the number of people in poverty fell from 264 million in 1980 to 34 million in 1999 (column 2). Measured as a proportion of China's rural population, the incidence of poverty fell from 33 percent in 1980 to 4 percent in 1999 (column 3). According to the World Bank (2001), however, China's poverty line (about 0.70 US dollar per day) is lower than the poverty line that they use to measure poverty in other countries (1 US dollar per day). If the World Bank's standard is applied, although the progress in eliminating poverty is still remarkable (nearly 200 million people rose above the 1 dollar per day poverty line between 1980 and 1999), there are still more than 100 million people living below that income level.

Whatever single numeric measure is used, large discrepancies still separate those living in the richer coastal area and those in the poorer inland areas (Table 1.4). The average rural resident in the east has an income (2929 yuan) that is almost double that of the average resident living in the west (1502—column 1). Similarly, average expenditure levels are also almost double (column 2), while the amount of income that a household is required to spend on food is much lower (column 3).

Rural-Urban Income Dichotomy.

Inequality, among other things, is a barometer of the efficiency of an economy as well as its political stability, and the fact that during the reform era China has experienced an exceptionally increase in inequality, is cause for concern. Gini ratios for the whole country (combining rural and urban residents) have been above 0.40 since the early 1990s and have

continued to rise. China's rural-urban income gap is large by international standards—particularly when the recent 1998 revisions to urban per capita income data are applied. In nominal terms, the rural/urban per capita income ratio declined from 0.54 in 1985 to 0.35 in 1994, then recovered by five percentage points between 1994 and 1997 (Figure 1.1 and Table 1.2, column 6). These ratios compare poorly with Vietnam where the 1997/98 rural per capita income level was 67 percent of that of urban incomes (Bales, 1998). Even when adjusting official rural and urban income data for housing costs and other poorly measured or excluded components of income, rural/urban income ratios do not improve. Further, Yang and Zhou's (1996) analysis of rural-urban income ratios, for 36 countries over the 1985-1995 decade, demonstrated that urban incomes are rarely more than twice rural incomes. Only one country (out of 22 for which 1995 data were available) exceed China's urban/rural income ratio. Using consumption as an income proxy, China also compares unfavorably with India in terms of its rural/urban inequality. In 1993-94 China's per capita rural/urban consumption ratio was 0.28, while India's was 0.61.

The rural/urban ratio using constant 1985 prices, reflects the differential increases in the cost of living between rural and urban areas, and illustrates a similar but slightly more modest decline in relative incomes. However, these data underestimate both rural and urban in-kind income. Price deflators adjust for differential price changes but not price levels. Adjusting for this differential (15 percent), imputing rent to rural incomes and adjusting urban incomes to include in-kind income for housing, education, health care, pensions and other subsidized services provides more accurate income estimates. These adjustments lowered rural incomes to 31 percent of urban incomes in 1990—substantially less than the 45 percent suggested by official data (World Bank, 1997a).

The large rural-urban income gap points to a large differential in labor productivity and to constrained factor mobility, especially labor and capital; it also reflects the arbitrary nature in which compensation levels are set. Although only examining data through 1992, Yang and Zhou (1996) determined that the marginal productivity of labor in agriculture, TVEs, and SOEs was Y601, Y1,211, and Y9,346 respectively, in 1992. Such large productivity gaps indicate barriers to labor mobility prevent a narrowing of the differential—despite large numbers of sanctioned migration and larger numbers of “floating” population. The government attempts to control the pace of migration to ensure urban services are not overwhelmed, and in part to assure urban grain sufficiency. Other costs also constrain migration, including; lack of job information, housing, medical, education and other social services which are unavailable to rural migrants. Government policies continue to support and subsidize urban standards of living, including the absence of hard budget constraints for state-owned enterprises (protecting urban jobs), and low-cost capital for urban enterprises although housing and enterprise reforms and fiscal constraints are mitigating these benefits as urban workers now pay higher rents and contribute more to their pension and medical benefits.

Intra-rural inequality has also risen rapidly during the 1980s and early 1990s, a type of inequality that may be more socially sensitive since rural residents may be more aware of the differences in standard of living between themselves and other rural counterparts (Rozelle, 1996). The World Bank (1997b) has shown that one of the largest gaps exists between coastal and inland provinces. Some of the gap may be due to factors restricting the flow of labor and

other resources between rich and poor rural areas. With rising market integration, the barriers may be declining, but large initial discrepancies in resource, human capital, and locational endowments may require generations to equalize wealth levels.

It will be very difficult to improve the trends in rural/urban income ratios without improving labor efficiency and productivity through increased capital/labor and land/labor ratios in agriculture. While the former ratio can be increased by making capital more accessible, significant increases in the land/labor ratio can be achieved only by transferring labor out of agriculture. During the early and mid-1990s increasing agricultural prices contributed to increasing rural incomes, preventing further deterioration in the rural/urban income ratio but additional reliance on agricultural price policy may be limited since the prices of many commodities are now above international prices. Shifting production to higher value commodities and continued improvements in TFP will permit modest income growth in agriculture, but without additional land and capital per agricultural laborer, future per capita income growth in will be slow in agriculture.

The Changing Role of Agriculture in the Economy

Successive transformations of China's reform economy are based on economic growth in the agricultural sector. Agriculture has made important, but declining contributions to national economic development in terms of gross value added, employment, capital accumulation, urban welfare, and foreign exchange earnings. Before 1980, agriculture contributed more than 30 percent of GDP and half of export earnings. Each share fell below 20 percent by the early 1990s (Table 3). Agriculture employed 81 percent of labor in 1970, but only 50 percent in 1997.

The declining role of agriculture in international trade is particularly striking. The share of primary (mainly agricultural) products in total exports was 50 percent in 1980 (Table 1.5). By the mid-1990s, the share was less than 15 percent. The share of food export to total exports fell from 16 percent in 1988 to 6 percent only in 1997. Food imports fell from 15 percent to 3 percent in the same period.

The declining importance of agriculture is historically common to all developing economies. China is densely populated; farm sizes averaged less than one hectare as early as the 1950s. Population growth and limited land resources will shift China's comparative advantage from land intensive economic activities like agriculture to labor intensive manufacturing and industrial activities (Anderson 1990).

Cropping is the dominant sub-sector within agriculture. It contributed 80% of the gross value of agricultural output in 1978 and 75.6% in 1980. By 1997, its contribution fell to 56.4%. The shares of livestock and aquatic output more than doubled during the same period (Table 1.6).

The Non-Agricultural Sector

TVE growth and expansion has been impressive over the entire reform period—except during 1989-90. Despite rapid growth in rural industrial employment, output, and wages (TVE

wages have grown at 18 percent annually), and the substantial direct and indirect contribution to the rural economy, rural-urban income disparities have worsened since 1985. Doubtlessly, rapid TVE expansion prevented the income ratio from being even more adverse, but it was unable to reverse the worsening trend. Jin and Qian (1998) found that TVEs did not increase average per capita rural income given the levels of non-farm employment and/or local public goods provision. Furthermore, the local nature of rural industry also has contributed to rising intra-rural inequality (Rozelle, 1996).

TVEs not only have successfully generated off-farm work opportunities for the local rural labor force, but for workers from other villages as well, creating rural-to-rural migration (Lohmar, Zhao, and Rozelle, 2000 and next section). Rural-to-rural migration in China is a paradox internationally—it has previously not been observed on such a large scale, and yet in China it is the fastest growing sub-sector of the rural labor force. The rise of private sector ownership can, in part, account for the shift in hiring non-village residents, since their owners are unconcerned with non-economic criteria, such as employment priority for local workers. From the migrant's viewpoint, common backgrounds permit rural in-migrants to better integrate into the work environment. These factors, in addition to the fact that most TVEs engage in labor-intensive light industry, mean that in-migrants are more likely to be women, older, and less educated; rural-to-rural migration can be said to be one of the most important new windows of opportunities for rural residents into the economy.

Barriers to migration appear to be primarily on the urban side, although scholars still debate whether or not rural institutions affect migration decisions. Analysis of factors influencing migration found few village institutions that constrained migration (Rozelle et al., 1999). Land tenure and grain delivery quotas do not influence migration, but land and credit markets marginally influence out-migration. The ability to rent out land while maintaining nominal use rights appear to facilitate out-migration. Also, the existence of informal credit markets appears to encourage out-migration. Urban in-migration continues to be severely inhibited by the household registration system and limited access to urban social services.

2. Rural Labor

Since economic and political reforms began in China just over twenty years ago, it has experienced rapid economic growth (Naughton, 1995). The expansion of the rural economy has driven a large part of this growth (Putterman, 1992; Perkins, 1994). In turn, rural labor markets have changed dramatically over the past twenty years and significantly contributed to the success of the rural economy (Solinger, 2000; Chen, Zhao, and Li, 1995; World Bank, 2001). Most observers of China agree that the success of rural labor in raising rural incomes and productivity can account for a significant part of rise in rural welfare (Parrish, Zhe, and Li, 1995; Rozelle, 1995).

The rise of rural labor markets, however, transcends its role in providing rural residents with a means to raise their incomes (Todaro, 1976; Stark, 1976). For China to successfully modernize, the nation must rely on rural labor markets to facilitate the shift from a largely rural population to an urban one. Without well-functioning labor markets, the economy cannot be

transformed from agricultural to industrial. Hence, it would seem that more important than assessing how well they have contributed to per capita rural incomes is the question of whether or not rural labor markets have emerged in a way that will allow them to more effectively facilitate the transformation of China.

Although many researchers have produced findings that contribute to the debate, scholars do not agree on the role of labor markets in facilitating China's long run development. Whereas some researchers believe that significant barriers still exist in China's and that the absence of well-functioning rural labor markets may be hindering growth, others believe that rural labor markets are significantly contributing to China's goals of modernization. They may not agree, in part, because their analyses typically consider questions that are relatively fragmentary, perhaps due to the magnitude of the questions being asked. The bits and pieces are often hard to put together and, as a consequence, sometimes appear to be inconsistent or contradictory.

Though some of the disagreement may be due to the way that researchers have posed and answered their research questions, part of the disagreement is real, and deep divisions exist in opinions regarding the progress of China's development process with respect to rural labor markets. Some researchers have argued that formidable barriers still exist and keep China from efficiently using its rural labor resources. For example, Meng (1990; 1996) finds substantial evidence of non-market labor assignment and allocation behavior in the rural industrial sector, although she was writing about the 1980s and early 1990s. Benjamin and Brandt (1997) and Liu, Carter, and Yao (1998) both describe an inverse relationship between farm size and labor use, a signal that labor markets do not clear, although this relationship may be confined to on-farm labor.

Several scholars have focused on institutional features in rural and urban areas may constrain the movement of labor, despite high wage gaps and positive expected gains from migration. Mallee (1996) and Yang and Hao (1996) believe a number of barriers, such as land tenure arrangements and mandatory marketing delivery quotas, continue to increase the cost of out-migration and dampen off farm labor market participation. Johnson (1995) worries that several prominent urban institutions, such as the household registration system and the absence of social and educational services for rural residents in cities, restrict entrance into the urban market.

In contrast, other work has illustrated the emergence of well-functioning rural labor markets and the break down of the institutional barriers. For example, Cook (1999) demonstrates the equalization of off-farm labor returns between wage earning and self-employed workers in her rural Shandong sample. Maurer-Fazio (1999) and Zhang et al. (2001) show the rising significance of education as a determinant of off-farm earnings, a result that implies individuals are being rewarded more for their human capital, a sign of well-functioning markets. A number of papers document the absence or attenuation of institutional barriers to off farm labor participation. Lohmar's (1999) analysis of the effect of land tenure and quota policies finds that although more restrictive policies have some impact on household labor response to the off-farm sector, the magnitude is small. Knight and Song (2001) demonstrate how some urban firms have become less discriminatory in their hiring practices of those without an urban *hukou*. One of the most basic indicators of market health, the level of employment, supports the

hypothesis that labor markets have improved over time. Zhang, Zhao, and Chen (1995), Rozelle et al. (1999), and SSB (1990 to 2000) and others have documented the explosion of migration and off-farm participation.

The overall goal of this section is to provide an update of the trends in off-farm labor participation. I will estimate of the nation's aggregate off-farm participation rates, comparing, after five years of relatively slow economic growth (between 1995 and 2000), how rural labor has fared relative to its performance in the mid-1990s (a period after five years of rapid economic growth). Second, and more importantly for meeting our overall objective, we will decompose the growth in off-farm employment, examining what segments of the rural labor force are growing and where each segment is growing at.

To meet these objectives, the rest of the section will be organized as follows. In the next sub-section, we first introduce the data that are used for the analysis, a unique set of rural household data collected by the authors in the fall of 2000 that contains a 20 year employment histories for more than 2000 individuals from across China. The final section presents a series of figures and tables showing the aggregate and disaggregated trends of employment of rural individuals between 1981 and 2000.

Data

The main data for this study were collected in a randomly selected, nearly nationally representative sample of 60 villages in 6 provinces of rural China (henceforth "Household Data."² To accurately reflect varying income distributions within each province, one county was randomly selected from within each income quintile for the province, as measured by the gross value of industrial output. Two villages were randomly selected within each county, and twenty randomly selected households, both those with their residency permits (*hukou*) in the village and those without, were surveyed per village. A total of 1199 households were surveyed.

The survey gathered detailed information on household demographic characteristics, wealth, agricultural production, non-farm activities, and investment. Several parts of the household survey were designed to learn about migration from the household and other labor market participation across time. For roughly half of the households surveyed (610 out of 1199), a twenty-year employment history form was completed for each household member and each child of the household head, some of whom were no longer considered household members. The form tracks the level of participation in off-farm employment, the main type of off-farm work performed, the place of residence while working (within or outside the village), the location of employment, and whether or not each individual was self-employed. All households surveyed were also asked a comprehensive set of questions about their demographic characteristics, agricultural production, other non-farm activities, and both productive and consumptive investments made over the past twenty years.

² The provinces are Hebei, Liaoning, Shaanxi, Zhejiang, Hubei, and Sichuan. The data collection effort involved students from the Center for Chinese Agricultural Policy, Renmin University, and China Agricultural University and was led by Loren Brandt of the University of Toronto, Scott Rozelle of the University of California, and Linxiu Zhang of the Center for Chinese Agricultural Policy, Chinese Academy of Sciences.

Using the employment history data, several broad categories of off-farm workers could be identified. Migrants were identified as people with off-farm jobs who did not live in the household while working. Local wage laborers (henceforth, wage earners) were identified as people who had off-farm employment, were not self-employed, and lived at home while they worked. Finally, all people who reported being self-employed off the farm were categorized as such. In total, the survey divided off-farm jobs into four types: migrant wage earners (henceforth, migrants); self-employed migrants; wage earners; and local self employed. These definitions held for both members of the household and children of the household head. We also asked about the extent of the participation of each member, in each year, in the household's on-farm activities. Participation rates were created by normalizing by the total labor force, a figure calculated by aggregating all individuals above the age of 16 who indicated that they were either working in or searching for employment in agricultural and/or industry in each year. If a person over 16 indicated they had retired or could not work for health, full-time enrollment in school, or other reasons, they were not included in the labor force total.

As a supplement to this recent household data set, I also collected a 215 village community level data set that traced labor allocation and movement in 1988 and 1995 (henceforth "Community Data Set"). This data set is described in Appendix A.

The Evolution of Rural Labor Markets in China

Consistent with previous findings of other national studies of rural off-farm employment, the data show the off-farm labor force expanded steadily between 1981 and 1995. From around 15 percent in 1981, my survey estimates that in 1995, 32 percent of the rural labor force found some employment off-farm (Figure 2.1, Panel A). By assuming that neighboring provinces similar to those surveyed have identical rates of off-farm labor participation, I estimate that off-farm rural employment rose from less than 40 million in 1981 to more than 150 million farmers in 1995, a growth in off-farm employment of more than 100 million. Although based on a relatively small sample, these numbers demonstrate the consistency of my data with much larger national studies by the State Statistical Bureau (SSB, 1996) and our own 1995 national village survey. my estimate in 1995 is almost the same as both SSB's estimate of the non-farm labor force (31 percent) and my own estimates of rural off-farm employment calculated from estimates of village leaders of the participation in the off-farm sector of their villagers (34 percent—Rozelle et al., 1999).³

Despite the Asian Financial Crisis, China's own structural reforms, and a general slowing of economic growth in the late 1990s, our data show that rural off-farm employment growth continued expanding between 1995 and 2000 (Figure 2.1, Panel A). By 2000, 41 percent of rural individuals participated in off-farm work, a rise of 9 percent in the late 1990s. If so, my data imply that more than 200 million rural individuals worked off the farm in 2000, a rise of more

³ My data are also consistent with the estimates of SSB in the late 1980s and Parrish's study (Parrish, Zhe, and Li, 1995) in the early 1990s. For example, my data set estimates that 20 percent of the rural labor force worked off-farm in 1988. This figure nearly agrees with the State Statistical Bureau estimates for that year, 21 percent. My 1993 labor force participation rate, 29 percent, is only three percentage points higher than the best guess made by Parrish, Zhe, and Li's national study, a difference that, in part, can be explained by Parrish's slightly broader definition of off-farm labor.

than 50 million workers in the last 5 years of the 1990s. If employment generation and the ability to create jobs during a period of relatively slow growth are indicative of a healthy labor market, then China's labor markets would have to be given a high mark for maintaining rural incomes.

Disaggregating the Evolution of Rural Labor Markets

An examination of disaggregated trends provides an initial basis for demonstrating that China's labor markets may be doing more than just providing off-farm income for rural workers. Trends by job type clearly show that the focus of workers over the past 20 years has shifted from rural to urban destinations (Figure 2.2, Panel A). In 1981, most rural individuals (nearly 85 percent) not only spent all of their time in farming, but those who worked off the farm were almost three times as likely to live at home and work in or close to the village (7 percent were local self employed; 4.2 percent were wage earners) than to work out of the village (less than 1 percent were self employed migrants; less than 4 percent were migrants). By 2000, almost as many off farm workers were living away from home (more than 85 percent in cities or suburban villages of major metropolitan areas) as in the village. Migrants composed both the largest and fastest growing component of the rural labor force.

Trends examining the off-farm employment histories of different age cohorts amplify these trends and demonstrate one of most striking characteristics of China's changing employment patterns: the shift towards off farm employment being dominated by younger workers (Table 2.1 and Figure 2.3).⁴ Workers in all age cohort categories worked participated at similar rates in 1981 (ranging from 18 to 19 percent--Figure 2.3, year 1981) and 1990 (ranging from 20.5 to 33.6 percent--Figure 2.3 and Table 2.1, column 1). Moreover, there was no clear progression when moving from the oldest to youngest cohorts. By 2000, however, there was a distinct ranking as one moved from oldest to youngest cohorts, and the youngest workers participated at rates more than twice (75.8 percent) those of the older cohort (37.6 percent).

Moreover, the rise of in the off farm participation rates of younger workers is accelerating relative to older ones (Table 2.1). By 2000 young workers in the 16 to 20 year old cohort participated at rates three times (75.8 percent) those of 16 to 20 year olds in 1990s (23.7 percent). Although less differentiated, those in the 21 to 25 year old cohort and those in the 26 to 30 year old cohort doubled their off-farm participation. In contrast, older workers, while still increasing their participation rates (by 17 percentage points), worked in the off farm substantially less (only 37.6 percent for those in the 41 to 50 year old cohort in 2000).

The rise of in the off farm participation rates of younger workers also shows their increasing specialization in the off-farm sector (Figure 2.3). In 1990, for example, of those in the younger cohorts who had off farm jobs, more than half spent time (either part time or during the busy season) working on the farm (Figure 2.3, Panels A and B). By 2000, less than a quarter of

⁴ Table VV and Figure 23 are created in order to allow us to compare the off-farm labor participation rates of individuals belonging to different age categories during different years. For example, when comparing the participation of 16 to 20 year olds in 2000 (75.8 percent) with those in 1990 (23.7 percent), we are actually looking the participation in 1990 of those individuals who are currently 26 to 30 years old. Figure 4, on the other hand, traces out the work histories on the same set of individuals over time.

the youngest cohort who worked off-farm, spent any time in agriculture. In contrast, in 2000, of those in the 41 to 50 year old cohort who worked off the farm, over 80 percent of them were still working in agriculture, either on a part time or seasonal basis (Panel C). My data illustrate the tendency for young workers to live away from home and not engage in any on-farm work. Similar shifts, are seen to be occurring when following the same sets of individuals over time (Figure 2.4).

Finally, these trends are seen to be accelerating in richer areas (Figure 2.5). Off-farm participation rates in the richest province in our sample, Zhejiang (Panel A), are both historically higher and have grown faster than those in other provinces (Panels B and C). In Zhejiang, by 1990 total off-farm labor participation neared 40 percent (above the average of the rest of the country with Zhejiang excluded in 2000). By 2000, the off-farm participation rates of rural residents across all of Zhejiang (including its poorest southern and western counties) had grown to nearly 65 percent. In Sichuan and Hubei, two poorer provinces, off-farm participation started at a much lower rate in 1981 and grew slowly until 1990. In the 1990s, however, as migration has emerged as the most dominant type of labor activity, labor participation rates have accelerated. If these trends are indicative of what growth in China will be in the future as long as the overall economy continues to grow, then we may see continued strong growth, and even an acceleration, in the coming years.

Impacts of Developing Rural Labor Markets

While emerging rural labor markets may have numerous effects on the fabric of rural and urban economies, in this section, we limit our descriptive analysis to three. First, we examine how the development of labor markets has affected the level of participation of women in off-farm activities. Second, Third, drawing on an earlier survey, I show how labor movements out of rural areas are going further from home, creating truly national labor markets. Finally, I show that labor markets are not just beginning to integrate into urban market, they are beginning to link inland rural areas with coastal rural areas.

Gender. The rise in labor markets has already begun to have a positive impact on increasing off-farm participation rates of women (Figure 2.1 and 2.2). Although women have participated at rates far below those of men throughout the entire 20-year sample period, since the early 1990s, participation rates have risen (Figure 2.1, Panels B and C). In the 1980s, consistent with the findings from my national community survey-based study reported in Rozelle et al., 1999, the participation rates of men (more than 25 percent in 1981) far exceeded those of women (less than 5 percent). Moreover, despite these low initial levels of involvement in the off-farm sector, the growth of participation rates of women remained below those of men in the 1980s. In the 1990s, however, the rate of growth of participation of women has risen faster relative to men.

The rising participation rates of women have been driven by the entry by women into all job categories, although the most striking absolute gains have come in migration (Figure 2.2, Panels B and C). Throughout the entire 1980s decade, less than 1 percent of women left their homes to work for a wage or become engaged in self-employed activities. Since 1990, however, the rate of growth has been higher than any category of job types for either men or women. By

2000, nearly 6 percent of the female labor force was working as a wage earning migrant and nearly 3 percent was working as a self employed migrant. One interpretation of this rise in the participation of women is that as labor markets have become more competitive, the scope for managers to exercise their discriminatory preferences has declined, thus opening up new employment opportunities for those who previously had not been able to participate. Multi-variate analysis in Rozelle et al. (2001) are consistent with these results.

Education. Drawing on a community level data set that I collected in 1996, there is also a shift to greater education is even more significant (Table 2.2). In 1988, 61 percent of migrants nationwide had at least a middle school education. By 1995, the national average climbed to 64 percent. The percent of high school-educated migrants nationwide rose from 7 to 8 percent between 1988 and 1995. Although rural men generally have higher levels of education than rural women, the education of male and female migrants is roughly equivalent. Male migrants are slightly more likely than women to have either a high school or elementary education which suggests that the range of opportunities for male migrants is wider.

In the 2000 household data set, the propensity of more educated to enter the migrant and local off-farm wage sector is confirmed. Multi-variate analysis shows that in the 1980s, for each additional year of education, the probability of becoming a migrant rises by 10 percent and the probability of working in a local wage earning job rises by 6 percent. By the 1990s, the probability of becoming a migrant rises by 18 percent for each year of additional education and the probability of finding an off-farm job rises by 17 percent. The participation in formal training and apprenticeship programs also has a large and significant effect in increasing the participation in all forms of labor market activity. To the extent that we would expect well-functioning labor markets to give more employment opportunities to those with higher levels of human capital, during the whole reform period, labor markets appear to have been playing some role.

Migration Destinations. Drawing on my earlier community level data set, the destinations of migrants, both men and women, also changed between 1988 and 1995 and differ from region to region (Rozelle et al., 1999). In coastal areas such as Zhejiang, more migrants stay within their home county than in other areas. Migrants from inland provinces move outside of their own provinces more frequently than others. Surprisingly, most migration destinations were short and medium distance, except in Sichuan and Hubei in 1995.

The number of long distance migrants, especially women, has risen sharply (Table 2.3). Nationwide, the proportion of migrant men moving to remote destinations rose from 28 to 42 percent between 1988 and 1995; the proportion of women rose from 7 to 41 percent. Some areas had exceptionally high levels of outmigration. The proportion of men migrating to destinations outside the province increased from 61 to 74 percent in Sichuan and from 14 to 46 percent in Hubei. If these figures are relatively accurate estimates of provincial migration, one of every seven male laborers from Sichuan works outside of the province. The proportion of women in the long distance labor market rose sharply in all survey provinces except Shandong. In Zhejiang, for example, few women left for work in Shanghai or Fujian in 1988. By 1995, 17 percent left Zhejiang in search of wage work. Over half of the female migrants from Hubei and Sichuan left their home provinces.

Developing Rural to Rural Linkages. While China's success at generating off-farm work opportunities for its rural workers is well known, what is less well known is that many of the new jobs are in rural areas and go to workers from other villages. In 1988, only about 1 percent of the rural labor force found employment in another rural village (Table 2.4, row 9, column 4). By 1995, 5 percent of rural workers were employed in a rural village outside of their home village (column 1).

The increase in the size of the rural labor force, the rapid rise in the proportion of rural workers who leave their home village for work, and the increasing share of those workers heading to other rural villages have contributed to the expansion in rural-to-rural labor movement. Rural-to-rural movement represents the fastest growing off-farm employment sector in rural China, with an annual growth rate of 27 percent compared to 13 percent growth in local employment and 9 percent growth in rural-to-urban movement (Table 2.4, rows 3, 6 and 9, column 7). Growth in rural-to-rural migration was especially high at 38 percent annually (row 11). I estimate that there were 12.9 million rural-to-rural migrants in 1995 up from 2 million in 1988.⁵ An additional 9.8 million rural workers in 1995 commuted to other villages, up from 3 million in 1988. The 22.7 million workers who found non-agricultural employment through rural-to-rural labor movement (12.9 plus 9.8) make China's development unprecedented. I am unaware of a development experience in any other country where the rural sector has offered industrial jobs to such a large group of mobile workers.⁶

Summary of Rural Labor Market Findings

In summary, then, in this section we have provide evidence showing how labor markets clearly are acting in a way consistent with an economy that is in transition from agriculture to non-agriculture and a population that is shifting from rural to urban. Our descriptive analysis illustrates that labor markets have a.) allowed migration to become the dominant form of off-farm activity; b.) been increasingly dominated by young workers; c.) expanded fastest in economies or areas that are relatively well-off; and d.) increasingly drafted workers from sub-sectors of the population, for example, women, that earlier had been excluded from participation. Rural workers also showed signs of specialization especially when examined by age group and education. Young and better educated workers work much less on the farm than older workers in 2000. Perhaps more telling, the on-farm participation of young workers in 2000 is much less than when compared to those in their same cohorts in 1990 and 1981. Finally, my data also show that workers are moving further from home and developing ties in other rural areas.

Geography and Labor Patterns

Specialization of another type—the emergence of specialized modes of production in different villages across China's geographical landscape—also may have been facilitated by the emergence of labor markets. Drawing on my community level survey, I find that a distinct

⁵ These estimates come from the percentage of rural labor going into villages (estimated by the survey) multiplied by China's total rural labor force as published by the State Statistical Bureau (SSB). The SSB reports 403 million rural workers in 1988 and 446 million in 1995.

⁶ See Lohmar and Rozelle (2000) for more details on the rural to rural labor force.

pattern of the distribution of economic activity has emerged (Figure 2.6).⁷ When ranking the sample villages in terms of average income per capita and dividing them into four distinct groupings, I find that full-time farming is the dominant form of economic activity in the poorest of the poor villages (the poorest 10 percent of the sample) and is far more common (relative to other economic activities, such as migration, the running of micro-enterprises, or the running of large, complex manufacturing firms) than the role of the full time farmer in the better off villages—Panel I). In contrast, most of migration is occurring in villages in the lower-middle income categories (that is in villages that are in the 90th to 50th percentile in terms of their average income per capita--Panel II). Likewise, (upper) middle-income villages (those in the 50th to 10th percentile) have relatively specialized in micro-enterprise operation, and have participated in migration to a much lower extent. Finally, large scale manufacturing dominates the economies of the richest 10 percent of China's villages.

Nearly the exact same pattern of regional specialization in employment and economic activity can be found when dividing villages into groups according to their “distance” from a major metropolitan region (Figure 2.7). For this illustration, I use measures of Core-Periphery Zones first used by Skinner (1995).⁸ Those in the periphery (CPZ 6 and 7) are mostly engaged in full-time agriculture, especially when measured relative to other economic activities. In contrast, those in CPZ 5, rural residents that live in villages in areas that are fairly--but not extremely--remote, are those who have a propensity to migrate. As villages move closer to the core, the intensity of micro-enterprises and large manufacturing firms arise. A very large proportion (more than 67 percent) of manufacturing firms occur in CPZ 3 or 4.

In the rest of our analysis, we use these figures in our analysis. When we talk about the impact of a rise in manufacturing in rural areas due to TIL, we can see that these will have an impact on some, but not necessarily all, rural residents. First order impacts would be felt by those in the richest villages and in villages nearest the core, since these areas, based on their historic ability to manufacture and export these goods, should be able to expand production. However, rural migrants, or those in the lower middle income, more remote regions, might also benefit, since they are ones who are providing a lot of the labor in the richer, more centrally located villages. However, we would not expect first order or immediate benefits to those in middle-income or the most remote villages.

The Impact of TIL on Rural Incomes and Employment

In this section, I discuss some of the impacts that TIL may have on the rural economy. To do so, I will proceed as follows. First, I discuss the various different impacts that China can expect from TIL. Next, I will examine the different factors that will tend to minimize the

⁷ These figures are from Mohapatra (2001).

⁸ In Skinner (1994), the author argues that in analyzing spatial data provinces are not the appropriate unit of analysis. To rectify this problem, Skinner has assigned both core-periphery zones indices (CPZ) to every county in China. A CPZ measure is assigned to each county using a macro-regional index of highly correlated variables, such as electricity use, meat output, and age structure. A measure of 1 to 3 means that the village is in a county that is in the immediate vicinity (suburb) of one of China's main 7 major metropolitan regions (e.g., Beijing, Shanghai, Guangzhou, Wuhan, Chengdu, etc.). A measure of 7 means that it is in a periphery county that is most “remote” from the metropolitan core.

impacts—in both the short and long runs. Finally, I will analyze how each may affect the different sectors of the rural economy.

Impacts

In this subsection, I briefly review the various effects that TIL policies may have on the rural economy. First, I examine the direct negative and positive effects. Next, I raise the possibility of longer run secondary or indirect effects.

Direct, Negative Effects

There is much discussion inside and outside of China about the negative impacts that TIL policies will have on the rural economy. Most of the discussion focuses on the effects that will arise from the fact that the prices of many of China's agricultural commodities are above world market prices (see AGR_TIL paper). It is almost certain that many of China's domestic producers of a number of its major commodities, such as wheat, maize, cotton, and soybean, will suffer income declines from lower prices. Given the vast areas of China over which these crops are grown and the potentially large gaps in prices between domestic and international prices, it is possible that complete liberalization would have a very large impact on the producers of these crops inside China. Moreover, these pressures should expect to be fairly sustained over time. Even if prices in the world rose temporarily if China were to dramatically increase imports, an action that would dampen imports, there is probably enough flexibility in world cropping systems for wheat, maize, cotton, and soybeans, that foreign producers would respond with greater production and in the medium-run there would be vast quantities of the products at relatively low prices ready to enter China's market.

Workers in some sectors also will be affected negatively by the reduction in employment and wages. In the TVE_TIL paper, there is a discussion of the fact that a number of sectors will become less competitive after TIL. In these sectors, falling demand for labor and downward pressure on wages will hurt the interests of rural workers. To the extent that most of the sectors that are most vulnerable are in the urban sector, a sector that is dominated by fairly high-paid urban workers, the largest negative, direct employment effects will likely fall upon urban workers, not those from rural areas. However, there are rural workers in these enterprises, too. And, although the direct competition between urban and rural workers is fairly limited, there could not help but be some additional competition for rural workers in certain sectors from laid off urban workers who are searching for new work and/or self-employed business opportunities. In total, then, there should be limited negative impact of TIL policies on the employment and wages of a subset of rural workers.

Direct, Positive Effects

The direct, positive effects will mainly occur as mirror images to the negative ones. The largest positive impact of TIL measures almost certainly will come from the rise in the demand for rural employment due to the increased demand for China's product overseas and the more relaxed investment environment inside China. If China's access to export market increases,

many of the sectors that most likely will be the largest beneficiaries will be those labor-intensive firms that hire large volumes of workers from rural areas.

The rise of employment in the off-farm sector would also expect to have upward pressure on wages, although the gradual emergence of China's rural labor markets may be making employment available to enough new workers in the coming years that the new increases in the supply of workers could be big enough to offset any rise in wages do to the higher demand for labor from the export sector. As seen, during the late 1980s to mid-1990s, rising demand for labor led to the hiring of more than 50 million workers. Instead of leading to higher wages, however, the entry of new workers facilitated by the breakdown of traditional barriers was more than enough to offset the demand effect. Real rural wages between 1988 and 1995 were almost flat (Rozelle, Zhang, and Hughart, 2000). Given the past record on improvements in the off-farm labor market, and given the fact that 300 million workers are still in the agricultural sector without jobs off the farm, there seems almost certainly to be scope for continued development of China's rural labor markets in such a way that additional supplies may be more than enough to offset any rise in wages. Of course, if the labor markets would be emerging even without TIL, the additional supplies of labor may have entered the labor markets even without the new rise in export sector demand. If that were the case, without TIL real rural wages would either fall more (or increase less) than if there were no TIL-induced demand increases.

Overlooked by many observers, TIL policies may have a positive effect on certain key subsectors of agriculture. For most of the past decade, China has exported more agricultural commodities in value terms than it has imported. As shown by Huang et al. (2000), most of the exports have been labor intensive, horticulture, livestock and other processed products. Many of the products have been shipped to other Asian economies, though increasing quantities have been going to the US. To the extent that TIL helps China's access to markets in other countries for products in which it is able to export, agricultural producers of these commodities will benefit by higher prices and more export opportunities.

TIL policies may also help China remove or reduce barriers to many of its agricultural imports that have been erected by foreign countries (such as Japan, Korea, and the US) in recent years, if becoming part of the WTO gives China a way to appeal the unfavorable decisions of bilateral trade dispute settlements. Currently, Japan has banned the import of 4 commodities from China including garlic and jute products for tatami manufacturing. The US has taken trade actions in its Federal Trade Commission (and is taking more at an accelerating rate) against a number of commodities, such as garlic, honey, apple juice concentrate, shrimp and crayfish, tomato paste, etc. Korea is undertaking similar actions. In almost all cases, China is being accused of dumping, or selling commodities on international markets at a price that is less than its cost of production. In many cases, it appears that China's producers are not being subsidized either directly or indirectly and are merely the world's low cost producer. But, because the actions are in the country of the importer and rely on mobilizing considerable financial and legal (and political) resources for defending themselves, in almost all cases, China has lost. In most cases, high countervailing tariffs have been placed on the commodities, effectively eliminating them from that market. Because China is not in the WTO, there is no appeal, even when the results of the actions are clearly being done for trade protectionist reasons and have no economic

basis. If TIL gives China the right of appeal, then such cases may be reduced or at least give them some recourse.

Less selectively, almost all agricultural producers will benefit from the falling tariffs and reduced trade barriers for key agricultural inputs, especially chemical fertilizers, pesticides, and seeds. Currently, state trading, licensing, and tariffs have protected domestic fertilizer and chemical pesticide markets. Prices for some chemical fertilizers and certain high quality pesticides are above world market prices. If TIL policies were successful in reducing these price and quantitative barriers, farmers could reap substantial benefits.

Falling non-tariff barriers could also aid agricultural producers get access to better technology and higher quality agricultural inputs. For example, currently China requires that no more than 20 percent of chemical pesticides can be imported. China's farmers have repeatedly expressed their high demand for foreign produced pesticides, pesticides that are frequently more effective and safer for both the applier and the ultimate consumer. Quantitative restrictions and barriers to distribution have forced the price to rise in a number of markets and made the products completely unattainable in others. Similar restrictions keep parent stock of chicks for the broiler industry from being imported. Breeding stock can be imported, but only after extreme quarantine regulations are met, actions that limit their use.

Indirect Effects

There are a number ways that TIL policies could benefit China's rural economy. I explore three. First, there are many foreign countries that might be induced into investing into the agricultural inputs sector or importing more once TIL policies are in place. Second, in response to the legal and accounting regulations that TIL policies will force China to put into place to meet their trade agreement obligations may also spill over and stimulate investment and increase competition and efficiency in China's domestic markets. Third, I examine the impact of making China's markets more connected to global markets when producers are in sectors undergoing rapid technological change.

Currently, there are many explicit and implicit barriers keeping foreign agricultural input firms from investing in China. Rozelle, Pray, and Huang (2000) delineate a number of the most restrictive measures. For example, manufacturers of pesticides are required to produce the active ingredients inside China. Since many trade secrets are embodied in this process, a number of firms are hesitant about investing for fear that their product's manufacturing process could be stolen. In the late 1990s, the experience of one large US manufacturer confirmed the worst fears of the industry. After less than six months after the beginning of production in a new factory, a number of copy-cat factories began to produce the exact same chemical pesticides and were selling them at a price below the break-even point of the FDI factory.

Great potential gains could be acquired by farmers if restrictions on multi-national seed companies were eliminated. For years, a number of international seed producers have been experimenting with their new varieties in China. According to many of their reports, their new varieties could produce important new gains in yields. Yet, regulations require that the foreign partner can not own more than 50 percent of the firm. A number of restrictions on the import of

seed stock and parent varieties also limits the flexibility of firms to get around other barriers in the industry.

More general improvements to the economy that may accompany TIL could also have dramatic positive effects on agricultural producers and rural industries. Currently, restrictions on wholesaling has kept a small number of large state-owned firms in control of the wholesale industry. Their buying and distribution practices often either purposely or inadvertently kept the products of foreign firms out of the market, and kept them from producers. Smaller rural industries also were forced to do their own marketing, limiting the expansion of their production capabilities. If TIL allows for the entry of foreign firms into the wholesaling industry, or at least encourages domestic firms to innovate and become more open, then all those in rural industry and agriculture stand to benefit. Similar positive effects could arise if TIL induces the development of better and more regular legal and accounting practices.

Opening agricultural markets to global competition may also have one other benefit, especially for producers that are producing products for export and for those producing crops that are undergoing rapid technological change. Currently, when producers adopt new technologies there are two countervailing effects. Costs fall (or output rises with costs fixed) that lead to positive efficiency gains. However, because China's economy is closed to the world, as supply expands, the price of the commodity falls. Except for the case of the early adopters in the first year or two after the extension of the technology, in the longer run, some or all of the benefit from the fall in costs are negated by the fall in the price of the domestic good. If China's markets were open to the world, however, their domestic demand curve would become more elastic and the negative effects of prices would be dampened.

Summary

In summary, there are potentially very large positive and very large negative effects of TIL policies. If agricultural markets were completely opened, the large gap between the world market price and China's domestic price and the vast production potential of other countries in the case of certain major commodities, could potentially have large negative price effects on China's producers. It is exactly these negative effects that some people in China are worried could lead to a destabilization of the countryside. On the other hand, leaders are hoping that rural laborers will gain even more from the projected rise in China's exports and other economic activity as the nation enters the WTO. Moreover, China is a large country with a complex economy, and these negative effects on agricultural producers will not be universal. Some agricultural producers stand to gain. Likewise, however, not all workers and industrialists in all sectors will gain directly from TIL in the manufacturing and service sector. There are also a number of indirect effects on agricultural producers and workers from rural areas, many of which promise to provide positive benefits in the short, medium and longer run; in some cases, though, there may be negative indirect effects.

Buffering Effects

In the above discussion, I reviewed the potential positive and negative impacts of TIL on those who are in the rural economy—both those engaged in agriculture and those that rely on the

rural industrial and service sectors. If these impacts accounted for most of the effects, then if an analyst could measure the price differences between world and China's domestic price, and if the analyst could have estimates of the supply and demand elasticities inside China and on world markets, then the analyst could conceivably come up with a quantitative measure of the net overall gain (or loss). In the rest of this section, I will raise several arguments about why even these calculations may not accurately measure the real benefits and costs the economy will incur. In fact, there are at least three factors—policy safeguards, high transaction costs, and household responses—that will serve to buffer the effects of TIL policies on many who live in rural areas in China.

Policy Safeguards

Even in the most radical set of conditions at the peak year (currently specified as 2004) under which China will enter the WTO, there are provisions that will allow the nation to protect its rural sector—both under the letter of the agreement and by actions that it should be expected to take. Under the current accession agreement (AGR_TIL, Box Table 1), China's TRQ levels are set at modest enough levels and the above quota tariff rates are set at high enough rates that its leaders believed its rural sector was being seriously hurt after its entry into the WTO that it could minimize any damage, either real or perceived. For example, after bringing in imports up to its TRQ level (e.g., 9.636 million tons for wheat), China's leaders could legally assess a tariff of 65 percent on any additional imports. At such high tariff levels, China's wheat producers almost certainly would be shielded from any other competition from international producers for many years since according to almost any set of predictions, there are almost no conceivable scenarios under which China's domestic price would rise by more than 50 percent of the world price for a long period of time—especially if China continues to commit itself to carry through with its ambitious set of “green-light” investments in water control, rural roads, and agricultural research and extension. The same would be true for almost all other commodities. Of course, there would be pressure to continue to liberalize in the next round of world TIL negotiations, but, if the effects were damaging enough (or were perceived to be damaging enough), China's leaders would almost certainly not agree to any further concessions, at least not without large enough gains in other parts of the agreement that they thought they would adequately be able to take other measures (e.g., delinked producer payments) with which they could offset the negative impact.

Moreover, even under the current agreement, if leaders truly perceived large parts of the rural sector were being hurt, China should also be expected to be able to find interpretations of existing rules to provide them with a measure of protection.⁹ International agreements are never specified in comprehensive enough terms that a determined government can not find ways to limit the impact of many of the TIL provisions. One of the best examples of this has been the way in which Korea implemented its TRQ agreements. By putting the TRG rice import quantities “out to bid,” most of the TRG imports that have entered the country have been

⁹ I am not arguing in this section that China will or is planning to implement policies in this way. In fact, there are many in the government who believe (maybe rightly so) that such policies, although inflicting some costs on some rural residents, will benefit China in the long run as it will help move the economy towards a direction that is more efficient. In this paragraph, I am merely raising the possibility about what might happen if China truly believed its interests were being harmed or its stability disturbed.

extremely low quality because the right to import was given to the lowest bidder. In effect, this action, which Korean leaders can still claim to be in adherence to their TIL commitments, also serves to provide almost complete protection to its farmers. China, a country that is equally as good in executing policies in ways that help its leaders meet national goals, should be expected to look and probably find ways to limit the impact of policies if they were thought to be damaging. For example, it is still unclear how licensing arrangements will be handled that will allow the private sector to bring in their part of the TRQ. One could imagine how rules could be set up to only give these TRQ import rights to companies that would work in cooperation with the government in a way that would minimize any adverse impact of large imports.

High Transaction Costs and Isolated Regional Markets

One of the greatest uncertainties regarding the question about how large an impact of TIL will have on China's rural economy, especially its agricultural producers, is how much below world market prices are prices faced by China's agricultural producers. In other words, if TIL policies were to partially or fully open China's markets, how much would domestic prices fall? In my opinion, there is almost no solid empirical basis for answering such a question. Surprisingly, given its importance, most of the current work done on the degree of protection is not very detailed. Most of the comparisons are done on the basis of a comparison a single national price and a single world market price. Almost no adjustments are done to account for quality differences between imported domestically traded products. Little thought has been put into accounting for regional differences among China's major producing regions. Also, many comparisons are done between China's farmgate and border prices, when it is known that transaction costs inside China are relatively high.

To the extent that there are high transaction costs inside China and to the extent that certain domestic markets are isolated from others in the country—especially those inland areas that are isolated from port regions where imports land—it could be that the impact of TIL policies are not evenly distributed. In previous work done on China's agricultural markets (Rozelle et al., 2000), it was found that in general China's markets are fairly integrated. However, this conclusion should be qualified. First, although there has been a large improvement, this previous work still found large parts of the country, especially poorer areas, were not completely integrated. According to my community level data, farmers in poor areas not only market only a small portion of their output (mostly maize), they sell into local markets (for feed) that are not necessarily integrated into national markets. Moreover, even in the integrated regions, the transaction costs of moving commodities between producing and consuming regions are high; when measured on a cost per kilometer per ton, the cost of moving bulk commodities in China are nearly five times as great as in the US (Rozelle et al., 2000).

If these studies of integration and transaction costs are representative of China's markets, in general, the effects of TIL policies on producers in those areas will be greatly attenuated. According to a study by Taylor (1998) of the impact of NAFTA on Mexican farmers in border regions and those in more remote regions that faced high transaction costs for marketing their output and buying inputs varied dramatically. In fact, Taylor finds that NAFTA has had little impact on those in the poorest areas mainly because they have been insulated from the changes by high transaction costs. Before NAFTA since most of their economic activities were all

with others in their own village or township, the prices that they were facing and selling for were determined locally and were not affected by what happened far away in the nation's border areas. Moreover, because farm households in poorer areas are operating in economies that are characterized by poor, incomplete or absent markets for many factors, such as land and on-farm labor, even when they do interact with commodity or input markets, if there are changes in these prices, some of the impact of the prices are "absorbed" by changes in the shadow value of the un-marketed household resources, such as its land or labor (see Singh, Squire and Strauss, 1986, for a complete analytical description of the exact mechanism). For example, part of the fall in agricultural prices could affect the shadow value of land, which while "real" is unrealized since the household is not able to (or is not willing to) sell or rent the land in any case. Such impacts, rather than having their full effect fall on family nutrition or consumption, often end up mainly affecting the farmer's valuation of leisure or un-marketed land. That is not to say, TIL policies do not affect welfare in these areas; they do. However, the complicated ways in which farmers in these economies respond to changes in prices and marketing opportunities usually mean the effects are much smaller than they would be on households that live and work in completely commercialized economies.

Household Responses

While in the previous section, I argue that there are many households in China that may be substantially isolated from the effects of TIL policies by virtue of the fact that they live and reside in economies characterized by high transaction costs and incomplete markets, there are many households that live in areas that are highly integrated into the rest of the economy. For these households, there will be little comfort in their knowing that others in poorer areas are not feeling the effects of TIL policies, if these policies are bringing significant negative impacts. In other words, there will still be a large number of households that will suffer the adverse consequences of TIL.

However, because of the ability of households to respond, even though there may be large negative effects in the initial period, the costs may diminish over time. For example, in the case of NAFTA's impact on Mexico, farmers in some of the border areas found their maize crop to be unprofitable in the first years after the onset of the implementation of the free trade policies. Undoubtedly, their incomes fell substantially. These farmers, however, did not stand still and continue to produce at a loss. Instead, they responded and adopted new technologies and made investments that allowed them to take advantage of positive opportunities that arose in the wake of the free trade agreement. There are many cases in which farmers in Northern Mexico invested heavily—sometimes in partnership with US growers—in fruit and vegetable production since protections for the US markets also fell. In many cases, profits after an initial investment period were higher for these Mexican farmers than before when they were producing for the protected domestic maize market. I am sure not all farmers came out better. But, because of the ability of farmers to respond, their losses in subsequent years can be substantially lower than the initial year.

Hence, in China the magnitude and severity of the negative impact of TIL policies on agricultural production will depend in part in how well households are able to respond. The rapidity with which the rural economy has evolved in the past when facing changes in the

external environment (such as how they responded to the fiscal reforms in the 1980s with the rise of TVEs; the marketing responses to grain reforms in the early 1990s; and the restructuring of ownership patterns in response to banking reforms in the late 1990s). TIL policies themselves may help the rural economy respond even faster if they promote more liberalized credit, better property rights, the rise of wholesaling networks, and encourage foreign direct investment.

TIL Policies and Differential Impacts on Subsectors of the Rural Economy

To this point in the paper we have talked only generally about how TIL policies may affect the rural economy as a whole and how it was possible that different types of households in different regions of the country and subsectors of the economy might be affected differently. In this part of the paper, I examine how the typical household in different regions of the country might be affected by TIL policies. If we can identify that certain groups of households or certain regions of the country are particularly vulnerable, it may be possible to more accurately target aid to these regions to help producers during the post-TIL transition.

Relying on the categorization that underlie Figures 2.7 and 2.8, and based on a number of assumptions (not the least of which is that we are primarily examining the “typical” household in each region—while we recognize that all regions are fairly heterogeneous), we find that certain regions will be affected more severely than others. If TIL policies stimulate manufacturing in light industry, the largest winners will be the richest of the rural areas. As seen in Panel IV of Figure 2.7 (2.8), most of the labor force in the villages that are among the richest 10 percent in the country (closest to the core metropolitan regions) will enjoy higher wages and more employment if manufacturing expands after the implementation of TIL policies. The richest rural areas will almost certainly enjoy higher investments by both domestic and foreign investors.

Higher demand for China’s manufactured products may also be expected to help those outside of the richest areas, in particular those in the lower middle-income villages, through the higher demand for rural labor (Figure 2.7, Panel II). Previous analysis by a number of different research teams have found that most of rural migration is coming from villages that are below average but not those that are the poorest of the poor. In most of the households in these villages (Zhao, 2000), the income from rural migration far exceeds income from other sources. Hence, even if there are some adverse consequences on agricultural incomes in these villages, the dominance of rural migration in these villages, could make the typical household in these areas a net gainer from TIL policies.

While it might be thought that households in the poorest regions (who are mostly full-time farmers—Figure 2.7, Panel I) will be hurt the most by the changes to agriculture introduced by TIL policies, it may be that households in these villages enjoy the most buffering by a number of factors and so may be relatively unaffected. To the extent that these farmers are self-sufficient, have lower levels of cash income, and sell their commodities (such as feed maize) into markets that are relatively isolated from the rest of the economy—especially those most affected by TIL-induced imports of agricultural goods. The net effect will depend on a number of factors, but even if farmers sell a substantial amount of their output, if they primarily purchase agricultural inputs and other tradable stable commodities (such as wheat and soybean oil), any

fall in revenues will be attenuated. In short, I expect that the poorest of the poor in China will either not be affected at all because of their extreme remoteness and high degree of self-sufficiency, or because they will gain nearly as much as they lose.

In my opinion, the largest negative effect of TIL policies will affect those in the middle-income categories (Figure 2.7, Panel III). The typical household in these villages do not benefit universally either from the greater demand for labor from local investments by enterprises or from greater demand for local labor, since migration is not very common. In many cases, they also are not so very remote. Transaction costs are not that low. They typically are fairly well integrated into the rest of the economy. Households are frequently highly commercialized. In fact, there is a higher propensity to be running a self-employed enterprise in these types of villages than in any other region. Consequently, full time farmers in these areas will be adversely affected. If their businesses are connected with agriculture or with any other sector that is affected by TIL policies, they will be hurt in a second way. In short, those in these middle-income villages that are located in the far suburbs and the not so-far-away rural areas will be the ones that mostly likely be affected by TIL policies—at least in the short run. Of course, as discussed above, since these villages are in the regions that are fairly well-off it may be that these households are fairly flexible and are able to take advantage of a number of programs instigated by the government to help the hardest hit areas.

So, in summary, to the extent that we are examining the *mode* household in each area, my prediction is that most regions have reasons to be fairly optimistic. The poorest regions will be unaffected due to their remoteness. The next to the poorest and richest should have substantial benefits if TIL policies increase the demand for China's rural industrial products or for rural labor in general. Those in the middle-income areas may be hurt, however, to the extent that they will respond, the first round negative effect may be able to be dampened considerably. In short, there is reason to believe that most of the aggregate effects will not be too serious.

However, there are other households in rural China besides the “typical” one. In rich areas there are commercial farmers who have invested in and are producing agricultural goods that will suffer large price falls when TIL policies are fully implemented. In a number of areas that are well-integrated into the rest of China's economy there are farmers who are on land that is best suited for wheat and maize production, two crops that will most likely see a large increase in imports. Many of these households have few feasible alternative crops that they can produce. In some areas, rural factory owners and their workers will suffer if they happen to be in an industry that loses its long-standing protection. In the long run, most of these households may adjust; in the short run, however, some will experience severe consequences. Hence, although I believe that most households will not suffer too much, some will. It is possible that if such adverse consequences are too serious, and farmers demonstrate their un-satisfaction in a vocal enough way, there could be a perception that the consequences are worse than they actually are. In turn, if enough negative publicity is generated, it could even conceivably generate enough unease among the leadership that the nation's long-run drive towards TIL could be slowed.

Conclusions

So to the extent that TIL policies, in general, will have a small, negative effect and larger positive effect on households, such policies, on balance, will be good for the rural economy. Of course, the most important effect may be the indirect effects that TIL policies will have on the efficiency of the rural economy. Moreover, the negative effects will be mitigated by the ability of households being able to respond in their production and investment decisions. Hence, as China enters the 21st century, it should combine trade policy and investment liberalization policy with a number of other transition and rural development policies in order to push for as rapid an evolution of China towards a modern economy as possible.

So, perhaps the key question is not what is need to be done with TIL policy. The nation should go ahead with it. The question is how will China proceed with development in the coming years so that it will be prepared to take advantages of the benefits that TIL policies have to offer. What needs to be done to complete the transformation of China from a rural-based, traditional society to a modern one? Can China make it? Will it bog down? What can it do to effect the final transformation?

In thinking back on the reforms, the policy changes in the late 1970s and 1980s were successful in boosting per capita food production but incomplete in many other aspects. The implementation of the responsibility system in agriculture was revolutionary. But the lack of well-defined property rights has kept land consolidation and other farm structural changes from taking place. Markets have emerged and have become more integrated and competitive according to a number of studies (Sicular), but progress on market liberalization has been slow: procurement channels and input supply lines for some commodities and farm inputs remain under state control. The government has maintained an active role in supporting investment in water, roads and research, but the levels of investment have fallen or have been rather stagnant. Although more than 100 million workers found employment off the farm in the past twenty years, there are still serious barriers to movement into the city. In several ways, state policies continue to treat rural residents as second class citizens.

Our assessment of the remaining problems in China's farm economy should not be considered a criticism of past policies, but rather an attempt to begin a forward-looking discussion of the remaining challenges that agricultural reformers face as they enter the 21st century. Some observers have characterized the last two decades as the transition years, a period that is now ending (Nyberg and Rozelle). If so, the next two decades are the beginning of the real development years. There is no reason to think that the policy agenda or general reform strategy of the development period will be the same as during the transition period. There may have been strategic reasons for moving slowly on market liberalization and sectoral deregulation during the transition period. Long run, sustained development, however, will require a new set of policy actions. Although the policies must differ in the development period, the success of the general reforms and the modernization of China ultimately will depend on success of the transformation of agriculture, as they did in the transition period.

Can China make these needed changes? What is the prognosis? What decisions must leaders in China and officials in international organizations now make to ensure that the momentum China has gained in the 1980s and 1990s can be maintained in the coming decades? What is the cost of failing to push the transformation of agriculture forward? In the remainder of my paper, I consider the policy pitfalls and challenges facing China in the 21st century. I first look at this from the pessimists point of view. And, then from the optimists point of view.

The Pessimists

There is a wide spectrum of pessimistic scenarios in relation to China's future agricultural performance, some more credible than others. For example, cynics such as Lester Brown (1995) believe that the economic reform of China's agriculture has run its course. Brown paints a gloomy picture for rural China in future years. He believes that China's leaders are not willing to give up control of the rural economy in order to reap the benefits of free markets, which means severe interventionist policies will continue in China's agriculture.

According to this pessimistic view, past policies have in some sense already determined the future of agriculture, and China will have serious food problems. The growing population, the annual loss of arable land to erosion and nonagricultural development, reduced efficiency of irrigation and water shortages, and overall environmental degradation has destroyed the ability of China to feed itself in the future. Policy prescriptions are few because these trends are already inevitable. While Brown does not follow through and assess the impact of the breakdown of agriculture on general economic development, it is not difficult to see how a regime obsessed with food security might adopt draconian measures to force the farmers to produce as much grain as possible. Such a state of affairs even suggests that the leadership would consider going back to the collective system.

While few serious scholars buy into Brown's arguments, it is easy to construct scenarios that lead to a stagnant agricultural system and trigger the problems that such an outcome could bring. Consider what a continuation of the status quo—arguably one the most “mild” of the pessimistic scenarios—could lead to. The one-time increases from the responsibility system and the investments in agricultural technology from the pre- and early reform era become exhausted and growth in food production begins to flounder. Continued fiscal problems tie the hands of the government, leading to reduced investment in agriculture. Poor property rights undermine the households' willingness to make up for some of the lagging public investment. Continued uncertainty over land reallocations reduces the incentive to rent out land even when the family is short of labor. This acts as a barrier against rising farm size. China's continued intervention into markets keeps open exchange of farm products and inputs to a minimum and weakens the impetus for households to move away from subsistence into specialized agriculture. More seriously, continued restrictions on the movement of labor holds down overall farm labor earnings.

If the economy continues to be run as a partially reformed entity, many downstream effects may result, including misguided policy choices. For example, if food production stagnated and China's leaders became concerned that they were becoming too reliant on world food markets, it is easy to imagine how, with or without WTO, they would force domestic

production back into grains and other staples. If WTO pushed down domestic prices, one could easily see how such policies would lead to more domestic policy intervention. With lower prices, the government would have to adopt strong-arm policies to ensure compliance. These policies would block the effect of markets and go against the spirit of the WTO. Retrenchment could very well be followed by retrenchment. And with lower returns to agriculture, the rural-urban income gap would widen. The situation could deteriorate to the point at which the potential gains from rebellion in the countryside finally outweigh those from working hard in the severely constrained economic space allowed by the state. Instability would likely be fought with efforts to increase control.

World trade, or at least world trade with China, would suffer in the pessimistic scenario. Even if China somehow continued to honor their WTO commitments, an unhealthy rural economy would slow down aggregate economic growth. Slower growth means lower incomes and lower demand, and no doubt the demand for high quality imported agricultural products would suffer. Most likely, however, China would use one or more of a variety of methods to restrict trade, even at the risk of violating their WTO commitments. Whatever the actual choice of institutional barrier to keep out agricultural products (and there are many), the main point is that the propensity to “cheat” on its WTO commitments will rise if the rural economy is unhealthy and there are prospects for political instability. For this very reason, we stress that it is extremely important for China to get on the right policy track in the upcoming period of policy reform. Any constriction of the economy could set up of a series of events that makes further retrenchment even more likely, and ultimately, retrenchment will lead to slower growth which would likely lead to even further retrenchment.

A More Optimistic View

We believe, however, that it is more likely that China’s leadership will find a way to move beyond today’s policy regime with the support of the international community. As long as the leadership believes it is absolutely critical that China begins its push to transform the agricultural economy and the success of the nation’s overall future development depends on the success of the agricultural sector, we are comfortable in stating that this scenario is more realistic. In this scenario, China’s overall economic growth of the 1980s and 1990s would continue through the first decades of the 21st century; and the economy would grow 6 to 10 percent a year on average for many years. As during the transition period, rapid growth would translate into rising incomes and increasing consumer demand, particularly for high-value agricultural products. The macroeconomy would continue to unravel itself from the restrictions of the previous Socialist era. The bouts of inflation and deflation that were caused by and contributed to China’s end-of-the-decade boom and bust cycles would largely be brought under control. And, most basic of all, in the optimistic scenario, the needs and welfare of the rural economy become integrated into the economic calculus of the leadership.

The impetus for upgrading the status of agriculture in the economic plan is fairly straightforward. The new environment will dictate a revolutionary agricultural transformation, including farm restructuring, land reform, the creation of a new paradigm for migration, the development of integrated and competitive domestic markets, and the establishment of predictable, fair, and transparent relations with trading partners. The vision of this new

agricultural economy in China is one that will transform itself in several fundamental ways. Property rights will become better defined for land in the agricultural sector and the rule of law will improve, allowing companies that deal in advanced agricultural technologies—such as new seeds, fertilizers, pesticides, and herbicides—to operate profitably. Markets will improve as infrastructure investments in roads and communication begin to reduce transaction costs. The rise of private traders will increase the reliability of supply and demand in markets, while the retreat of the state will reduce the propensity for local officials to intervene.

Land and Marketing Reforms. If the reformers pursue a commitment to true economic and political reform, new initiatives will be necessary to resolve the contradictions associated with China's land policies. Currently, farmers have poorly defined rights associated with the land they farm, while the village retains ownership rights. This has adverse impacts on investment, and some economists stress how weak land use rights also undermine credit markets in developing countries (Besley). As a result, farm households may have increased difficulty accumulating wealth to finance retirement. Furthermore, weak land rights limit the possibilities for serious farm restructuring. Hence, we believe the government should push through new initiatives, such as a proposal that is currently in front of a People's Congress working committee that would require banks to use thirty year land contracts as collateral for farm and non-farm business loans. Ultimately, either permanent use contracts or even land privatization seems necessary.

China has not taken as much advantage of specialization or regional comparative advantage as it could. To do so, competitive internal grain trade is required, in which commercialized state and non-state enterprises operate under the same constraints, incentives, and commercial standards. This would facilitate more rapid responses to grain surpluses—including surplus stocks—and shortages, and stabilize both prices and availability more than the current regime. Farmers would also have better access to quality inputs and technology than they presently enjoy. More flexible domestic markets would raise farm prices, increasing efficiency and contributing to economic growth.

There has been clearly enough progress in recent years to support the view that reforms will continue, as long as China complies with the spirit of the new initiatives. For instance, the current form of the WTO accession agreement contains a number of provisions that signal that China is heading in the right direction. The tariff-rate-quotas (TRQs), if properly executed, could be the first crack in the armor of China's monopolistic state trading regime. If tariffs are maintained at the binding rates that China has offered in its WTO negotiations, the new agreement is revolutionary. Since domestic prices can be maintained at roughly 60 percent above world prices initially after accession, China will not be immediately flooded with foreign grains or oilseeds. However, the tariff bindings are very low by international standards, and if they are followed they will prevent China from ever being able to adopt the extreme protectionist policies that have been used so effectively to keep out imports by its East Asian neighbors. In fact, there is a great opportunity for the current agreement to demonstrate to China's leaders that international competition will contribute to domestic food price stability and help reduce domestic distortions, and in the long run will encourage China to gradually move away from its food-security based self-sufficiency policies.

In fact, marketing and pricing policy reforms had led to measurable market developments over the reform era, until Zhu Rongji took drastic steps to try to re-monopolize grain markets in the late 1990s. Before then, most food commodities were marketed by farmers at market-determined prices. Statistical analyses indicated domestic grain markets were becoming fairly well integrated and increasingly competitive (Rozelle et al.). The rise of a private trading class had resulted in up to 50 percent of China's grain procurement being transmitted through private channels. However, no one argued that China's markets were perfect; problems remained, including continued intervention by government grain agencies, incomplete separation of policy and market functions, the continuance of producer quotas, and the high expense involved with a large and costly state grain reserve.

If instead of trying to reimpose central planning, a set of grain reforms proposed by reformers in 1998 had been successfully implemented, the government's complex set of policy objectives of improved efficiency, protection of farmer income, and reduction in the government's fiscal burden would likely have been met. The major measures included the following:

3. Clear separation of commercial and policy functions to parallel the separation of commercial and state grain reserves. The commercial companies would be responsible for farm procurement and interprovincial grain transfers, with financing independent of the state budget.
 - Clear separation of central and local government responsibilities. Buffer stocks for price stabilization and disaster relief stocks would be the responsibility of the central government. Local governments would be responsible for implementing income stabilization policies (e.g., food stamp or welfare programs) and would not attempt to intervene into markets.
 - Clear separation of old and new grain debts. The current grain financing debt is approximately Y200 billion, of which Y130 billion represents defaulted policy loans with the balance representing borrowing for commercial operations. The policy debts would be serviced by the fiscal system, and the commercial debts would be restructured and their repayment would be decoupled from current operations.

We believe that a bold new step, which could help put China on the optimistic growth path, would include the implementation of these policies, or policies similar to them.

Reforms, investment, and actions beyond the liberalization of grain markets are also needed. Although fruit, vegetable, and livestock product marketing were liberalized more than a decade ago and have grown rapidly, several policy and institutional constraints impede marketing efficiency. Standardized national quarantine and phytosanitary inspection procedures and shipping documents applicable to all interprovincial commodity transport would improve marketing efficiency and farmers' incomes. Commodity shippers meeting national standards should be able to transit all provinces without unnecessary red tape and without paying officially sanctioned transit fees. Producer marketing associations should also be allowed to participate in

the market, as they would improve farmers' market bargaining power with respect to downstream purchasers.

With radical changes to land rights and the marketing environment (as well as equally radical changes in the individual ability to migrate, obtain credit, and enjoy other economic essentials), China's rural sector will undoubtedly be a very different place in three or four decades. Improved land rights and the elimination of migration restrictions would give farmers an opportunity to choose between farm and city life. We foresee hundreds of millions of rural workers moving to the cities over the next 50 years, some to the suburbs of large metropolitan areas, but many to small and medium size cities where their labor and capital become part of the largest urbanization movement in the history of the world. With secure land rights, farmers could increase farm size through leasing. Larger farms could raise the returns to farming to at least the point where specialized households make a living on par with urban dwellers.

Envisioning China and the World after Success in Development

After a successful massive migration, widespread farm consolidation, and significant market improvement, what will China's agriculture look like? The largest market for China's farmers will be domestic. If incomes and urbanization increase significantly, the implied increased demand for meat three decades hence could be incredible. With cheaper feed accessible to livestock producers in China, they might be able to compete for Japan's pork market in the short and medium run, if (and only if) they can overcome their hoof-and-mouth disease problems. In the long run, however, even a good part of Japan's pork market would be dwarfed by China's urban demand. Increased meat demand in China would be very good news for world corn and soybean producers.

Although corn and soybean producers would gain under this scenario, the same factors would allow China's producers to become more specialized and market their products in a more sophisticated manner. China's horticultural and livestock producers could therefore become more profitable and more competitive on international markets. If barriers to investment are removed and China's infrastructure improves, it is likely that the quality of China's fruits and vegetables and processed food products will improve and will be able to compete in any world market. As trade barriers fall elsewhere in the world, it is not inconceivable that China could dominate, or at least heavily participate, in the world's markets for walnuts, apples, citrus, strawberries, grapes, asparagus, processed tomatoes, etc. On one hand, this would be bad news for California and other temperate Northern Hemisphere producers of fruits, nuts, and vegetables. On the other hand, foreign direct investment in China would be less risky due to the rise of legal institutions and greater transparency. In this scenario, there would be tremendous opportunity for foreign investment in food production and processing in China.

Such an environment would also provide new markets and investments for input suppliers from U.S. and other countries. Currently imports of pesticides and herbicides are restricted and foreign direct investment opportunities in the agricultural input sector are limited by inadequate intellectual property rights, lack of regulation, and antiquated distribution systems. In a China dominated by firms that must be internationally and domestically competitive, there will be great pressure to welcome Deere and Co., Pioneer and Monsanto (among others).

Today's policies in China are curiously protecting industries, like seeds and pesticides, which have very little future in world markets. To enable China's farmers to compete on world product markets, they must be given access to world input markets.

If China's economy continues to grow and its farm sector participates, there is no doubt that the world's food economy will be a very different place. On the supply side, access to new technologies and inputs, specialization and lower costs for inputs will spur domestic production. China will continue to produce large grain harvests; what else does one plant in the lower Yangtse Delta or on the North China Plain? But China will also experience much more agricultural specialization. As China liberalizes, some producers on the domestic and international fronts will benefit, and some will not. However, as food demand rises, the premium for high quality and high valued foods will also increase, giving farmers more production choice and better opportunities to earn a fair living.

In a seminar in the early 1990s, Ted Schultz, the Nobel Prize winner from the University of Chicago said that he thought the returns to specialization from China's move away from planning and subsistence to a country that had specialized family farms would swamp the returns from decollectivization. If Schultz was right, it might be that the gains from liberalization of China's agriculture have not yet really begun since markets there are still in their infancy. The latent growth that Schultz predicted will only happen as markets mature and as specialization begins according to comparative advantage. And if these conditions are met, China will finally emerge as a major force in world food markets.

Appendix A

Community Level Data

This paper draws on a unique set of data on the emergence of markets in rural China collected by the authors in 1995. The authors and several Chinese and foreign collaborators designed the sampling procedure and final survey instrument with the village as the unit of analysis after more than three years of pretesting. The field work team, made up of two of the authors and fourteen other graduate students and research fellows from Chinese and North American educational institutions (all with PRC citizenship and an average education level higher than a masters degree), chose the sample and implemented the survey in more than two hundred villages in a nearly nationally representative sample.¹⁰ After answering questions about market activities in 1995, relying on recall in most cases because most interviews were conducted in 1996, village leaders also approximated changes since 1988, a year chosen for its comparability. Both 1995 and 1988 had high grain prices and followed several years of rapid economic growth in the rural sector. Township and village accountants also provided information from records about cultivated area, population, quota obligations, village income, and other variables; these data make up a small portion of the project's information.

To get a profile of China's labor market development during the reforms, leaders from each village were asked to place each resident working off-farm in either 1988 or 1995 in one of four non-overlapping categories: out-migrants, out-commuters, the self-employed, and local wage earners. An out-migrant (*changqi waigong*), is a person who leaves the village for at least one month per year for a wage earning job, but retains direct ties to the village by returning during spring festival or annual peak season farm operations at the very least.¹¹ Our migrant category specifically excludes commuters who are also employed outside of the village, but who live at home. Out-commuters, referred to in many areas as those who "leave in the morning and return in the evening" (*zaochu wangui*), are not considered migrants by villagers and leaders, so separating the two categories facilitated data collection. The self-employed category includes all

¹⁰ The sample villages were selected randomly on the basis of a stratified random sampling procedure. The villages all come from nine representative provinces (Zhejiang, Shandong, Hubei, Sichuan, Yunnan, Shaanxi, Hebei/Liaoning, and Guangdong) which were randomly selected from each of China's traditional geographic regions (East China--huadong, North China--huabei, Central China--huazhong, Sichuan, Southwest China--xinan, Northwest China--xibei, Northeast China--dongbei, and South China--huanan). Eight counties were selected from each province, two from each quartile of a list of counties arranged in descending order of gross value of industrial output (GVIO). GVIO was used on the basis of the conclusions of Rozelle, 1994 and Rozelle, 1996 that GVIO is one of the best predictors of standard of living and development potential and is often more reliable than net rural per capita income. Two townships, one above the median GVIO and one below were randomly selected from each county. Two villages in each township were selected in the same manner. Data collection in Guangdong was so expensive that the study was never started. Due to the exclusion of Guangdong, areas with high levels of off-farm employment may be under-represented in the sample.

¹¹ The survey also attempted to estimate the number of permanent out-migrants. For the purposes of this study permanent out-migrants are those who leave the village for employment purposes and have no intent to re-establish residence in the village. Leaving the village permanently was such a rare event that the survey tabulated the total number of workers leaving the village in the periods between 1989- 95 and found that the total number of permanent out-migrants amounted to less than one percent of the labor force. For the remainder of the paper, migrants refer only to long-term, not permanent, labor migrants. Due to the survey's focus on emerging markets, we explicitly did not consider those who moved for marriage, education, or retirement.

those who work for themselves as “petty capitalists” (*getihu*), most frequently operating in transport, trade, or handicraft production. Local wage earners (*zai bencun na gongzi de*) work either in village or private firms. In addition to estimating the total number of each type of laborer, leaders broke down labor participation by gender, and approximated the proportion within each gender group who belonged to different age, education, job-type, and ownership sub-categories and the average wage earned by each group.¹²

Leaders also were asked to estimate the number of workers coming into the village for work (in-commuters and in-migrants), the characteristics of these workers and their wages. Since the survey only covers rural villages, and nearly all workers coming into these villages are from other rural areas, the incoming workforce can be designated rural-to-rural labor movement. To the extent that this sample is nationally representative, we can net out the workers coming into the villages from those leaving the villages to compare the rural-to-rural segment of rural labor movement to those who are not moving into villages (and work in either townships or cities) which we call rural-to-urban.

¹² Leaders were able to provide information on the average daily wage for most of the categories in which workers typically are paid wages. For the self employed, village leaders estimated the average daily earnings, which incorporates the returns to labor as well as other fixed factors.

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Table 1.1: Resource Flows from Agricultural and Rural Sectors to Non-Agricultural and Urban Sectors (Y billion, constant 1995).

	Fiscal System		Financial System		Grain Marketing (implicit tax)	Total Resource Flow	
	Agri. to non-agri.	Rural to Urban	Agri. to non-agri.	Rural to Urban		Agri. to non-agri.	Rural to Urban
1980	-38.5	-30.0	13.2	3.7	46.0	20.8	19.7
1985	-18.4	11.8	23.5	7.4	15.6	20.7	34.8
1990	-31.1	16.1	68.9	47.8	43.0	80.8	106.9
1991	-35.6	20.0	59.4	28.3	27.9	51.6	76.2
1992	-35.8	38.5	56.9	17.3	20.8	41.8	76.5
1993	-28.5	103.8	49.1	8.6	24.9	45.5	137.4
1994	-26.4	105.2	53.4	38.3	59.5	86.4	203.1
1995	-21.3	122.5	51.1	27.8	50.2	80.0	200.6
1996	-22.1	113.2	44.0	27.6	32.9	54.7	173.7

Source: Derived from China Finance Yearbooks and China Statistical Yearbooks, various years.

Table 1.2. Income and distribution by rural and urban in China, 1980-99.

Year	Real per capita income index		Gini coefficient	Real per capita net income in 1999 price (yuan)		
	Rural	Poorest (20%)		Rural	Urban	Urban/rural ratio
1980	100	100	0.24	616	2062	3.35
1985	189	165	0.26	1193	2605	2.18
1990	218	177	0.31	1380	3217	2.33
1995	272	193	0.33	1702	4713	2.77
1999	349	252	0.35	2210	5854	2.65

Note: exchange rate is 8.28 yuan/US\$ in 1999.

Source: SSB, 1989-2000, and rural household income and expenditure surveys.

Table 1.3. Rural poverty in China, 1978-99.

Year	Rural Population (million)	Absolute poverty (million)	Incidence (%)
1978	780.14	260	32.91
1979	790.30	239	30.24
1980	790.47	218	27.58
1981	795.65	194	24.38
1982	799.01	140	17.52
1983	801.74	123	15.34
1984	807.34	89	11.02
1985	807.57	96	11.89
1986	811.41	97	11.95
1987	816.26	91	11.15
1988	823.65	86	10.44
1989	831.64	103	12.39
1990	841.42	85	10.10
1991	852.80	94	11.02
1992	847.99	80	9.43
1993	851.66	75	8.81
1994	855.49	70	8.18
1995	859.47	65	7.56
1996	864.39	58	6.71
1997	866.37	50	5.57
1998	868.68	42	4.83
1999	870.17	34	3.91

Sources: Poverty data for 1978—1989 are from World Bank (China: Strategies for Reducing Poverty in the 1990s, 1992); 1990—1999 data are from China Agricultural Development Report, various issues, MOA; Rural population are from SSB, Statistical Yearbook of China.

Table 1.4. Rural income, living and food expenditure by region in 1999.

	Per capita net income (yuan)	Living expenditure (yuan)	Food Expenditure (yuan)	Food exp share (%)
East	2929	1991	963	48
<i>Shanghai</i>	5409	3867	1669	43
<i>Beijing</i>	4227	3122	1233	39
<i>Zhejiang</i>	3948	2807	1293	46
<i>Guangdong</i>	3629	2646	1341	51
Central	2003	1437	788	55
West	1502	1197	706	59
<i>Tibet</i>	1232	767	531	69
<i>Guizhou</i>	1334	1070	722	67
<i>Gansu</i>	1393	881	499	57
National	2210	1577	829	53

Note: East includes Hebei, Liaoning, Jiangsu, Zhejiang, Fujian, Shandong, Guangdong, Guangxi, Hainan, Beijing, Tianjin and Shanghai; Central Shanxi, Inner Mongolia, Jilin, Heilongjiang, Anhui, Jiangxi, Henan, Hunan and Hubei; West includes Shaanxi, Gansu, Qinghai, Ningxia, Yunnan, Sichuan, Guizhou, Chongqing, Tibet and Xingjiang.

Source: Based on SSB's rural household survey, 1999.

Table 1.5. Changes in Structure of China's Economy, 1970-97

	1970	1980	1985	1990	1995	1997
Share in GDP						
Agriculture	40	30	28	27	20	19
Industry	46	49	43	42	49	49
Services	13	21	29	31	31	32
Share in Employment						
Agriculture	81	69	62	60	52	50
Industry	10	18	21	21	23	24
Services	9	13	17	19	25	26
Share in Export						
Primary Products	na	50	51	26	14	13
Foods	na	17	14	11	7	6
Share in Import						
Primary Products	na	35	13	19	18	20
Foods	na	15	4	6	5	3
Share of Rural Population	83	81	76	72	71	70

Source: State Statistical Bureau, China Statistical Yearbook, various issues; and China Rural Statistical Yearbook, various issues.

Table 1.6. Composition of China's Agriculture by Sectors (%), 1980-97

Sector	1980	1985	1990	1995	1997
Farming	75.6	69.2	64.6	58.4	56.4
(crop)					
Forestry	4.3	5.2	4.3	3.5	3.3
Livestock	18.4	22.1	25.7	29.7	31.0
Fishery	1.7	3.5	5.4	8.4	9.3
Total	100	100	100	100	100

Note: Composition of agriculture by sectors is calculated by using gross output value.
 Source: State Statistical Bureau, China Statistical Yearbook, various issues.

Table 2.1. Comparison of Labor Participation Rates (percent with any off-farm work)
Patterns of Age Range Groups, 2000 and 1990

Age range Groups	Percentage with off-farm work in:	
	1990	2000
16-20	23.7	75.8
21-25	33.6	67.2
26-30	28.8	52.5
31-35	26.9	47.6
36-40	20.5	43.3
41-50	20.8	37.6

Notes: Table compares workers who were, for example, between ages 16 and 20 in 1990 with workers who were ages 16 to 20 in 2000.

Source: Authors' survey.

Table 2.2. Education Level of Male and Female Rural Migrants, 1988 and 1995^a

	No More Than Elementary School Education				Lower Middle School Education				Upper Middle School Education			
	Male		Female		Male		Female		Male		Female	
	1988	1995	1988	1995	1988	1995	1988	1995	1988	1995	1988	1995
	(percent)											
Zhejiang	58	42	49	54	38	47	45	39	4	10	6	7
Sichuan	38	37	25	33	57	57	71	62	6	6	4	5
Hubei	70	41	57	42	26	50	43	50	4	9	0	8
Shaanxi	32	40	18	31	55	49	78	62	12	11	4	8
Shandong	31	22	50	29	66	60	50	66	3	17	0	5
Yunnan	40	47	~	45	58	47	~	51	3	6	~	4
National Average ^b	47	39	45	42	46	51	50	51	7	10	5	7

Source: Author's Study

^a A migrant is defined as one who leaves the village for wage earning employment for at least 1 month and maintains ties with the village by returning at festivals, agricultural peak seasons, etc., at least once a year.

^b National estimates are generated by summing provincial estimates weighted by estimated proportion of migrants. The estimated proportion of migrants is calculated using the total labor force represented by each province and the estimated percent of migrants from table 1. Zhejiang represents Guangdong, Fujian, Jiangsu, Shanghai, and itself. Sichuan represents itself. Hubei represents Henan, Hunan, Jiangxi, Anhui, and itself. Shaanxi represents Ningxia, Gansu, Inner Mongolia, Shanxi, and itself. Yunnan represents Guangxi, Guizhou, and itself. Zhejiang, Sichuan, Hubei, Shaanxi, Shandong, and Yunnan are weighted .14, .145, .34, .275, .06, and .04 respectively for male migrants in 1995; .16, .16, .25, .35, .06, and .02 respectively for male migrants in 1988; .30, .12, .30, .20, .04, and .04 respectively for female migrants in 1995; and .62, .11, .18, .08, .01, and 0 respectively for female migrants in 1988.

Table 2.3. Destination of Male and Female Rural Migrants in China, 1988 and 1995^a

	Within the County				Within the Province (but outside the county)				Out of the Province			
	Male		Female		Male		Female		Male		Female	
	1988	1995	1988	1995	1988	1995	1988	1995	1988	1995	1988	1995
	(percent)											
Zhejiang	29	47	74	49	34	24	25	33	38	29	1	17
Sichuan	21	9	28	8	18	17	21	14	61	74	51	78
Hubei	31	24	98	24	55	30	1	8	14	46	1	67
Shaanxi	15	14	33	16	67	50	65	55	18	36	3	29
Shandong	2	13	0	7	66	57	50	76	32	30	50	13
Yunnan	25	30	0	44	75	56	0	41	0	7	0	15
National Average ^b	22	22	69	28	51	35	24	30	28	42	7	41

Source: Author's Study

^a A migrant is defined as one who leaves the village for wage earning employment for at least 1 month and maintains ties with the village by returning at festivals, agricultural peak seasons, etc., at least once a year.

^b National estimates are generated by summing provincial estimates weighted by estimated proportion of migrants. The estimated proportion of migrants is calculated using the total labor force represented by each province and the estimated percent of migrants from table 1. Zhejiang represents Guangdong, Fujian, Jiangsu, Shanghai, and itself. Sichuan represents itself. Hubei represents Henan, Hunan, Jiangxi, Anhui, and itself. Shaanxi represents Ningxia, Gansu, Inner Mongolia, Shanxi, and itself. Yunnan represents Guangxi, Guizhou, and itself. Zhejiang, Sichuan, Hubei, Shaanxi, Shandong, and Yunnan are weighted .14, .145, .34, .275, .06, and .04 respectively for male migrants in 1995; .16, .16, .25, .35, .06, and .02 respectively for male migrants in 1988; .30, .12, .30, .20, .04, and .04 respectively for female migrants in 1995; and .62, .11, .18, .08, .01, and 0 respectively for female migrants in 1988

Table 2.4. Composition of China's Rural Labor Force, 1988 and 1995 (Percent of Total Rural Labor Force).

Sectors		1995			1988			Growth Rates, 1988-1995		
		Village Labor Force			Village Labor Force			Growth Rates, 1988-1995		
		All Workers	Male Workers	Female Workers	All Workers	Male Workers	Female Workers	All Workers	Male Workers	Female Workers
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Full-Time Agricultural Labor	(1)	67	52	77	81	73	89	-1	0	-1
Non-Agricultural Labor^a	(2)	33	48	23	19	27	11	12	11	14
Village Residents Locally Employed ^b	(3)	15	22	12	9	13	6	13	11	13
Self Employed	(4)	11	16	8	6	8	4	14	14	17
Village Enterprises	(5)	4	6	4	3	5	2	6	5	7
Rural-Urban Movement	(6)	13	20	6	9	13	3	9	9	11
Commuters	(7)	6	9	4	5	7	3	6	5	7
Migrants	(8)	7	12	3	3	6	0.5	14	13	21
Rural-Rural Movement	(9)	5	6	5	1	1	2	27	29	24
Commuters	(10)	2	3	2	1	0.7	1	18	26	10
Migrants	(11)	3	3	3	0.5	0.7	0.3	38	30	53

Source: Authors' survey.

^a Many of these workers also contribute labor to agriculture in addition to their off-farm employment

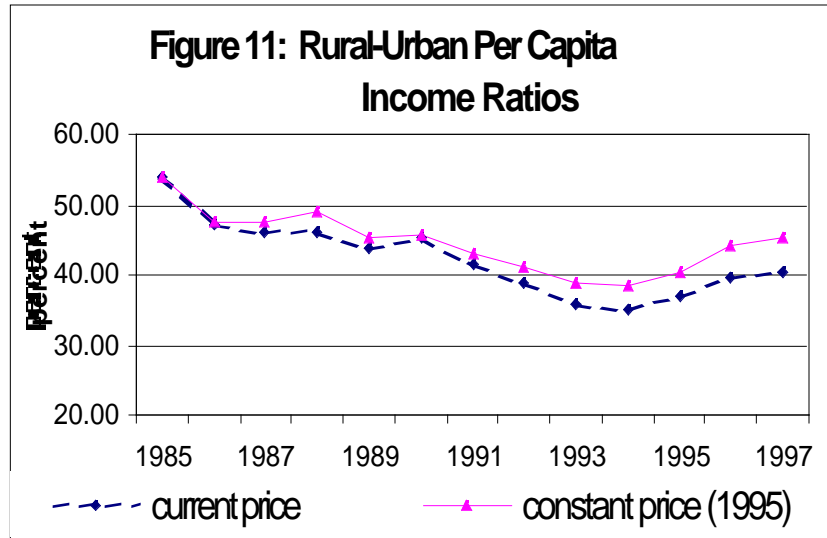
^b These workers are village residents with off-farm employment in the village.

^c These workers have off-farm employment outside the village but close enough to commute (daily) from their home village.

^d These workers have off-farm employment outside the village and must leave for at least one month at a time for their job

FIGURES

Figure 11 on the next page (rural to urban income gap)



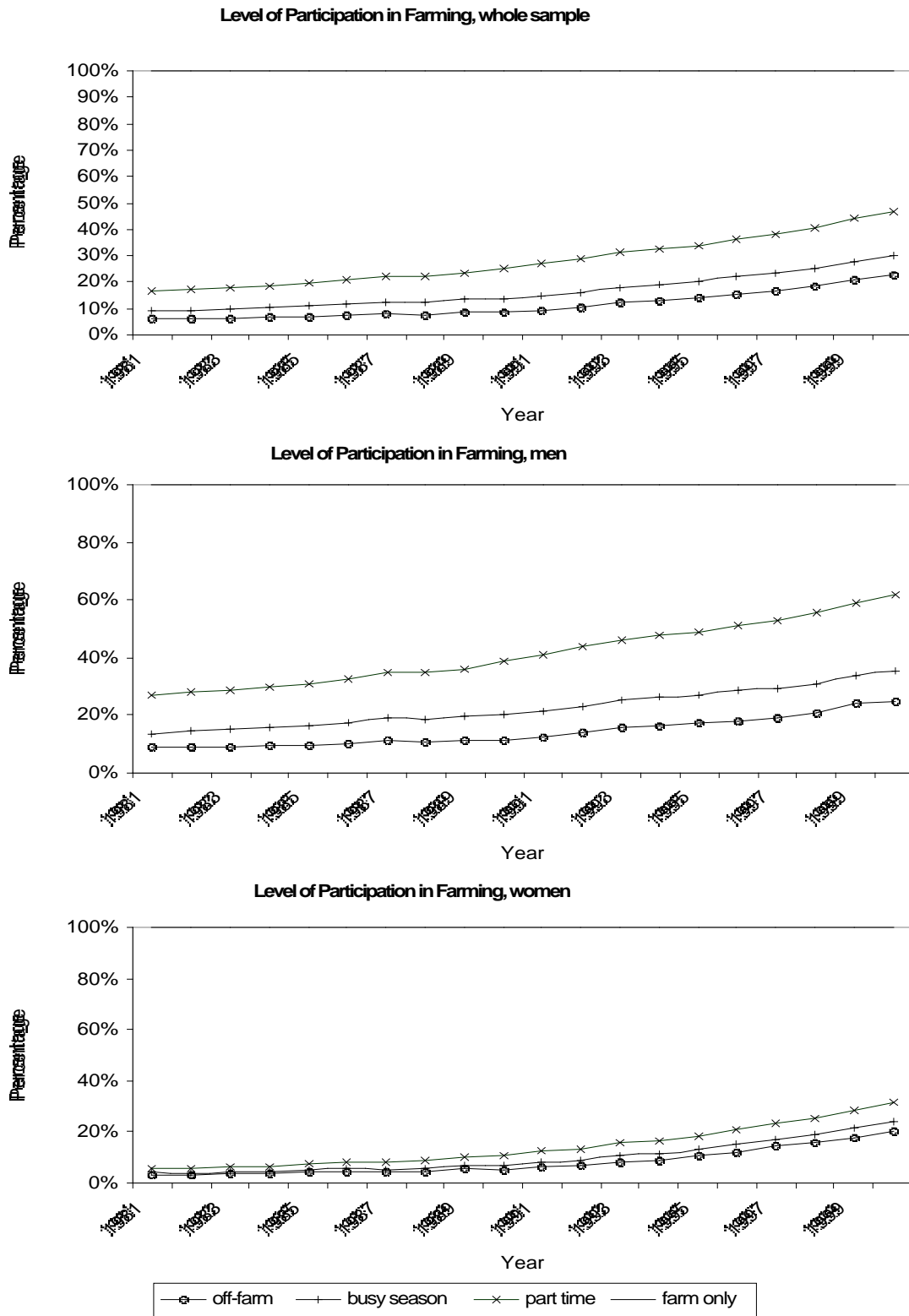


Figure 2.1. Level of Participation by Individuals, 1981-2000.

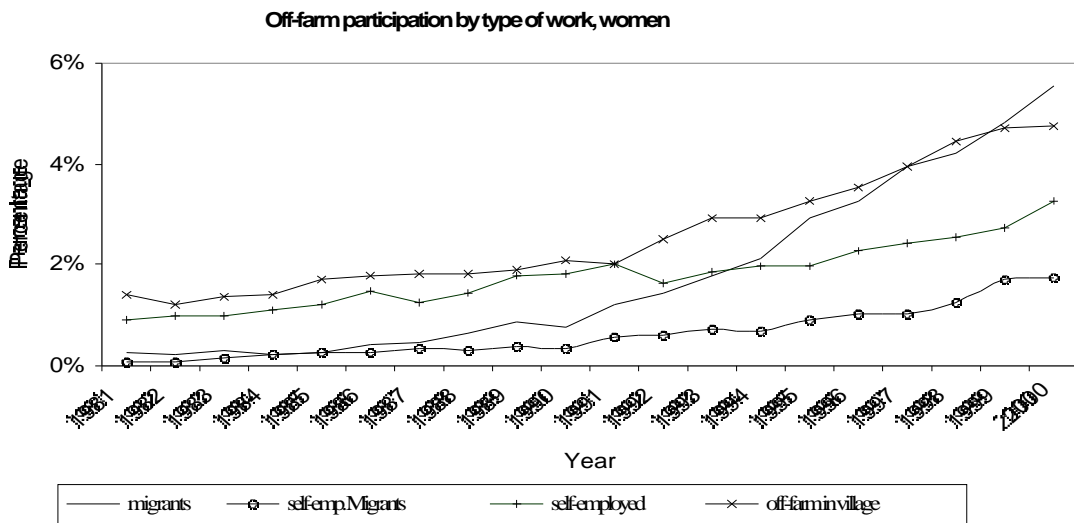
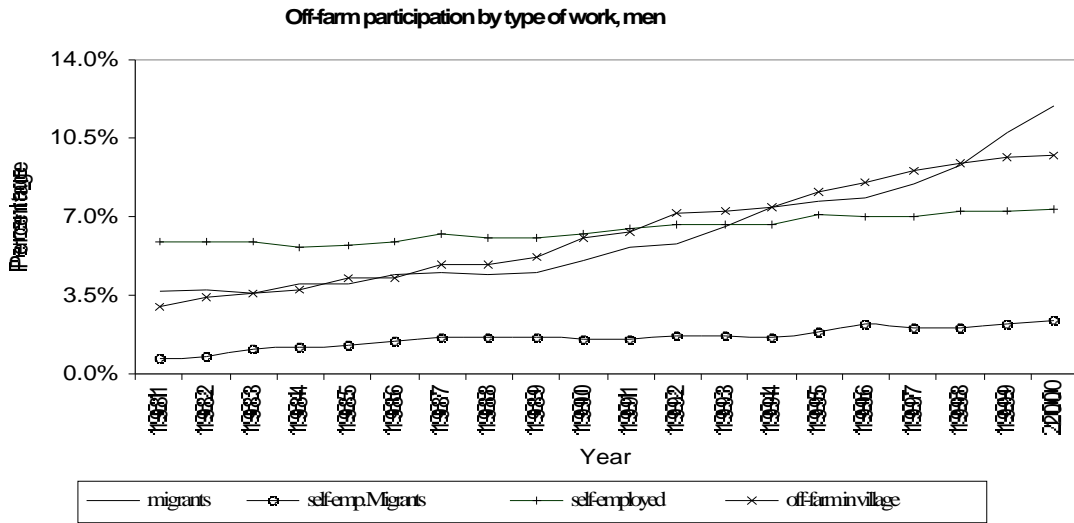
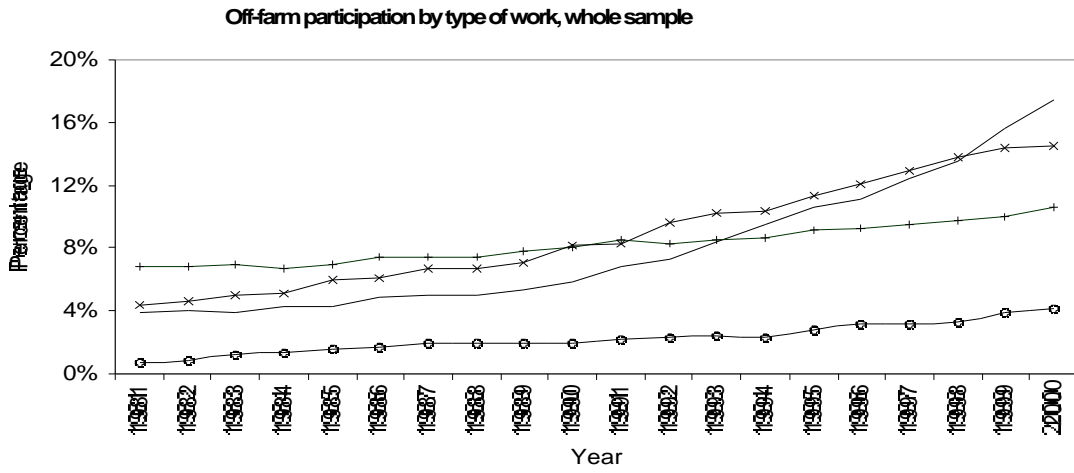
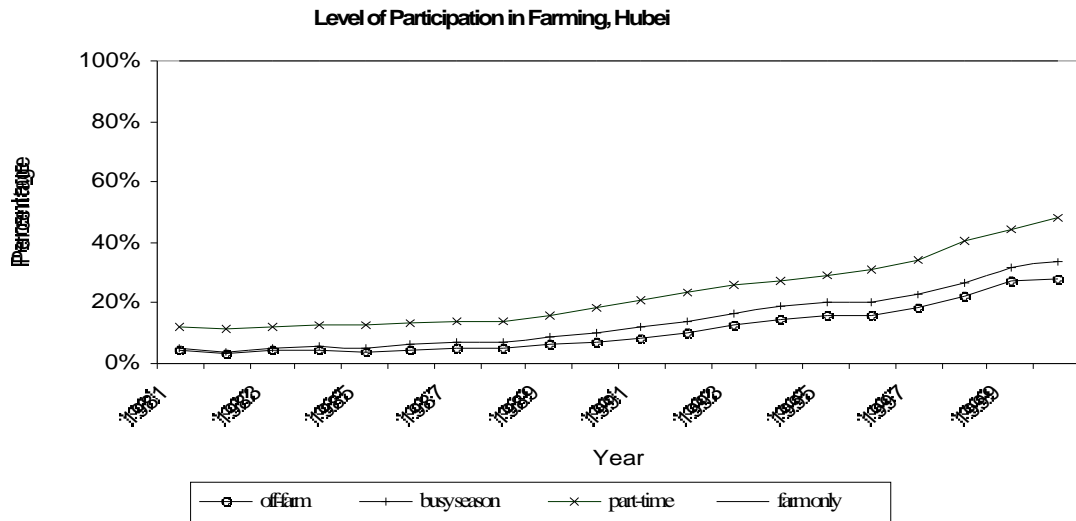
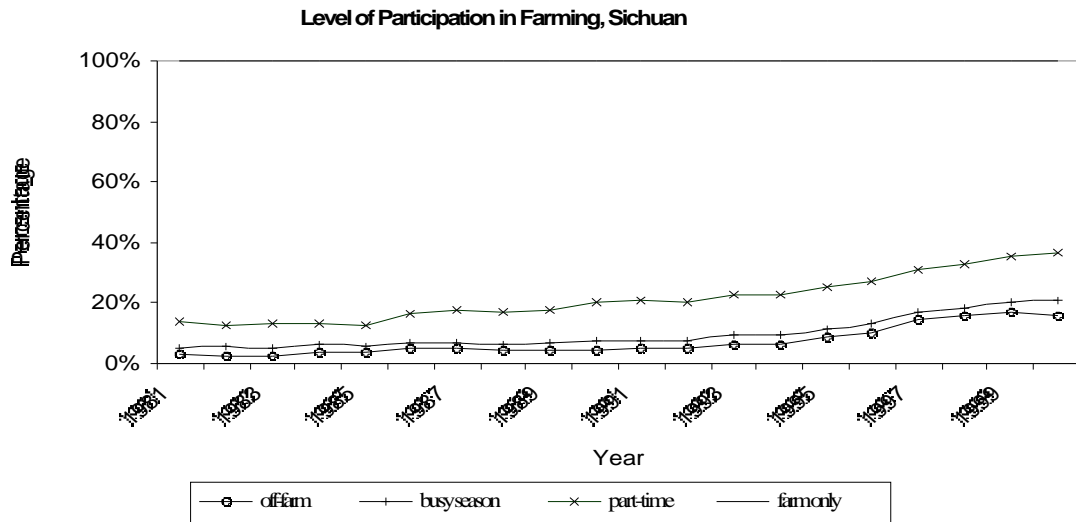
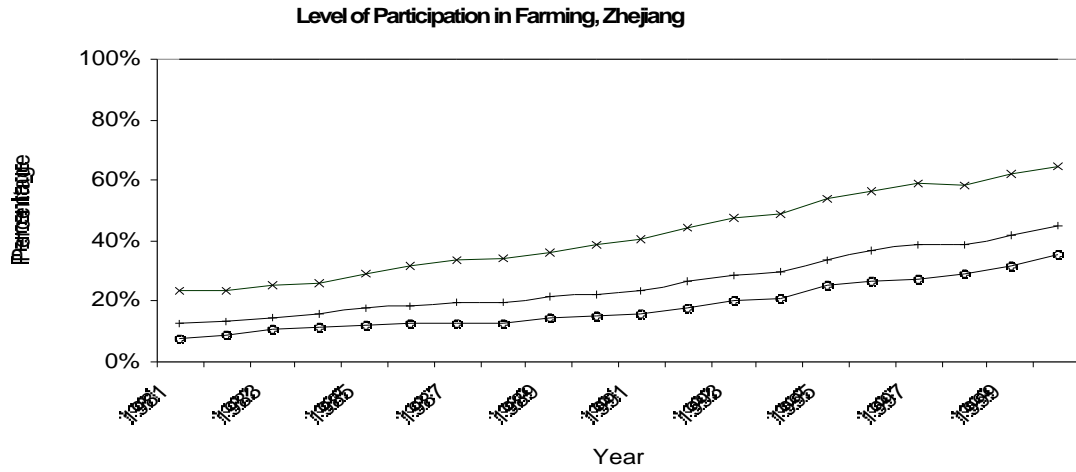


Figure 2.2 Percentage of Total Labor Force in Different Types of Off-farm Work.

Figure 2.3. Level of Participation by Individuals, selected provinces.



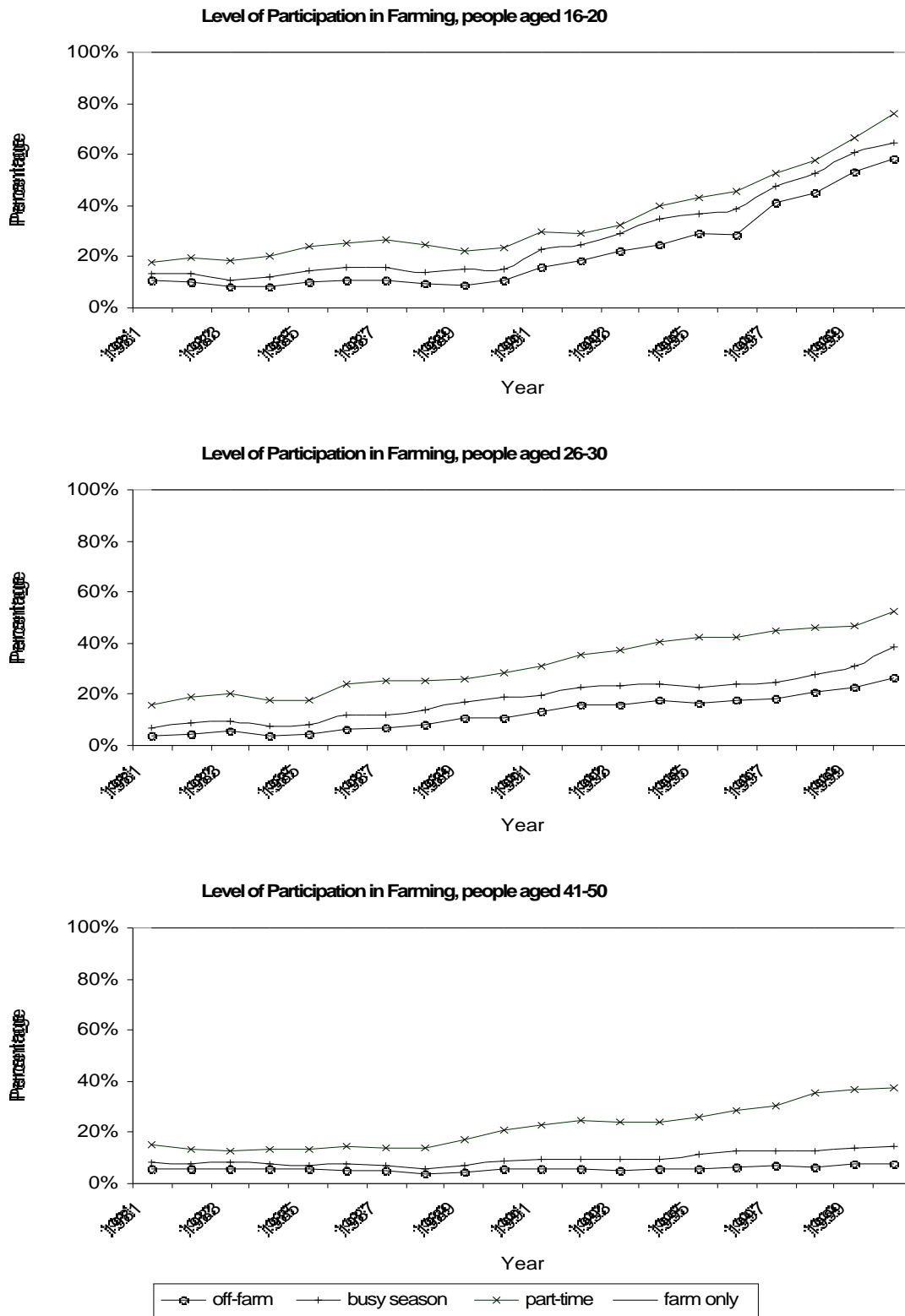
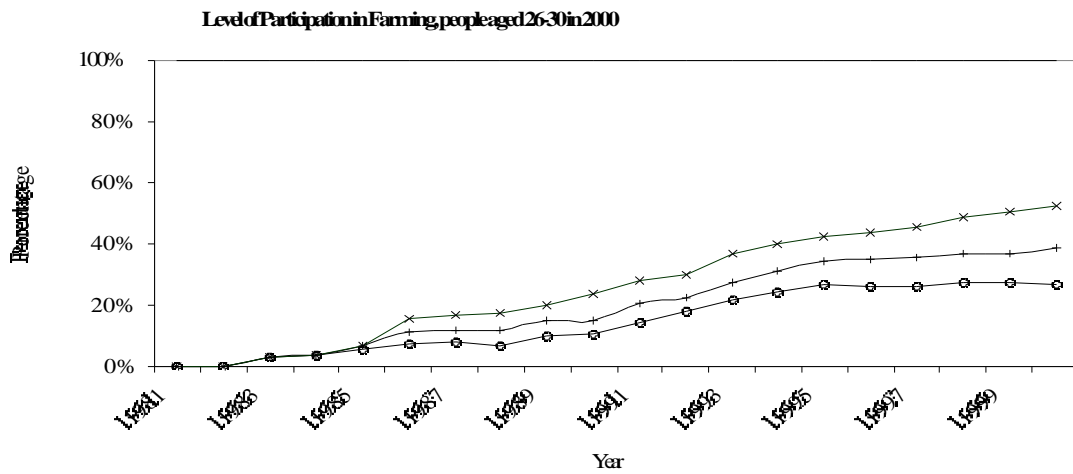
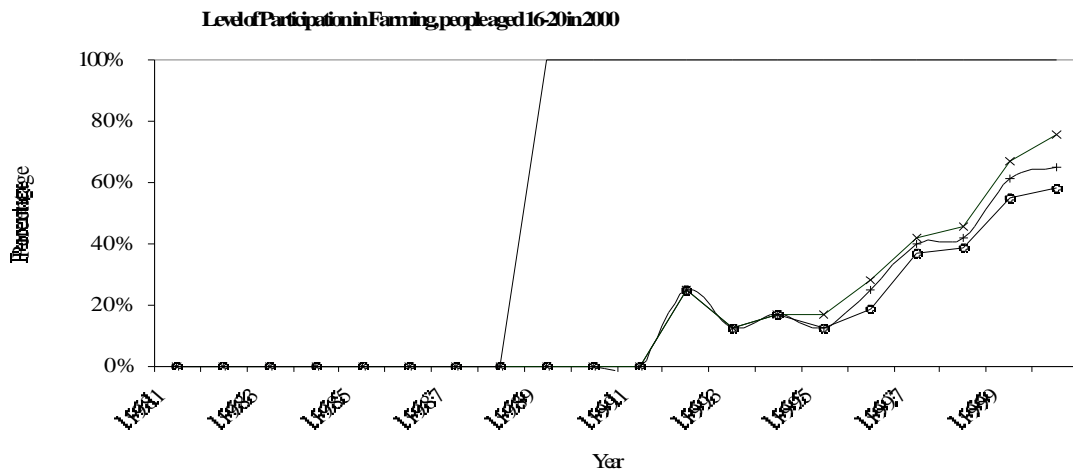
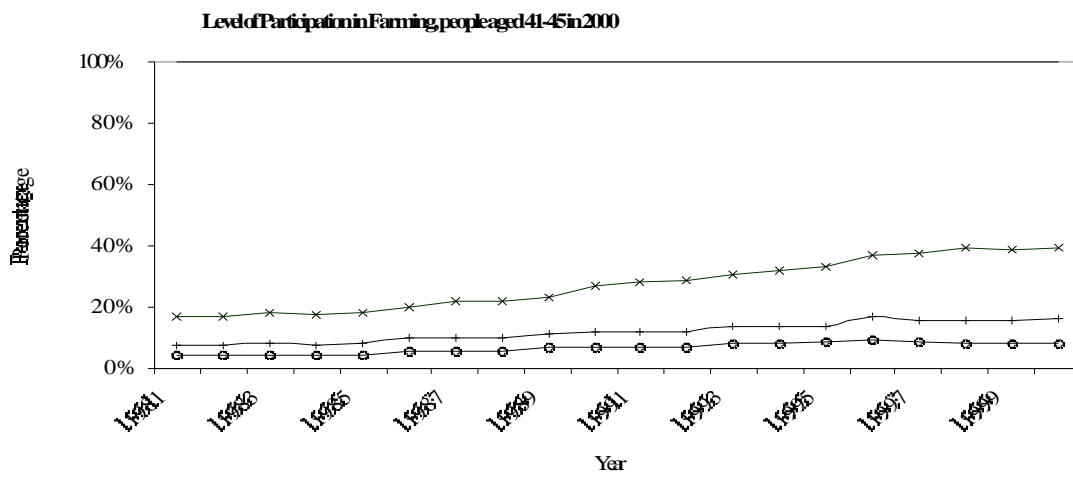


Figure 2.4. Level of Participation by Individuals, age range cohorts, 1981-2000.

Figure 2.5. Level of Participation by Individuals, age range groups in 2000.



—○— off-farm —+— busy season —×— part-time — family



—○— off-farm —+— busy season —×— part-time — family

Figure 2.6. Employment shares among off-farm sectors and wealth

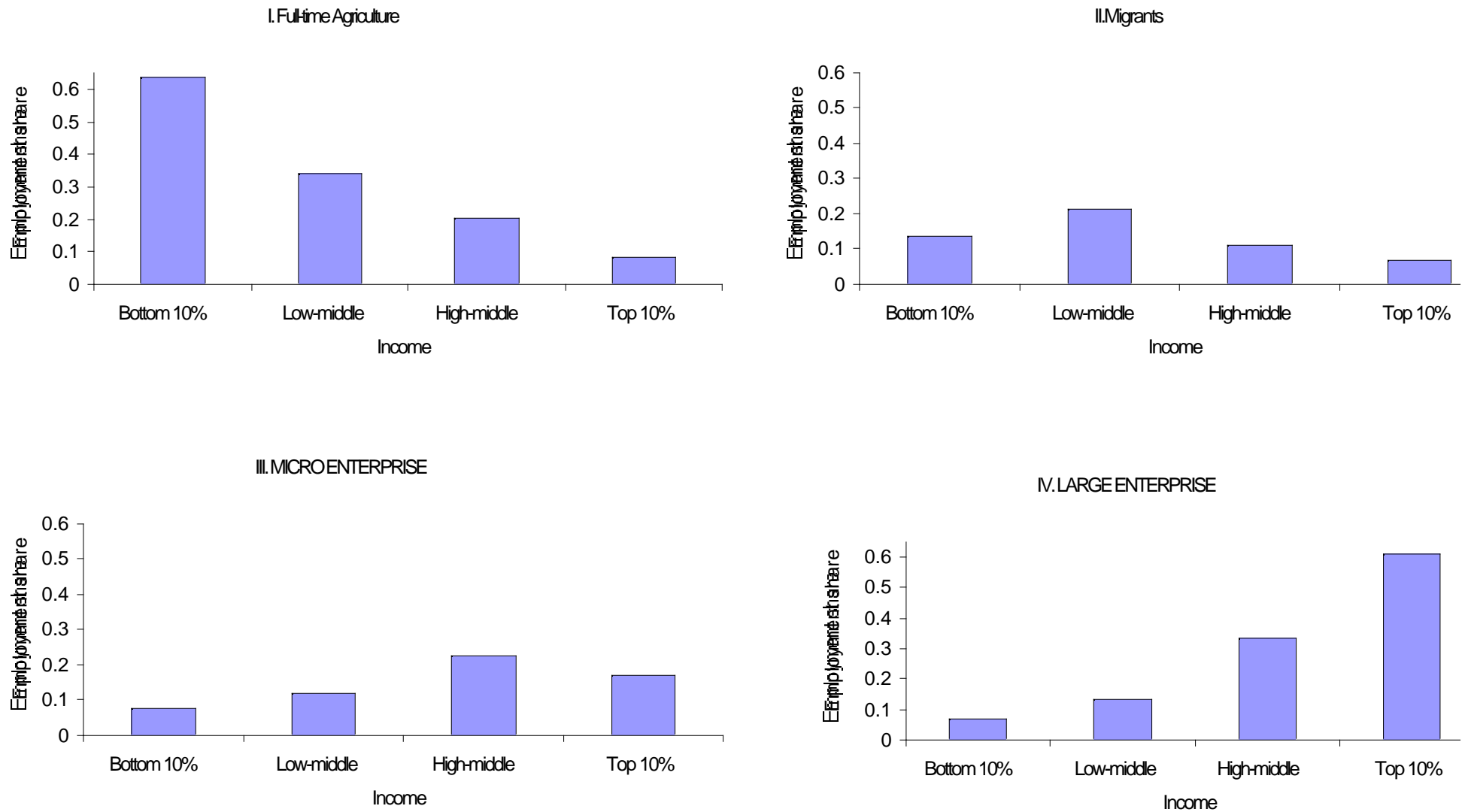
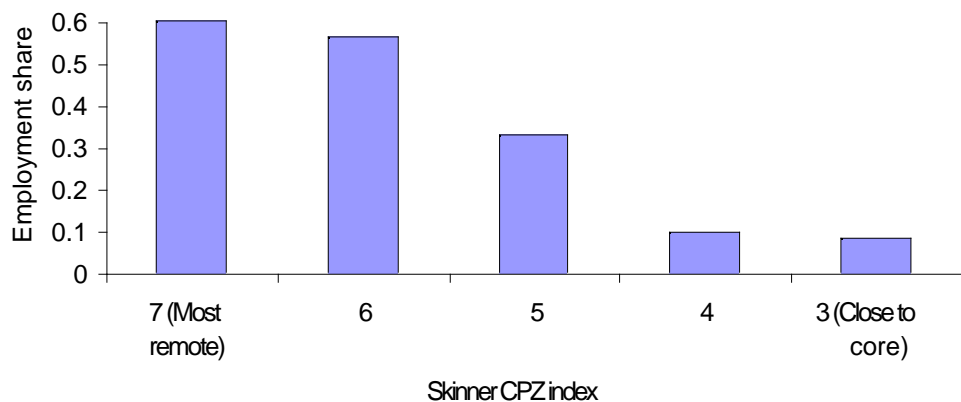
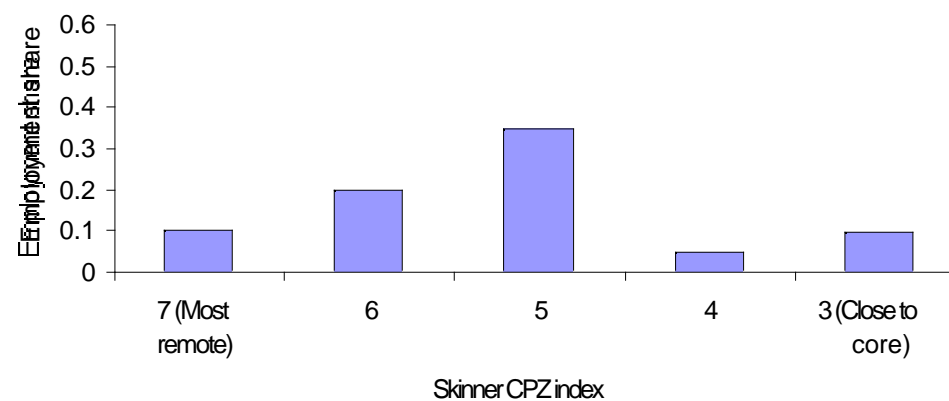


Figure 2.7. Employment shares among off-farm sectors and CPZ, rural China

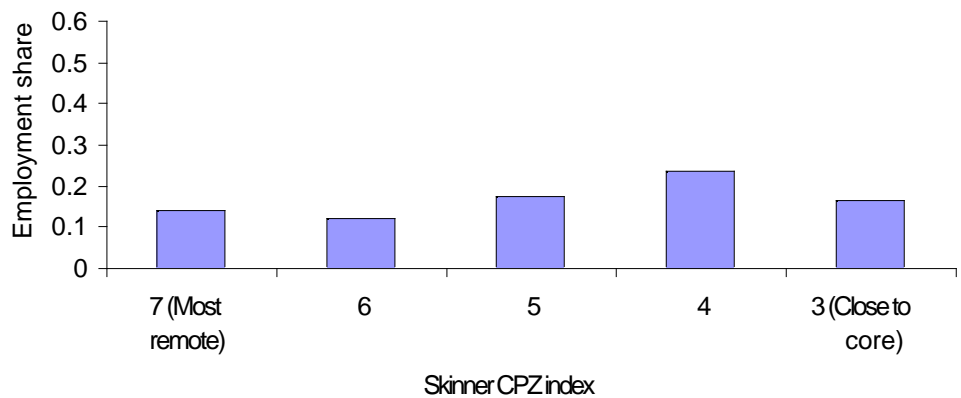
I. Full-time Agriculture



II. Migrants



III. Micro enterprise



IV. LARGE ENTERPRISE

