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Working Paper

The Impact of Rural Enterprises on Household Savings in China

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Qiuxia Zhu

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**The Impact of Rural
Enterprises on Household
Savings in China**

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List of Abbreviations

TVEs	Township Village Enterprises
The CC of CFPC	The Central Committee of Communist Party of China

8.3 yuan = 1 US\$ in 2002

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Abstract

In view of development policy, capital formation is crucial for economic growth in a country. Since the reform in 1978, China has enjoyed high saving rates. However, in the late 1990s the saving rates rose to such a high level, therefore the economic policy to promote consumption in order to reduce savings was suggested. This paper attempts to explain this paradox of “excessively high saving rates” in relation to the capital accumulation mechanism in rural enterprise (TVEs: Township and Village Enterprises).

The determinants of household savings in developing countries is one important topic of the development research. However most studies have ignored investment as one main determinant. In the famous Lewis’ model, the savings of farm households for non-farm investment are not considered, because in most cases it is difficult to sort out capitalists from the rural households. The case of the capital formation of TVEs in China offers us an opportunity to test the non farm investment as a saving incentive, because there are no large or small capitalists and landlords available after the agriculture reform in China in 1978.

With facts and statistical analyses, this paper has proved that the development of TVEs is an important factor of the high saving rates of rural households since the reform. The way of development of private TVEs and the process of the privatization of the collective showed that owing to the extreme financial discrimination, TVEs underwent an evolution into a financial institution. The demand of TVEs for private credits forced rural households to save and hence function as an informal financial market. The managers have the motivation to save because they want to run a collective TVE or to set up a private TVE. The workers have the motivation to save because they want to get a job or keep their job in TVEs. Using first hand data and statistical analyses, it was plausibly proved that households with manager in TVEs have higher saving rates than non-manager households. It is especially obvious in households with manager in shareholding and shareholding co-operative TVEs. Households with peasant worker in collective TVEs have higher saving rates than others. This implies that collective TVEs used many methods to force their workers to save.

Kurzfassung

Unter dem Aspekt der Entwicklungspolitik ist die Kapitalakkumulation von entscheidender Bedeutung für das Wirtschaftswachstum in einem Land. Seit der Reform von 1978 profitierte China von der hohen Sparquote. Ende der 90er Jahren war die Sparquote äußerst hoch, daher wurde eine konsumfördernde Wirtschaftspolitik vorgeschlagen, um diese hohe Sparquote zu verringern. Die vorliegende Arbeit versucht dieses Paradoxon in Zusammenhang mit dem Mechanismus der Kapitalakkumulation in ländlichen Unternehmen (= TVEs: Township and Village Enterprises) zu erklären.

Die Bestimmungsfaktoren für das Sparverhalten der Haushalte in den Entwicklungsländern ist ein wichtiger Gegenstand der Entwicklungsforschung. Jedoch wurde die Investition als eine Motivation in den meisten Studien nicht berücksichtigt. Im bekannten Modell von Lewis wurden die Ersparnisse der ländlichen Haushalte ausgeklammert, weil es in vielen Fällen schwierig ist, die Kapitalisten von ländlichen Haushalten zu unterscheiden. Der Fall der Kapitalakkumulation in chinesischen TVEs eröffnet uns die Möglichkeit, die These zu bestätigen, dass die Investition in den nicht-landwirtschaftlichen Sektor als eine wichtige Sparmotivation für ländliche Haushalte zu betrachten ist, da es nach der Agrarreform in China 1978 keine kleinen oder großen Kapitalisten und Landbesitzer gibt.

Anhand von Fakten und statistischen Analysen hat diese Arbeit bestätigt, dass die Entwicklung der TVEs entscheidend für die hohe Sparquote der ländlichen Haushalte in China nach der Reform ist. Der Weg der Entwicklung der privaten TVEs und der Prozess der Privatisierung der kollektiven TVEs zeigten, dass die TVEs unter dem Umstand des beschränkten Zugangs zu Krediten zu einer Art Finanzinstitution evolviert. Die Nachfrage nach privaten Krediten führt dazu, dass aufgrund der Funktion der informellen Finanzmärkte die ländlichen Haushalte verstärkt sparen. Die Manager der TVEs haben große Motivation zu sparen, um ein kollektives TVE unter dem Vertrag führen oder um ein privates TVE aufbauen zu können. Die Arbeitnehmer haben große Motivation zu sparen, um einen Arbeitsplatz in TVEs zu erhalten oder zu behalten. Mit Hilfe der Daten aus der Erhebung und der statistischen Analyse wurde klar bestätigt, dass Haushalte mit Managern in TVEs höhere Sparquoten aufweisen als die Haushalte ohne Manager in TVEs. Dies wird besonders deutlich für Haushalte mit Managern in Shareholding und Shareholding □operative TVEs. Haushalte mit Bauernarbeitern in kollektiven TVEs haben ebenfalls höhere Sparquoten als andere. Dies bedeutet, dass kollektive TVEs mit vielen möglichen Methoden ihre Mitarbeiter zum Sparen zwingen.

1 Introduction

1.1 Background

In view of development theory, capital formation is crucial for economic growth in a country. In the studies about the sources of China's economic growth, capital increase is considered to be the most important factor, with productivity growth induced by structural change being another significant determinant^{1 2}. At the same time, the role of the development of rural TVEs (Township and Village Enterprises³) in China's growth is also well recognized⁴. Since the development of rural TVEs served as the initial institutional push for the capital growth and structural changes, we believe that the development of TVEs is the key to explaining and understanding Chinese economic growth.

To overcome the problem of capital shortage, importing foreign capital and raising domestic saving rate are important components of development policies in developing and transitional countries. Since the initiation of the reform in 1978, China has enjoyed high and rising saving rates, which are helpful to China's economic transformation. However, in the late 1990s, the saving rate rose to such a high level that scholars suggested that the economic policy should promote consumption (A. Bohnet, 1999, Xu, Yongbing, 2000, pp. 42-46, and Chen, Leye, 2000, pp. 13-18). This contradicts the economic measures recommended for other developing countries. How could China as a developing country face the capital surplus problem, and how can it be explained? This paper will try to explain this paradox of "excessively high saving rate" in relation to the capital accumulation mechanism in TVEs.

¹ By means of the estimated production function, an exponential growth of 9.35% was calculated. 54 % of the exponential growth was due to capital accumulation, hence its crucial importance, 32% was due to the increase of productivity and only 13% to labour (Gregory C. Chow and Li, Kui-Wai, 2002, p.252).

² "Sectoral productivity growth accounts for 42% of aggregate growth". Fan, Shenggen, Xiaobo Zhang and Sherman Robinson, 1999, p.36.

³ TVEs is the term used in Chinese Statistics for "rural enterprises". The definition of TVEs refers to enterprises in rural areas (in town and village). One third of the rural labor force work in TVEs, and TVEs output amount to 30.7% of China's total GDP in 2001.

⁴ "The People's Republic of China had a successful agricultural revolution from a technical perspective, but was only able to take full advantage of this once it moves to the 'Household responsibility system', which released labor to the nonagricultural sector and effectively put huge amounts of additional purchasing power into hands of the rural masses." ADB, 2001, p.16. The development of non-state-owned enterprises was the most important factor for China's economic growth in the past 20 years (Lin and Liu, 2000, pp. 1-21).

1.2 Problem Statement, Research Objectives and Hypotheses

At the end of the 1990s, the development of TVEs in China underwent a structural change, through which collective TVEs lost their dominating position to private ones. The analysis of this institutional evolution of TVEs shows that peasants' continuous pursuit of private ownership was the driving power of TVEs' development. Although private TVEs had to face competition from collective TVEs as well as political and financial discrimination, they have grown step by step. This triumph of private TVEs proved that the development of TVEs in China is not a paradox to the conventional property rights theory (Zhu, Qiuxia/Elbern, 2002).

The purpose of this paper is to study the way *in which* private TVEs overcame the extreme difficulties in obtaining capital. In comparison with farm households in other developing and transitional countries, farm households in China had extreme difficulties in obtaining capital to set up private enterprises because of the following reasons: 1) After 40 years of total collective economy, farm households did not possess any assets; 2) Through the agricultural reform 1978-1984, only land use rights were transferred to farm households, whereas the collective land ownership was not changed, therefore, farm households did not have substantial collaterals to acquire loans from formal financial institutions; 3) Private non-farm enterprises were and still are discriminated against by formal financial institutions within a political environment which puts these enterprises at a disadvantage. Under such conditions, the capital of rural private non-farm enterprises can only come from two sources: household savings and borrowing from the informal capital market.

Therefore this paper will try to identify and analyze new determinants of the savings of rural households during the reform period. With this aim, the following objectives are set for this research: 1) financing methods of collective and private TVEs; 2) patterns of the saving behavior of rural households; and 3) the determinants of the savings of rural households.

By analyzing the determinants of the savings of rural households, this paper attempts to show that the development of TVEs is an important but unrecognized explanation for the high saving rates of rural households since the reform. Our central hypothesis is: **The capital demand of TVEs forced rural households to save because of the financial constraints, leading to high saving rates.**

1.3 Method of the Analysis

The methodology of this research consists of two elements: 1) a theoretical analysis of the determinants of household savings in the framework of institutional economy; 2) a statistical or econometric analysis.

The theoretical analysis is rooted in the literature of the determinants of savings. The statistical or econometric analysis is based on the survey data in the selected provinces. Generally, the research makes use of a household comparison to come up with a causal analysis of the saving behavior of households.

2 Recent Studies on Saving Rates in China since 1978

Finding an explanation for the high saving rates in China since the reform is a challenge for Chinese researchers. Few theoretical and empirical studies have been conducted in recent years to explore this topic. Existing studies are mainly based on two theoretical strands: 1) the traditional equilibrium theory which is briefly presented in Table 1. It includes simple Keynesian consumption / saving function, the life cycle and permanent-income hypotheses. 2) The disequilibrium factors caused by the institutional transformation. The studies of Ellis and Naughton (1990), Ma (1993) and Mu (1998) belong to this strand. The factors are shortage and rationing of consumer goods, insurance system reform and the monetization of the economy. One weakness of the traditional equilibrium theory is its mixed results, which fit well in some cases but less well in other cases. The equilibrium theory is also weak in that the possible altruistic motivation as an explanation was ignored. The weakness of the disequilibrium explanation is that the shortage and rationing of consumer goods and the monetization of economy can only be considered as an explanation for the rural households (HHs) in the 80s, but not for rural HHs in the 90s. Other factors related with the reform can only influence the savings of urban HHs.

Table 1: The Main Studies on Saving Rates since the Reform in China

Theories	Author
Current income Hypothesis	Wong (1993) Qian (1988) World Bank (1988)
Permanent income hypothesis	Qian (1988) Wang (1995) Jalan and Ravallion (1998)
Life-cycle theories	Modigliani and Cao (1996)
Forward-looking models	Kraay (1998)

In summary, it seems that all the studies could explain the so-called “strange high” saving rate *to the same extent*, but not satisfactorily, especially when compared to countries with Chinese culture during their takeoff period (A. Kraay, 1998, p. 7).

In my point of view, it is difficult to compare China with other countries because of the following reasons:

- Compared to other countries with Chinese cultural traditions: The factors related to the economic reform are not comparable. Among them, the abolishment of the rationing of consumption goods was very important⁵.
- In comparison with other transformation countries in Europe with socialist ideology: The factors related to the rural industrialization process are hardly comparable. Among them, the development of TVEs was very important⁶.
- In comparison with other developing countries: the factors related to socialistic legal arrangements are not comparable. Among them, laws on land ownership and capital markets were important. The collective land ownership limited the function of land to provide for credits. And the collective units and regional governments played a more important role in the allocation of financial resources.
- In comparison with other transformation and developing countries: the Chinese culture has a crucial impact on the saving behavior of households and the financial behavior of enterprises.

⁵ A survey in 1990 showed that the first choice of saving reasons in the total sample of 83.1% per cent of households was “to purchase durable consumer goods”, Mu, Guodong, 1998, p. 470.

⁶ All transformation countries in East Europe have reached a much higher degree of industrialization than in China before the transformation. China was still an agricultural country with small collective production units. Rural industrialization was started by rural community and farm households — TVEs.

Table 2: Determinants of Household Savings in China in Four Main Fields: Reform, Industrialization, Legal Arrangement and Cultural Background

Differences in comparison with Chinese culture regions	Economic Reform: from planned to market economy	<ul style="list-style-type: none"> - monetary income and income growth within a short period - enhanced income risk - abolishment of rationing consumer goods - new possibility to investment - reform of the insurance and education system - growth of income difference
Differences in comparison with transformation countries	Industrialization: from agricultural to industrial society	<ul style="list-style-type: none"> - income and monetary income growth of rural households from TVEs - different treatment of urban and rural areas in the social insurance system - collective TVEs supported by local governments - underdevelopment of the rural financial market
Differences in comparison with developing Countries	Socialistic law: Collective land owner-ship, non-private financial institutions	<ul style="list-style-type: none"> - land cannot be used as security on loans - financial support for collective TVEs - households have to obtain capital on informal financial markets
Differences in comparison with transformation and developing countries	Culture: philosophy of family budget; Strong pursuit of entrepreneurship; ⁷ Network (Guanxi);	<ul style="list-style-type: none"> - savings for purchasing durable consumer goods (not on credit) - saving capital for setting up self-employed individuals enterprises - informal capital markets

It is note-worthy that administratively-forced saving was a main point in the explanation of high saving rates before the reform. Rationing consumer goods limited the consumption of urban residents. Consumer prices were controlled by the government (setting low prices for agricultural products and high prices for industrial products). After the reform, such a Maoist model of forced capital accumulation gradually lost its importance. But a recent research found that contemporary Chinese accumulation was still similar to the Maoist forced industrialization model (C. Hermann-Pillath, 1999).

In my view, the mechanism of Maoist forced savings may not have played a significant role. It perhaps played only a marginal role. The forced saving is of another type, i.e., the self-forced saving. In other words, the rural households forced themselves to save. This paper attempts to test this hypothesis.

⁷ In many cases, employees consider the employer-employee relationship as a short-term one since they intend to become owners of self-employed individual enterprises or of private enterprises themselves in the future. Working as an employee means preparing for an employer's career. This is the core idea of the Chinese entrepreneurial spirit which also explains the harmony between both sides, Shao Qiyelang, 1996,

3 Determinants of Household Savings: A Theoretical Discussion

The economic definition of saving as abstention from consumption does not specify reasons for saving. In financial terms, funds saved for the eventual purchase of beer are no different from funds saved for protection against sickness or disability (J. D. Von Pischke, 1983, p. 415). Although by definition of savings it is not important for which reason: households save, there are many theoretical reasons for understanding what determines savings. The theory of the determinants of household savings can be subdivided into two main categories according to the assumptions, there are egoistic models and altruistic models.

3.1 Models Based on an Egoistic Person (Individual Models)

The Keynesian model

In the Keynes's theory, savings depend on disposable income. Savings equal disposable income minus consumption. Consumption is determined by disposable income through marginal propensity to consume. This model is not derived from agents' optimization over their entire life.

The relative income theory

The core of the relative income theory is that the propensity to consume (or to save) for an agent is influenced by the community where it is located. The increasing satisfaction of consumption for an individual or a household is relative to that of other households in the same community. Households with income less than the average of their peers will have high average propensities to consume, as they try to keep up with the community average, hence they have lower average propensities to save. The consumption expenditure depends on the relative income changing between the current and the previous time. The recent living standard of households also influences their propensity to consume. On the other hand, households will not increase their consumption when their income increased, leading to high savings (J. Duesenberry, 1949 and F. Modigliani, 1949).

Life-cycle hypothesis (LCH)

The life cycle theory is the principal theory of savings (F. Modigliani and R. Brumberg, 1954). The motivation of saving is smoothing lifetime consumption. *Individuals save to prepare for their retirement when they must dissave and consume.* An individual's savings will peak in his or her prime earning years and fall as the savings are drawn down to finance consumption during retirement years. Theoretically speaking, the marginal utility of consumption at a time of

lower income is higher than that at a time of higher income. Two core issues of the LCH are that individuals are farsighted, not myopic, and they save for precaution; and that they have planned to exhaust all their life resources and will not possess any assets at the end of their life (M. Gersovitz, 1995, pp. 384- 385).

The permanent income model

The permanent income model is based on the life cycle theory, but the motive for saving is not to guard against reduction in income in retirement, but for all times in the future (M. Friedman, 1957). The model assumes that the utility function of consumption is symmetrical and homogeneous in the two time periods t and $t+1$. The marginal rate of substitution in the two time periods depends on the ratio of consumption in these two time periods, not on the absolute level of consumption, so that the current saving is determined by permanent income.

3.2 Models Based on an Altruistic Person (Household Models)

The altruistic model (Barro's model)

The altruistic model was developed out of the new household economy. In contrast to the previous theories, the economic agent is a household, not an individual. This theory is closer to reality, because the household is considered as an economic unit in the national economic politics. In Barro's model, the function of the utility of consumption for a family consists of two parts: utility of consumption of the parents and of their children. *The parents transfer their income to the children, in order to enhance the consumption of the children* (R. Barro, 1974 and G. Becker 1974), assuming parents to be altruistic and children to be selfish. Individuals are assumed to be farsighted and their foresight is far greater than that in the life cycle model, because they don't only care about their own welfare, but also about their children's.

Overlapping-generations model (OLG)

The difference of OLG theory from the life cycle theories and other theories is that the wealth of individuals at the end of their life time is considered. The OLG theory assumes the wealth accumulation for the next generation to be a saving motivation (L. J. Kotlikoff, 1989. pp 3-4). Differing from Barro's model, the theory claims that the saving motivation of the old generation does not enhance the consumption of the young, but they leave assets to their next generation.

3.3 Theories Employed in the Research on Saving Behavior in Developing Countries

Theories referred to in previous sections were originally developed by and for developed economies. If we apply them in developing countries, we have to take the features of these

countries into consideration. Referring to the research of household saving behaviour, the differences are as follows:

First, households in many developing countries, in which several generations often live together, are larger than households in developed countries. This *large family character can internalize many of the insurance activities* that would otherwise require savings.

Second, income from agriculture is inherently uncertain. Income uncertainty has a great impact on savings. Although households are myopic, for survival, they still have to save for the consumption in the near future. This is a form of *inter-temporally smoothing savings*, not continuing over a long period.

The *third* difference is *the borrowing constraint*. Because the majority of households in developing countries live in abject poverty, it is not possible for them to obtain consumption loans. The borrowing constraint is an important factor for the savings of poor households. A. Deaton has proposed a basic model for developing countries, in which the saving motivation of households is considered to be a precaution against liquidity constraints (A. Deaton, 1989, pp. 65- 68).

4 Discussion on Applying the Theoretical Determinants of Savings of Rural Households in China

4.1 The Assumption of Myopia or Foresight

Are Chinese rural households more myopic or farsighted? In the literature, **these two factors are** controversially discussed **opposite**. On the one hand, the Chinese rural population can be considered as myopic. The research results show that in the 1980s the first saving motive is to purchase durable consumer goods and to support family members at their marriage and in emergency situations (Mu, Guodong, 1998, p.470). This is similar to other developing countries which are also characterized by a large amount of target savings. The results of J. Jalan and M. Ravallion' research show that precaution against income risk *was not an important* motivation of the middle income households for holding their wealth in unproductive liquid form. They also found that poor households cannot afford to do so and richer households don't have to do so (J. Jalan and M. Ravallion, 2001, pp. 38-41). This result is analogous to A. Deaton's characterization of *internalization of the insurance function in large families*. Families in today's rural China are not large, but a new form called "network family" can function as large families in many economic and social activities (Zhu, Qiuxia, 1998, pp. 63-75). In general, Chinese rural households seem to be more myopic than farsighted; they should thus be treated in a way similar to the way the peasants in developing countries are treated.

4.2 The Assumption of Altruism

Most researches about the attitude to child labor and to family planning in developing countries conveyed an image that households see children as workforce. Presumably household heads in developing countries could be considered as selfish, because they are poor and thus cannot take care of the welfare of their children. But the research of O. Stark confirmed the hypothesis that in developing countries interfamily transfer is possible (O. Stark 1995).

In China, traditionally, education level and a prestigious position are important for the family or clan, due to the influence of Confucian philosophy: "Only studying is important, all other things are not". A survey conducted in Shanghai shows that the first saving motivation was

the education of children⁸. Another survey on rural households at national level shows 60.6% wishing their children to have an education level of a university graduate, and 42.5% wishing their children to have the officer position⁹. Another research about saving motives in Taiwan demonstrates that house building is the main motive of savings, some parents also save for house building for their children (A. Deaton, 1999). Therefore we can reasonably assume most of the rural households in China to be altruistic. Considering the altruistic assumption, the education of children and the expenditure for getting a non-farm job for them seems to be the main saving motivation for rural households in China.

4.3 The Manners of Chinese Rural Households on the Borrowing Constraint

The borrowing constraint is an important factor of household savings in developing countries, because a borrowing constraint can even convert a negative saver into a positive saver. For instance, a household which wants to celebrate the wedding of their son (this is an important consumption expenditure in many Asian developing countries) does not have to save if they can borrow the money they need. But if they cannot borrow it, they have to save the money probably from the 15th birthday of their son until his wedding which will be held approximately at the age of 22. This is also similar to education or getting a non-farm job.

One of the cultural explanations for the saving behavior of Chinese people is that they follow the philosophy of household budget that encourages “spending according to income” (liang ru wei chu). That is, they don’t borrow even when they can (Dong, Furen, 1999, Zhou, Henfu, 1993).

4.4 The Core Issue of this Study

In general, current theoretical models of savings supplement each other, although each model is based on its own assumption. However, the weakness is that investment as a motivation of savings at household level was ignored. This weakness is probably due to the lack of data. “Data problems also preclude testing even the most basic hypotheses, for example, the classical (Lewis) Model, in which saving is done almost exclusively by capitalists. If capitalists belong exclusively to the corporate sector, the model is almost certainly false, but in most developing countries we have no way of sorting out the “capitalistic” pockets in the households sector...”, (A. Deaton, 1989, p.63). But in practice, non-farm activities in rural areas have become main determinants of economic growth in developing countries, especially in Asia and in China in

⁸ According to the survey with 500 households as samples on the saving motivation in the City of Shanghai, 37.6% stated education of children, 20.2% health precautions, similar to health insurance, 12.5% housing, Jiefang Ribao, vol. 18214, 1999.

⁹ Policy Research Office of the CC of the CPC and the Office of the Rural Sample Survey Station, the Ministry, of Agriculture, 1992, pp. 354-355.

recent years. In rural areas there are a lot of mini-enterprises (self-employed) and small enterprises set up by peasants using their own capital. In the case of China, the investors in rural regions are in fact only small peasants and not middle, large landlords or capitalists. **This is a good opportunity to test the hypothesis claiming that non-farm investment stems from non-capitalists.**

According to empirical research in China, the majority of farm households were observed at their borrowing activities: Formal institution loans were taken for financing current production (agricultural¹⁰). Informal loans were taken for non-productive purpose and construction (house building), ceremonial social events may be defined as fungible credit. Informal loans are mostly non-profitable (without interest) and given or taken among relatives and friends, without requiring the collateral¹¹. This means that for rural households in China, borrowing money on the informal financial market for investment is more difficult than borrowing money for consumption. The likely reasons are: 1) the political discrimination of private TVEs. 2) Presumably, the risk of non-farm activities is higher than that of agricultural production, especially when the peasants do business at the stage of “learning by doing”. 3) The amount of investment for productive purpose is higher than that for non-productive purposes.

Therefore, of all the possible determinants, this paper will focus on investment in TVEs as an important motivation of household savings.

¹⁰The support of agricultural production is the main task of formal financial institutions in China in the planned economy, aiming at the security of the national food supply. Under this policy, formal financial institutions provide credits for peasants in the planting season for seeds or other inputs, and the peasants repay them after having sold their products.

¹¹ The credit targeted for production was supported by the government. In two of four counties, the saving account deposits equaled formal debts. In two counties in Jiangsu, savings far exceeded formal debts (519 yuan savings, 17 yuan formal debts in Tai county; 192 yuan savings and 38 yuan debts in Jurong). Informal debts in Jiangsu far exceeded formal debts. In Gongzhuling, 68% of informal loans were interest-free, in Tai 80%, and in Jurong and in Xiajiang 100% of that were interest-free (The Survey in 1987-1988, F. Gershon , et al., 1993, p. 119). Another research showed the same results. 31% of poor Households obtained loans, 70% of that were private loans. 22% of that were charged with interest. 27% of non-poor Households took loans, and 66% of that from private individuals. 21% of that were charged with interest. Therefore the informal loans far exceeded formal ones (The survey in 1993-1994, Zhu, Ling, et al., 1997, p.102).

5 TVEs Investment as an Important Explanation of the High Savings of Rural Households

On the one hand, rural households theoretically have higher savings than urban households in a country, because rural households face income insecurity, with their main income coming from the agricultural production. On the other hand, households with higher income theoretically have higher saving rates than households with lower income. In China, the income level of urban households is more than twice as high as that of rural households¹², whereas the saving rates of rural households is nearly as high as that of urban households. Therefore, the explanation of the enormously high savings rate of rural households is the first step in understanding high saving rates in whole China.

5.1 Development of TVEs as an Instrument to Solve Employment Problems

Over decades the Chinese government implemented a policy discriminating against rural residents. In the reform period, this policy was changed gradually. However, it still has its effects. An essential part of this discrimination policy is the limitation of migration of farmers to cities. The rural residents are treated almost like semi-slaves¹³, they have almost no rights to get a job on the formal labor market in cities and do not receive any support from the state for employment generation. There are many regulations that prohibit institutions and enterprises from employing rural residents. For example, if an enterprise (which is generally situated in cities) provides a job for a rural resident, it has to pay a fine of 3000 Yuan or it has to give up its registration. These peasant workers are often expelled from cities by officials in the “Clearing and Driving” actions (Qing Tui). They can find employment in cities only on the informal job market – by personal relations (Guanxi), (Yang, Xiaosu, 1992, p. 14).

While governments of municipalities or cities are running many investment projects they only create jobs for their own city residents, rural households are excluded from that privilege. Before the reform, children of rural households could obtain a status as a city residents only, if they had got a university degree and had been able to find a job in a city. Now, an additional way

¹² In 1995, annual per capita disposable income of households was 1578 yuan (rural) and 4283 yuan (urban), in 1999 2210 yuan (rural) and 5854 yuan (urban), (China Statistical Yearbook, 2000, p.311).

¹³ In the discussion about the rights of rural residents between Prof. Lipinsky and the author, he was of the opinion that the rights of Chinese rural residents were similar to peasants in the Middle Ages in Europe. The essential point is the limitation of the migration of peasants.

is buying the license of a city resident or investing in new private enterprises¹⁴. This institutional discrimination forces rural residents to create non-farm jobs for themselves.

5.2 The Development of TVEs

5.2.1 *The Development of Collective TVEs*

Under the above described institutional discrimination, rural households were forced to solve employment problems by themselves, and for this reason, the TVEs in the collective economy were already developed before the reform. Collective TVEs grew after the reform until late the 1990s. With political support, collective TVEs were financed in two main ways:

- 1) obtaining loans from formal financial institutions
- 2) raising capital from households.

1) *Obtaining loans from formal financial institutions*

Due to the income increase, the savings of farm households increased quickly in the 1980s, so that formal financial institutions (FFIs) collected the savings of households and provided loans for collective TVEs. The high capital demand of collective TVEs pushed FFIs to collect savings actively. They applied many instruments to stimulate private savings, e.g. with lottery tickets, bonus for bank employees who did excellent work in the consulting service of savings deposits. Nevertheless, rural households saved of their own will in this situation. Table 3 shows the volume and the growth rate of the loans for collective TVEs granted by FFIs. It was note-worthy that in 1985 19.5% of the external funds of collective TVEs, and in 1989 22.7% of that stemmed from loans of FFIs (Deng, Yingtao, 1992, p. 20).

2) *Directly raising capital from households*

Collective TVEs raised capital from households directly with various administrative methods:

- a) The collective, the community, the town and village raised capital directly from all households in the name of investing in TVEs (“Tanpai”);
- b) Enterprises raised capital directly from households that intended to get a job within the enterprise (Daizi Jingchang);

¹⁴ The price for the license of a city resident (Hukou) varies from city to city, for instance for a county city in Shanxi Province in 1994, such a license costs approximately 3,000 – 5,000 yuan, whereas for the City of Shanghai, the so-called Shanghai Green Card costs about 400,000 Yuan (buying a house of this value) in 2000.

- c) Enterprises compulsively borrowed money from some richer households;
- d) Enterprises compulsively borrowed money from their workers with interest;
- e) Enterprises delayed the payment of the wages of their workers.

Table 3: The Loans for Collective TVEs from Formal Financial Institutions 1978-1990

Year	Loans Outstanding of Collective TVEs from ABC and RCC in billion yuan	Growth Rate %
1978	33.2	
1979	55.5	67.17
1980	77.8	40.18
1981	89	14.40
1982	100.6	13.03
1983	130.79	30.01
1984	291.71	123.04
1985	345.12	18.31
1986	554.66	60.72
1987	711.26	28.23
1988	863.79	21.45
1989	992.24	14.87
1990	1222.88	23.24

* ABC: the Agricultural Bank of China; RCC: Rural Credit Cooperatives

Source: Deng, Yingtao, 1992, p. 19.

Methods a) and b) were normally named as “Raise Funds from Masses”. Method a) is the main method for acquiring start capital for TVEs. The local governments at every level do that very actively, because collective TVEs are not only a source of the local fiscal revenues, but can also provide non-farm jobs for their relatives, in some case even for government officials themselves, e.g. as a manager. In the collective economy, the local cadre can directly use the agricultural income of the collective (brigade or production groups) as investment in collective TVEs. After the abolishment of the collective economy, the local cadre could no longer act in the same way, hence employing the new method “Raise Funds from Masses”. They devised an investment plan, and then collected money from households. Table 4, Table 5 and Table 6 show the relevance of this part of the total capital source of collective TVEs in China as well as in

Fujian and Jiangsu Province. In China, the “funds raised from masses” amounted to 5.6% (1992), 7.4% (1996) and 4.6% (1999) of the total capital of TVEs (Table 4). This share was 26% in Fujian Province in 1992, and 16% in 1997 (Table 5). In Jiangsu Province, loans from informal financial institutions and internal enterprises amounted to nearly 50% of the total capital in most years (Table 6).

Table 4: Capital Structure of Township and Village-Owned TVEs in China

in mill. yuan

	1992		1996		1999	
		Percentage of total capital		Percentage of total capital		Percentage of total capital
		%		%		%
State	1921	1.8	1804.18	0.6	1373.36	0.6
Funds from Supervising Agency	4578.47	4.3	5719.42	2.0	2970.99	1.3
Credits from Banks	42032.9	39.8	76798.92	27.5	43266.24	19.2
Foreign funds	6400.58	6.1	32250.9	11.6	24855.99	11.0
Own Funds	35781.16	33.9	113949.7	40.8	123332.93	54.7
Raise funds from masses	5913.36	5.6	20643.6	7.4	10404.01	4.6
Other Funds	8929.67	8.5	27892.9	10.0	19313.06	8.6
total	105557	100.0	279059.69	100.0	225516.58	100.0

Sources: 1992, The Yearbook of Chinese TVEs 1993, p. 237.

1996, The Yearbook of Chinese TVEs 1997, p. 233.

1999, The Yearbook of Chinese TVEs 2000, p. 180-182.

Table 5: The Change of Capital Structure of TVEs in Fujian Province

in 100 mill. yuan

year	total capital	state	credit	outside capital	of that foreign capital	Self raised Funds	of F individuals (masses)	growth rate of g	(g/a)	(g/f)
	a	b	c	d	e	F	g	%	%	%
1986	4.5	0.42	1.32	1.95	0.07	0.64	0.12		3	18.8
1990	4.38	0.56	1.05	1.51	1.3	1.06	0.2	50	4	17.0
1992	27.73	1.2	4.94	7.8	5.2	12.48	7.2	3900	26	57.7
1993	55.25	1.8	10.9	17.8	12.9	21.45	11.2	55	20	52.1
1995	68.73	1.3	9.5	31.0	26.2	22.92	9.8	-12	14	42.9
1996	62.9	1.4	10.1	24.8	18.7	23.45	9.2	-6	15	39.3
1997	70.73	1.2	9.37	38.6	31.7	19.18	11.2	21	16	58.3

Table 6: The Loans Structure of Collective TVEs in Suzhou, Jiangsu Province

in 100 mill. yuan

year	loans from banks	loans from informal financial institutions	loans from internal enterprise	loans from business partnership	total	share of informal financial institutions	share of Internal enterprise	share of b and c
	a	b	c	d	t	b/t	c/t	(b+c)/t
						in %	in %	in %
1980	1.68	2.75	0.65	1.29	6.37	43.20	10.20	53.40
1982	2.85	4.00	1.11	2.21	10.2	39.33	10.91	50.25
1983	3.81	4.82	1.77	2.35	12.8	37.80	13.88	51.69
1984	8.4	8.17	3.12	3.68	23.4	34.96	13.35	48.31
1985	10.4	14.09	3.9	8.35	36.7	38.35	10.62	48.97
1986	16.24	18.73	5.09	8.34	48.4	38.70	10.52	49.21
1987	22.74	26.44	7.13	9.18	65.5	40.37	10.89	51.26
1988	26.97	44.96	9.79	13.63	95.4	47.15	10.27	57.42
1989	29.22	49.41	11.51	14.83	105	47.07	10.97	58.04
1990	36.34	51.72	12.9	19.09	120	43.08	10.75	53.83
1991	49.69	65.22	16.57	26.24	158	41.35	10.51	51.86
1992	71.83	104.88	23.17	40.26	240	43.67	9.65	53.32
1993	92.53	153.93	35.24	71.5	353	43.58	9.98	53.56
1994	122.5	172.06	55.41	101.84	452	38.08	12.26	50.35

* ABC: the Agricultural Bank of China; RCC: Rural Credit Cooperatives

Source: Xu, Zhiming and Zhang, Jianliang, 1997. p. 41.

5.2.2 *The Transformation of Collective TVEs*

The transformation of collective TVEs is also an important reason for the high savings of rural households. The transformation of collective TVEs in China proceeded as follows:

Manager-run based on contracts > shareholding cooperative enterprises > privatization

A strongly forced saving effect was apparent in every stage of the transformation. In the first stage, the managers – if they were not cadres – had to pay the guarantee for the contract giving them the right to run the enterprise (Diyan Chengbao) in many cases. In the second and third stage, collective TVEs were transformed to private ones, with the main form being shareholding or shareholding cooperative enterprises. In this process, managers buy and hold a large part of shares in order to keep their manager positions. There are two main ways of doing this in practice: first, the shares were sold to its key managers (general managers) or to a small group of managers (general manager with other manager staff); second, the shares were sold to a legal person (usually the original manager), who then reorganized the enterprise in the way of re-selling the shares to other individuals and institutions. The managers and the board members are the main owners of the shares after the transformation¹⁵.

The shares of TVEs were also sold to employees. In this process, the motivation of buying shares was to participate in the profits of TVEs. But some of them were forced to purchase the shares, in order not to lose their jobs or their original shares (free shares). In many collective TVEs, the total assets of the enterprise were assessed and first divided into collective and individual parts. The individual parts were distributed to the employees who don't have to pay for it. These shares were named original shares (free shares) (Yuanshigu or Gongxianggu). But the employees had to buy the shares issued for new investment (Xingu), also called cash shares (Xianjingu), before they could obtain their free shares. In many cases, the relation of the value of new shares and free shares was 1:1 or 2:1 (Xiao, Zhongming, Yao, Xiaoxia and Ding, Jingwen, 1996, pp. 53-56).

5.2.3 *The Development of Private TVEs*

Private TVEs in rural China emerged and developed during the reform period. This development constitutes an interaction process between policy makers and rural HHs, in which the policy on private TVEs was forced to change step by step, from “prohibition” to “permission”, under the peasants’ pursuit of private ownership (Zhu, Qiuxia/Elbern, 2002). Because political support was lacking, private TVEs suffered discrimination from formal financial institutions. Households running an enterprise had to solve the capital resources problem by themselves in two main ways: 1) The conventional way of capital formation; 2)

¹⁵ Literature describing this privatization method, see Dong, Xiaoyuan, et al., 2002, pp. 415-237.

Innovative financial methods. The latter one is important for the fast development of private TVEs.

1) *The conventional way*

The starting point for rural HHs in China is extremely difficult, since they didn't possess any bequest from the older generation after 40 years of collective economy, and they didn't own any land which could be used as collateral for loans from banks. A few investigations on private TVEs show their capital source. In many investigations of private enterprises, about 70% of the enterprises were set up without any loans from formal financial institutions. Their starting capital consisted of their own savings, loans from informal capital markets and shares (Zhu, Qiuxia, 1990, pp. 11-13). There are two conventional ways of accumulating capital: they can only save money by themselves or borrow money from the informal financial market. Considering the first way, saving is active (of their own free will). Considering the second way in which HH B borrows money either directly from HH A whose members are either HH B's relatives and friends or indirectly from HH A via informal intermediaries, saving is passive from HH A's point of view, since HH A is forced to save (the borrowing process is at the same time a saving process for HH A, because HH A can not consume with this money) for the borrowing purpose or to satisfy the capital demand of HH B (demand-pushed saving). However, in anyway, this process does not constitute a financial innovation, and the amount of capital supply is limited. Furthermore, informal financial intermediaries are illegal, thus limiting their borrowing activities only to a village or to a small group of people. At the beginning of the development of private TVEs, **self-employed enterprises** (according to the Chinese statistical definition) are the main form of private TVEs, farm households could set up these enterprises only by means of their savings or borrowings from relatives or friends. They could enlarge their enterprises with new investments financed out of the profits. But this natural individual capital accumulation process is too slow to develop enterprises.

2) *The innovative way*

In order to overcome the problem of "capital accumulation speed", the few farm households joined together to set up an enterprise. The **joined households enterprises** (Lianhui Qiye) were an important enterprise form at the beginning of 1980s (for data, s. Zhu/Elben, 2002). **Shareholding cooperative enterprises** are also an enterprise form for capital accumulation and were developed in the late 1980s and 1990s. In many cases, private shareholding cooperative enterprises are in fact the same as joined households. Shareholders are only a few households. Although the person partnership is probably an important enterprise form to enhance capital accumulation at the early period of industrialization in any country, in China, however, the size and the role of this enterprise form go beyond that in other countries, because the natural process of the rural private industrialization was broken out by collective economy. These two enterprise forms are an institutional innovation, with which the rural HHs could effectively enhance the speed of their capital supply and develop the TVEs to a large size within a short period. This can be defined as capital concentration at the primary level. In this innovation process, the traditional family relations have also been innovated. In the search for a partnership of stockholders, the

network family plays an important role. A network family is a new development of the traditional family and clan that is limited to only one family name of the male part. Due to family planning, the size of rural HHs is smaller than in the past, and furthermore, common assets of the traditional clan were abolished after China's first land reform. The network family enlarges the family relation cycle to the woman's family cycle. The partnership of stockholders was mainly based on the network family, brothers and sisters of the husband and the wife and their relatives¹⁶. In this way, individuals directly invest capital in enterprises. According to the investigation in Wenzhou in 1990 in 435 Shareholding cooperative enterprises, the individual shares amounted to 64.6 million Yuan, its ratio of the total capital to 89.4%. Of all the individual shares, 63% were possessed by employees (Xu, Zhengnan, 1992, p. 14).

In some private shareholding cooperative enterprises, employees possess shares in the form of "Daizi Jinchang" – joining the company with capital. This is also an innovative way to get capital. Every worker has a small number of shares that he or she can finance by household savings or by borrowing money on the informal financial market. For companies that have a large number of employees, the total value of the employee-owned shares is considerable and can play an important role in the investment of the enterprise.

Another important financing method is "paying wages with delay". This method was first used in collective TVEs and then also in private ones. It is a common practice. In some cases, employers (all types of TVEs) paid their workers with a delay of 6 months or one year. In this situation, TVE workers are forced to save. Only few literature sources refer to this common phenomenon: "It is also noteworthy that a kind of unnamed informal financial organization appeared in recent years, that is the TVEs. These enterprises generally do not have sufficient working capital and adopt a policy of forcing their employees to save. Each month, their employees receive a small amount to cover their living expenses, while the remaining wages are invested in the factory with the promise that, by the end of the year, the management will pay interest which is 2-3% higher than the official interest rate. In order to keep their jobs, the employees usually do not argue about this and regard the policy to be a regulation of the enterprise"(Zhu, Ling, Jiang and Von Braun, 1997, pp. 40-41). The reasons for this illegal "wages debt" method are the following: Non-farm jobs are very scarce for employees. In order to keep their jobs, they have to wait for the payment. Also, many employees are somehow related to the employer. Thus they believe that they will be paid when the employer sells his products and gets paid. This trust between the employer and employees is the institutional basis for this "debt" relation.

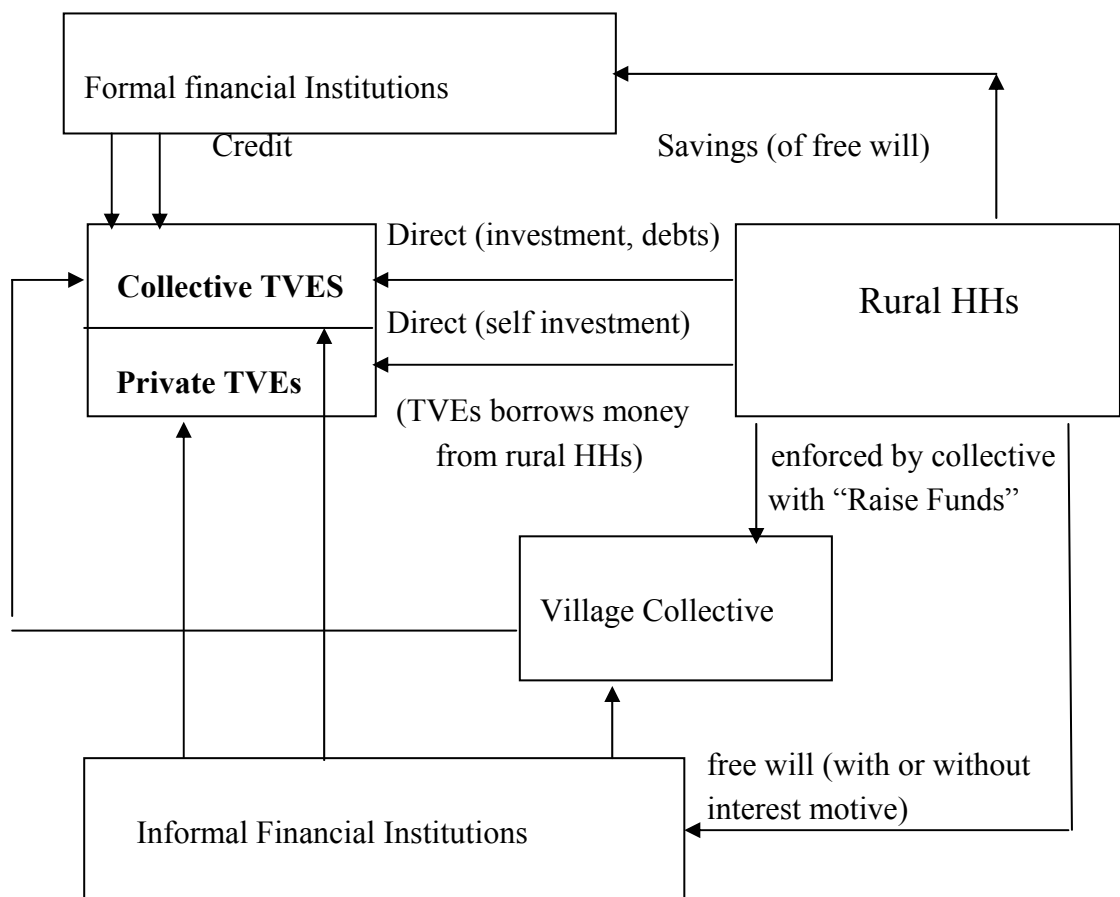
¹⁶ In the field study in five villages, the main shareholders are members of the network family, Zhu, Qiuxia, 1998.

5.3 Development of the Informal Financial Market in Rural Areas

The capital demand of the TVEs leads to the recovery of the rural informal capital market. At the same time, the informal financial market enhances household savings. The high interest rate on the informal financial market has a considerable impact on the savings. The interest rate was approximately 30% for private loans in rural China in the 1980s. “For instance, the rate of interest for production loans is proximately two to three times higher than the official rate of interest, while the rate for speculative trading loans might be as much as five times higher. The monthly interest will be at least around 50%.” (Zhu, Ling, et al. 1997, p. 57. p.102).

In summary, the financial innovation of TVEs in the transformation process had a great impact on the savings of rural households. All new investment in TVEs came from rural households. Figure 1 shows these relations.

Figure 1: The Relations between HHs, TVEs and Financial Institutions in Capital Formation of TVEs



6 Descriptive Analyze of Saving Rates

6.1 Aggregate Saving Rates

In national terms, savings consist of government savings, enterprise savings and household savings. In the course of the transformation in China, household savings became a main part of the total national savings. To understand the high saving rates in China, we first have to estimate the real saving rates since the reform (1978). A. Kraay used the definition of gross national saving rates (aggregate saving rates). Average saving rates¹⁷ amounted to 36.6% of gross national disposable income from 1978 to 1995 and exceeded 40% in 1995 (A. Kraay, 1998, Figure 1, p. 4 and Figure 2, p. 6). According to Mu's estimation, domestic saving rates¹⁸ increased from 31.0% in 1980 to 48.7 % in 1995, *a total increase of 17.7 percentage points in the period* (Mu, Guodong, 1998, p. 462, Table 19.1). In this study, we have estimated the final capital formation rate from the gross domestic product as saving rates, using the expenditure approach. Table 7 shows that the capital formation rate was 38% in 1978, 40.8% in 1995, and 37.0% in 1999. It was high and increasing since 1978, but the total growth was 5.6 percentage points from 1980 to 1995, (far less than Mu's estimation of 17.7). The figures differed by almost 12.1% (17.7% -5.6%).

¹⁷ Gross national saving rate is expressed as a percentage of gross national disposable income (GNP plus net transfers), both at current prices, A. Kraay, 1998, Figure 1, p. 4.

¹⁸ The domestic saving rate is used here to express total domestic saving as a per cent of gross domestic product (GDP), Mu, Guodong, 1998, Table 19, p. 462.

Table 7: Saving Rates by Expenditure Approach

Year	Gross Domestic				Capital Formation Rate (%)	Final Consumption Rate (%)
	Product by Expenditure Approach (100 million Yuan)	Final Consumption Expenditure	Gross Capital Formation	Net Export of Good and Services		
1978	3605.6	2239.1	1377.9	-11.4	38.0	61.8
1979	4074.0	2619.4	1474.2	-19.6	36.5	64.9
1980	4551.3	2976.1	1590.0	-14.8	35.2	65.9
1981	4901.4	3309.1	1581.0	11.3	32.5	68.1
1982	5489.2	3637.9	1760.2	91.1	33.2	68.7
1983	6076.3	4020.5	2005.0	50.8	33.8	67.7
1984	7164.4	4694.5	2468.6	1.3	34.4	65.5
1985	8792.1	5773.0	3386.0	-366.9	37.8	64.4
1986	10132.8	6542.0	3846.0	-255.2	37.7	64.1
1987	11784.7	7451.2	4322.0	11.5	36.1	62.3
1988	14704.0	9360.1	5495.0	-151.1	36.8	62.7
1989	16466.0	10556.5	6095.0	-185.5	36.0	62.4
1990	18319.5	11365.2	6444.0	510.3	34.7	61.3
1991	21280.4	13145.9	7517.0	617.5	34.8	60.8
1992	25863.7	15952.1	9636.0	275.6	36.2	59.9
1993	34500.7	20182.1	14998.0	-679.4	43.3	58.3
1994	46690.7	26796.0	19260.6	634.1	41.2	57.3
1995	58510.5	33635.0	23877.0	998.5	40.8	57.5
1996	68330.4	40003.9	26867.2	1459.3	39.6	58.9
1997	74894.2	43579.4	28457.6	2857.2	38.2	58.5
1998	79003.3	46405.9	29545.9	3051.5	37.4	58.7
1999	82429.7	49684.6	30496.3	2248.8	37.0	60.3

Source: China Statistical Yearbook 2000, p. 65. Data in value terms in this table are calculated at current prices.

6.2 Saving Rates by Rural and Urban Households

In empirical savings research, there are two alternative ways for measuring savings: by subtracting consumption from household income and by observing changes in the holdings of personal assets (Kochar, A. 2000, p.187). In this study, the first method was used Figure 2

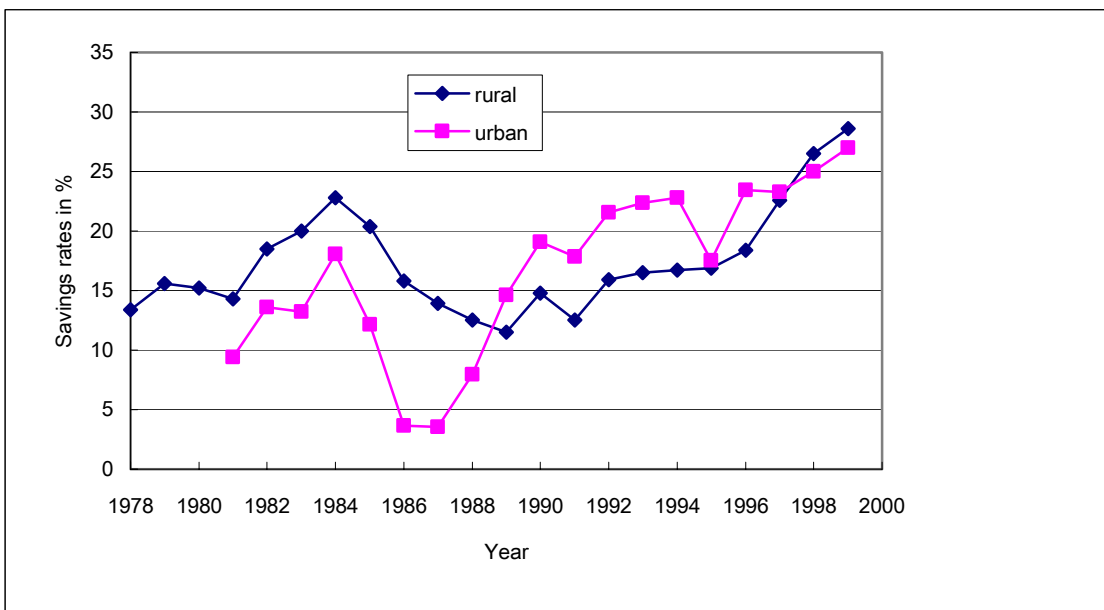
shows the saving rates of rural and urban households from 1978 to 1998 according to the following equation:

$$SR = (I - C)/I, \text{ where } SR: \text{ Saving rate; } I: \text{ Disposable income; } C: \text{ Consumption expenditure}^{19}.$$

The saving rate of rural households rose from 13.4% in 1978 to 16.9% in 1995 and 28.6% in 1999. The saving rate of the urban households increased from 9.41% in 1980 to 17.54% in 1995 and 27% in 1999.

The curves in Figure 2 show a clear effect of income growth on the change of saving rates. The reform, especially “the Production Responsibility System”, began at first in rural areas and was then adopted in state-owned units in urban areas. Accordingly, the saving rate of rural households exceeded that of urban households in early years but the two became almost identical in more recent years.

Figure 2: Saving Rates of Rural and Urban Households in China



Source: China Statistical Yearbook 1996, 1999, 2000.

¹⁹ Here consumption expenditure includes the expenditure for house building.

6.3 Saving Rates of Rural Households (“nonghu”) in Three Provinces

6.3.1 Saving Rates of Rural Households

Methods of data collection

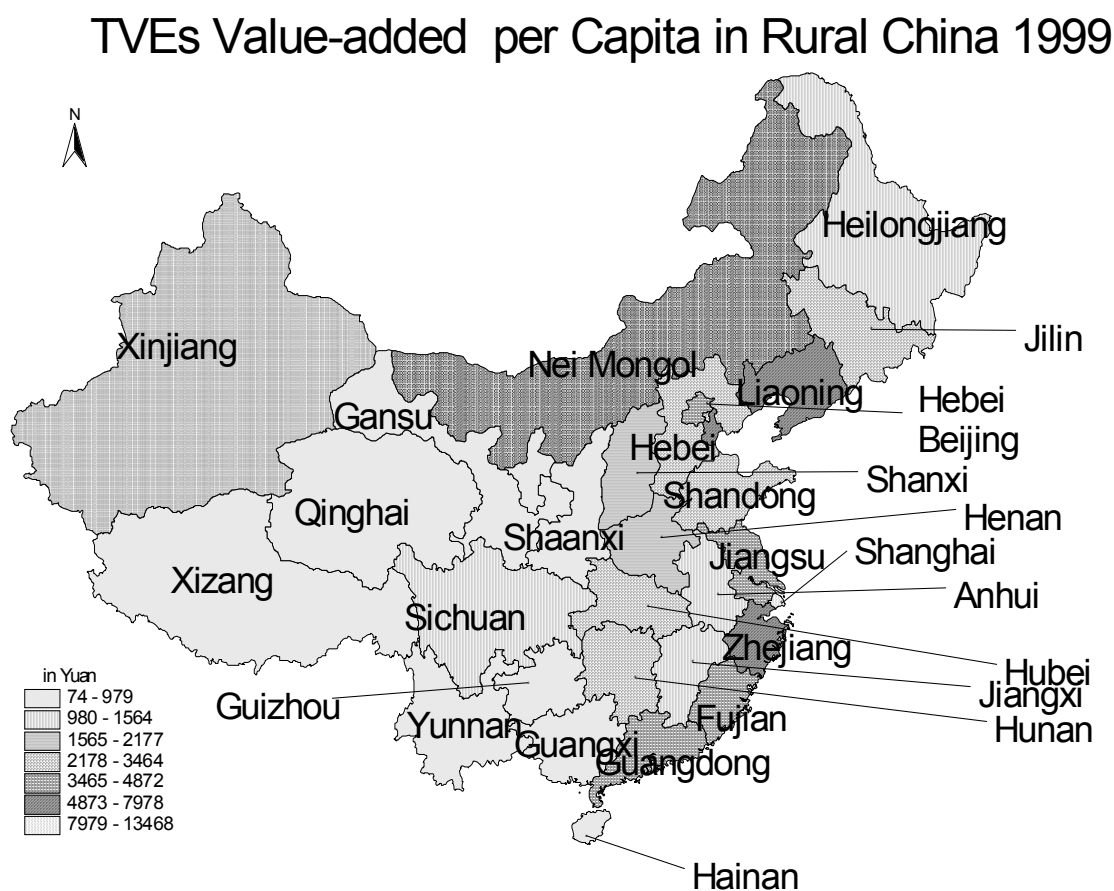
There are two methods collecting data for per capita income of rural households in China. Using the first one, the State Statistical Bureau (SSB) sends an investigation group to collect statistics directly from the grassroots level through sampling across the country. The other method, regulated by the Ministry of Agriculture, obtains the statistics by dividing the net income of sampled rural households by the number of household members. The net income is the gross income minus the total costs including production costs, taxes, fees and other charges. In this study the survey data were collected with the method of the Ministry of Agriculture (MA).

Selection of sample provinces

To estimate household savings in rural China, we have chosen household survey data (1995) with N = 2200 HHs from three provinces: Jiangsu, Shandong and Sichuan²⁰. Jiangsu has been one of the most developed regions for a long time, whereas Shandong is a newly developed province. Both provinces are situated in the eastern coastal region of China, whereas Sichuan is among the 10 poorest provinces. In 1995 the per capita net income for the three provinces was as follows: 2,622 yuan (Jiangsu), 2,235 yuan (Shandong), and 1,192 yuan (Sichuan). In 1999 it was: 3,495 yuan (Jiangsu), 2,549 yuan (Shandong), and 1,843(Sichuan) yuan. Jiangsu is the province where the initial development of collective TVEs took place. TVE development in Shandong has been very dynamic in recent years and reached medium level in China in 1995. Fig. 3 illustrate the position of these three provinces in China in terms of TVE value-added per capita. What happened in the three provinces is considered to be representative of whole China.

²⁰ The data sources: the survey data of the Rural Sample Survey Station. The samples of the survey are collected according to the stratified (three income categories) random method among 30% of the total rural households. The household samples are objects of long fixed observations by the office of the Rural Fixed Observation Office of MA. The total samples cover 300 administrative villages with 30000 rural households. This system was established in 1986 (Policy Research office of the CC of the CPC and the Minister of Agriculture, the Office of the Rural Sample Survey Station, 1992, p.1).

Figure 3: TVEs Value-added per Capita in Rural China 1999



Source: The author; Data: The Yearbook of TVEs 2000, p. 119.

Statistical estimation

Using the survey data, the following two saving rates were computed.

$$\text{Saving rate 1 (SR1)} = (\text{net income}^{21} - \text{consumption expenditure}) / \text{net income}.$$

SR1 includes productive investments, but does not include investments in non-productive fixed capital. For rural HHs in China, an important item of non-productive investments is house building. If this is considered in the savings calculation, then we will obtain the following formula:

²¹ Net income = total income – (other income + production costs + tax + contributions to collectives). In this formula, the expenditure on fixed capital is included in the net income so that “net income” in this survey refers to disposable income.

$$\text{Saving rate 2 (SR2)} = (\text{net income} - \text{consumption expenditure} + \text{expenditure for housing})^{22} / \text{net income}.$$

Table 8 shows the results. A total of 2200 households (HHs) are divided in two household with positive and negative savings in the three provinces. Per-capita savings amounted to 543 Yuan (2016 Yuan per household), with the average SR1 being 16%. The level of economic development in the three provinces may imply that the saving rates in these provinces would be higher than that of the nation as a whole, but in fact it is 0.9 percentage points below the national level (16.9%) (s. Figure 2). Nevertheless, we can reasonably consider that data from these three provinces are representative of the whole of China. In the group with positive savings the saving rate is 35%, and in the group with negative savings the debt rate amounts to 59%. An important finding is that among the three provinces the saving rate in Shandong exceeds that in Jiangsu by 7%, while the per capita average income in Shandong is 387 Yuan lower. There are two possible explanations for the remarkably high saving rate in Shandong. First, the growth of consumption is delayed compared to the income growth, because Shandong is a new rich province. Secondly, the privatization of TVEs in Shandong has made rapid progress at that time.

The average SR2 for the 2200 HHs is 25%, exceeding SR1 by 9 percentage points, but the difference among the provinces is less considerable. SR1 for Jiangsu, Shandong, and Sichuan are respectively 17%, 24%, and 8%. The corresponding SR2 for the three provinces are 28%, 31%, and 17%.

Table 8: Savings and Saving Rates without Housing Expenditure (S1 and SR1), 1995

	Households	Saving Average	Standard Error	Saving Rates Average	Standard Error	Net Income Average	Standard Error
		S1		SR1			
		in yuan	in yuan	in %	in %	in yuan	in yuan
Total	2200	543	1380	16	61	2149	1380
Positive savings	1751	916	978	35	19	8595	5060
Negative savings	449	-909	1719	-59	100	5826	3706
Jiangsu	810	611	1663	17	59	2622	1335
Shandong	640	736	1207	24	56	2235	1394
Sichuan	750	305	1124	8	67	1564	1192

²² The Expenditure on house building is “the expenditure of housing “ in the survey explanation. That includes rent, costs for electricity, house repairs, expenditure on building new houses and all expenditures for construction materials for house repairs and building in the current year. If the materials for house repairs and building are produced by the households themselves, and if these costs are valued and included in the income, then they will not be included in the expenditure (Policy Research office of the CC of the CPC and the Minster of Agriculture, the Office of the Rural Sample Survey Station, 1996, p. 27).

Table 9: Savings per Capita and Saving Rates Including Housing Expenditure (S2 and SR2), 1995

	Households	Savings Average	Standard Error	Saving Rates Average	Standard Error
		S2		SR2	
		In yuan	in yuan	in %	in %
Total	2200	750	1744	25	68
Positive savings	1809	1060	1611	41	49
Negative savings	391	-686	1356	-49	89
Jiangsu	810	867	1877	28	57
Shandong	640	910	1499	31	61
Sichuan	750	486	1761	17	81

Based on estimates of SR1 and SR2, we have estimated that 9% (25%-16%) of the total savings were spent on house building. A study estimated that the income elasticity of house building is higher than 1. Probably the preference of the house building in rural China also exceeds that in other countries, because in China rural HHs can obtain land for house building more easily under the collective land ownership²³. To focus on the hypotheses of this paper, we will apply SR1 (without the factor of house building) in the analyses of the following sections.

6.3.2 Saving Rates of the TVE Manager Households

HHs with TVEs managers have a higher saving rate than those without TVEs managers²⁴.

Table 10 shows the significant differences between these two groups. Among the total sample, HHs with main workforce as manager in TVEs amounted to 226. The average saving rate of manager HHs is 27%, exceeding that of non-manager HHs by 12 percentage points, and per capita savings are twice as high as those of the non-manager HHs (3971:1833). The average saving rate of the manager HHs with positive savings is 40%, exceeding those of non-manager HHs by only 6 percentage points. On the other hand, only 34 manager HHs have negative savings, 16 percentage points below the corresponding level of non-manager HHs. The lower debts of manager HHs is likely to indicate that manager HHs financed their business more by their own savings. This probably proves the hypothesis that the investment of TVEs forced the rural HHs to save.

²³ Pang, Lihua, 2001.

²⁴Managers in TVEs include six types: 1) in collective TVEs; 2) in self-employed enterprises; 3) in shareholding and shareholding cooperative enterprises; 4) in partnership enterprises; 5) in private TVEs; 6) in TVEs with foreign capital.

Table 10: Savings per Capita and Saving Rates of Manager HHs and Non-Manager HHs (SR1), 1995

	N	Savings Average	Standard Error	Saving Rate Average	Standard Error
		in yuan	in yuan	in %	in %
Total manager HHs	226	3971	5830	27.3	38
Manager HHs with positive savings	192	5341	4600	40	18
Manager HHs with negative savings	34	-3767	6049	-44	43
Total non-manager HHs	1973	1833	5113	15	63
Non-manager HHs with positive savings	1558	3217	3262	34	0.48
Non-manager HHs with negative savings	415	-3362	7085	-60	103

6.3.3 Saving Rates of the TVE Worker Households

The saving rate of TVE worker HHs exceeds that of HHs without workers in TVEs.

Table 11 shows the differences between the HHs with main labor as worker in TVEs and the HHs without TVEs workers in savings per capita and saving rates. The HHs with main labour²⁵ in non-farm activities were subdivided in many groups, however considering the focus of this study, we only use HHs with peasant workers (Nong Ming Gong)²⁶ from the samples and comparative them with HHs without peasant workers, managers in TVEs and other non farm employees. Among the total sample, HHs with peasant workers amounted to 562 HHs, constituting 25.6% of the total HHs. The average saving rate of HHs with peasant workers is 20.4%, with average savings of 621 Yuan. Among them, 463 HHs show positive savings, with average savings of 1013 Yuan and a saving rate of 38.6%. HHs without workers in TVEs have lower savings, with average savings of 811 Yuan and a saving rate of 11.7%.

²⁵ The main labour (Zhuyao laodongli) is a working household member who is the decision maker on economic activities of a household.

²⁶ Peasant workers are peasants who work full time or most of time in non-farm sectors by following employers: a. collective-owned TVEs; b. state-owned enterprises and institutions; c. others (The data of the group c is not available).

Table 11: Savings and Saving Rates of Peasant-Worker HHs and Other HHs, 1995

		N	Savings Average	Standard Error	Saving Rate Average	Standard Error
			in yuan	in yuan	in %	in %
Total peasant worker HHs		562	621	1337	20.4	
	HHs with positive savings	463	1013	826	38.6	18.3
	HHs with negative savings	99	-1212	1703	-64.5	91.1
HHs without peasant workers in TVEs *		1241	445	1385	11.7	66.8
	HHs with positive savings	957	811	1010	32.9	19.1
	HHs with negative savings	284	-790	1726	-59.4	108

* HHs without peasant worker, manager in TVEs and the other non farm employees.

6.4 Descriptive Statistical Analysis of Households Characteristics

In the above section, we have analysed the determinants of savings suggested by theoretical assumptions. Due to the data limitations, only a few determinants can be tested in this study. Especially the education of children is one of the important saving motivations which, however, cannot be tested in this study because demographic data are lacking in the survey data.

To identify the savings patterns, we split the explanatory variables into characteristics of a household and the characteristics of the main labor force of the household.

Characteristics of a household include: 1) income: net income per capita in Yuan; 2) ownership of productive assets; 3) ownership of non-productive assets; 4) Household size; and 5) types of household activity .

Characteristics of the main labor force of a household include: 1) age; 2) education level; and 3) employment status.²⁷

The **employment** status includes managerial position in TVEs or jobs as peasant worker and other non-farm employees. The manager in TVEs included the manager in self-employed enterprises. It is note-worthy that self-employed enterprises were not considered as “enterprises

²⁷ Because the types of household economy include agricultural and other activities as one group, so in the employment status of main labor, ‘farmer’ is excluded.

“in Chinese statistics, but are nevertheless regarded as households enterprises in LSMS²⁸. Since a manager in a self-employed enterprise is at the same time the owner of the enterprise, they should also belong to the group of private TVEs, which also include managers in shareholding and shareholding cooperative enterprises and managers in partnership enterprises. However, managers and owners of these four types of enterprises are not always the same person, because part of the ownership may belong to local government or other institutions. Therefore a more precise categorization is applied.

Table 12 and Table 13 illustrate the relations between the determinants and household savings.

²⁸ LSMS: *Living Standards Measurements Study*, conducted by the World Bank; See “Designing Household Survey Questionnaires for Developing Countries”, The World Bank, 2000.

Table 12: Saving Rates by Factors: Three Provinces, 1995

		Mean	Maximum	Minimum	Median	Std D.	Obs.(N)	N, %
Full sample		16,1	88,98	-883,73	27,8	61,4	2196	100
Household characteristics								
Income								
Lowest	1	-14,8	61,9	-810,4	4,5	75,6	439	20,0
2nd lowest	2	16,3	81,9	-883,7	24,4	55,1	439	20,0
Middle	3	17,7	74,1	-652,0	30,7	67,0	440	20,0
High	4	25,7	84,0	-496,0	35,4	49,6	439	20,0
Highest	5	35,4	89,0	-290,7	44,6	42,1	439	20,0
Productive assets ownership								
Lowest	1	23,7	87,3	-293,8	31,2	41,5	437	19,9
2nd lowest	2	10,2	79,7	-548,5	22,7	58,3	432	19,7
Middle	3	12,2	81,9	-810,4	27,1	70,9	449	20,5
High	4	13,1	83,8	-883,7	28,1	72,0	438	20,0
Highest	5	21,1	89,0	-638,0	32,6	58,1	439	20,0
Nonproductive assets ownership								
Lowest	1	13,0	74,7	-401,3	19,2	40,6	439	20,0
2nd lowest	2	17,4	87,3	-652,0	25,8	55,6	439	20,0
Middle	3	17,5	83,2	-548,5	27,7	51,1	439	20,0
High	4	18,7	83,9	-883,7	33,3	66,7	440	20,0
Highest	5	13,9	89,0	-810,4	34,0	84,0	439	20,0
Households size								
1-3		17,3	89,0	-652,0	28,1	55,8	861	39,2
4 and more		15,3	87,3	-883,7	27,6	64,8	1335	60,8
Types of household activity								
Agriculture and other activity		12,5	87,3	-652,0	24,5	64,3	834	38,0
Agriculture as main activity		17,5	89,0	-883,7	28,8	61,5	1094	49,8
Non agriculture as main activity		20,5	79,0	-293,8	34,5	51,6	181	8,2
Non agriculture		27,1	75,7	-43,2	31,0	29,7	62	2,8
Main labor of Characteristics								
Main labor as Manager in TVEs								
		27,26	78,97	-179,29	34,43	38,02	226	10,3
<i>Manager in collective TVEs</i>		25,8	74,0	-95,0	29,4	33,2	52	2,4
<i>Manager in self-employed TVEs</i>		30,5	79,0	-88,4	39,1	36,9	110	5,0
<i>Manager in shareholding and shareholding cooperative TVEs</i>		38,0	53,4	-4,2	40,2	13,8	14	0,6
<i>Manager in partnership TVEs</i>		35,6	64,8	16,6	33,1	13,2	12	0,6
<i>Manager in private TVEs</i>		11,0	72,9	-179,3	25,1	59,8	29	1,3
<i>Manager in TVEs with foreign capitals</i>		20,6	48,5	-7,9	15,4	22,4	9	0,4
Main labor as peasant-worker								
		20,5	81,9	-548,5	33,4	57,3	562	25,6
<i>in collective TVEs</i>		25,3	81,9	-293,3	34,7	48,5	365	16,6
<i>in state-owned Enterprise</i>		9,6	69,7	-548,5	35	86,6	108	4,9
Main labor as non farm employee								
		20,4	84,7	-496	30,2	50,3	285	13
Education level of main labor								
Illiterate and half illiterate		2,0	72,2	-810,4	20,4	102,3	126	5,7
Primary school		11,5	89,0	-883,7	26,0	71,2	843	38,4
Middle school		20,2	87,3	-408,0	29,4	45,2	966	44,0
Senior middle school and higher		22,3	83,8	-496,0	32,3	50,5	261	11,9
Age of main labor								
under 30		18,2	87,3	-290,5	28,7	44,1	220	10,0
31-40		13,3	83,9	-883,7	27,9	73,1	678	30,9
41-50		15,6	89,0	-810,4	27,8	60,5	815	37,1
51-60		19,5	84,0	-548,5	27,7	52,3	393	17,9
over 61		21,3	72,7	-266,2	26,5	43,2	90	4,1

Table 13: Saving Rates by Factors: Jiangsu, Shandong, Sichuan, 1995

	Jiangsu			Shandong			Sichuan			
	Mean	N	N, %	Mean	N	N, %	Mean	N	N, %	
Full sample	17,2	810	100	24,07	639	100	8	747	100	
Household characteristics										
Income										
Lowest	1	3,9	162	20	-13,1	127	19,9	-23,3	149	19,9
2nd lowest	2	7,4	162	20	21,2	128	20	3	150	20,1
Middle	3	11,2	162	20	32,7	128	20	12,5	149	19,9
High	4	29,7	162	20	35,5	128	20	13,2	150	20,1
Highest	5	33,9	162	20	43,8	128	20	34,5	149	19,9
Productive assets ownership										
Lowest	1	14,3	173	21,4	29,2	155	24,3	11,6	150	20,1
2nd lowest	2	10,8	151	18,6	30,3	100	15,7	10,1	151	20,2
Middle	3	20,3	162	20	13,9	128	20,1	8,2	150	20,1
High	4	21,4	162	20	14,9	130	20,4	1,4	147	19,7
Highest	5	19,2	162	20	32,3	126	19,6	8,6	149	19,9
Nonproductive assets ownership										
Lowest	1	14,4	161	19,9	26	127	19,9	12,5	149	19,9
2nd lowest	2	20,3	163	20,1	23,3	128	20	7	150	20,1
Middle	3	19,8	161	19,9	28,4	129	20,2	14,8	149	19,9
High	4	20,1	64	20,2	26,9	129	20,2	6,6	149	19,9
Highest	5	11,5	161	19,9	15,5	126	19,7	-0,8	150	20,1
Households size										
1-3		18,9	375	46,3	31,1	183	28,6	7	303	40,6
4 and more		15,8	435	53,7	21,3	456	71,4	8,6	444	59,4
Types of household activity										
Agriculture and other activity		13,2	353	43,6	15,9	233	36,5	8,8	273	36,5
Agriculture as main activity		24,4	388	47,9	28,3	325	50,9	1,3	381	51
Non agriculture as main activity		-4	64	7,9	37,4	34	5,3	32,5	83	11,1
Non agriculture		21,3	5	0,6	25,8	47	7,4	36,3	10	1,3
Main labor of Characteristics										
Main labor as Manager in TVEs		18,3	64	7,9	32	62	9,7	30,1	100	13,4
<i>Manager in collective TVEs</i>		21,7	29	3,6	27,6	18	2,8	43,1	5	0,7
<i>Manager in self-employed TVEs</i>		20,0	27	3,3	38,5	39	6,1	29,9	44	5,9
<i>Manager in shareholding and shareholding cooperative TVEs</i>					49,3	1	0,2	37,1	13	1,7
<i>Manager in partnership TVEs</i>		41,7	2	0,3	29,7	1	0,2	34,9	9	1,2
<i>Manager in private TVEs</i>		-14,4	6	0,7	-48,7	2	0,3	23,9	21	2,8
<i>Manager in TVEs with foreign capitals</i>					3,7	1	0,2	22,7	8	1,1
Main labor as peasant-worker		22,1	255	31,5	27	180	28,2	8	127	17
<i>in collective TVEs</i>		28,3	187	23,1	26,2	130	20,4	11,3	48	6,4
<i>in state-owned Enterprise</i>		8,7	40	4,9	29,6	36	5,6	-11,9	32	4,3
Main labor as non farm employee		13,1	86	10,6	25,3	104	16,3	21,6	95	12,7
Education level of main labor										
Illiterate and half illiterate		24,2	51	6,3	-47,4	16	2,5	-3,7	59	7,9
Primary school		16,3	311	38,4	16,2	200	31,3	4,1	332	44,4
Middle school		18,1	326	40,2	29,3	327	51,2	13	313	41,9
Senior middle school and higher		14,2	122	15,1	34,7	96	15	17,5	43	5,8
Age of main labor										
under 30		23,1	31	3,8	26	49	7,7	14,3	140	18,7
31-40		14,7	235	29	25,4	202	31,6	1,7	241	32,3
41-50		16,2	354	43,7	22,1	236	36,9	7,9	225	30,1
51-60		20	154	19	24,6	129	20,2	13	110	14,7
over 60		27,6	36	4,4	25,5	23	3,6	10,8	31	4,1

Relation between income and saving rates

The data set classifies five income groups. In the three provinces, the lowest income group shows a negative saving rate of -14.8%, whereas the highest income group has a saving rate of 35.4%. There is only a small difference (1.4 %) between saving rates of the second and of the third income group. In Jiangsu province (the richest province), the saving rates of all income groups are positive, but the saving rates of the third and fifth income groups are lower than the average of the three provinces. In Shandong and Sichuan provinces, the lowest income groups have negative saving rates. The saving rates of the high and highest income groups in Shandong are higher than these of Jiangsu (with 35.5% and 43.8% compared to 29.7% and 33.9%). Sichuan province shows the lowest saving rate, only half of the national level. The lowest income group has a saving rate of -23% and that for the second lowest income group is only 3%. This seems to be consistent with the theory that claims income to be the important determinant of savings. Generally, the data show a linear relation between income and saving rates.

Relation between assets and saving rates

In the total sample, groups with both the lowest and the highest amount of productive assets have relatively high saving rates, while groups in the middle show an inversely proportional relation between the two variables. The use of savings for purchasing productive assets as well as high savings due to owning or purchasing only a small number of productive assets are probably explanations for the inversely proportional relation. Shandong province shows the same relations as the three provinces in average, but in Jiangsu the high productive assets group show high saving rates, whereas in Sichuan the lowest and second lowest group have higher saving rates than the higher one.

In the total sample, **non-productive assets** were classified into five groups. The relation between the saving rate and amount of non-productive assets resembles the relation between productive assets and saving rate. In Sichuan province, the group with a highest amount of non-productive assets shows a saving rate of -0.8%. Presumably, this trend shows that a large part of savings is spent for non-productive assets, or that households borrow the money for purchasing those assets, in poor provinces.

Relation between non-agricultural activities of the households and saving rates

As expected, non-agricultural activities of the households have a positive impact on saving rates. According to their productive activities, rural households are classified into five groups. For the total sample, households with agricultural production as main activity and non-agricultural production as a sideline, making up 49.8% of all households in the three provinces, have an above-average saving rate of 17.5%. Households with non-agricultural production as the main activity and agricultural production as a sideline, as well as HHs whose main activity is only non-agricultural production show significantly higher saving rates of 20.5% and 27.1%, respectively.

Relation between education level and saving rates

The education level of the main workforce has a positive impact on saving rates, the higher the education level the higher the saving rates. Only the data of Jiangsu province indicate another relation. In Jiangsu, the group with the lowest education level for the main workforce has the highest saving rate (24.2%), which is positive and higher than province average (17.2%). Differences of saving rates between HHs whose main labor had middle school education and HHs whose main labor had primary school education are 13.1 percentage points (29.3%-16.2%) in Shandong, 9.1 percentage points (13.0%-4.1%) in Sichuan, but only 1.8 percentage points (18.1%-16.3%) in Jiangsu.

Relation between age and saving rates

The impact of age on saving rates is not clear. The age group of 31-40 shows the lowest saving rate, much lower than the age group of under-30s. For age groups of 40-50 and older, the saving rate increases linearly with age. This relation is similar in Shandong and Jiangsu, in Sichuan province the age group of 31-40 has extremely low saving rates, far below the average of the three provinces, 1.7% versus 8%. Possible explanations are: 1) The youngest group has to save in order to buy durable consumer goods or to build a house, since savings do not include the investment in non-productive assets; 2) The main labor at the age of 31-40 have young children, hence the low savings.

Relation between TVE manager households and saving rates

Considering the total sample, HHs with a manager in shareholding and shareholding cooperative TVEs show the highest saving rate of 38%, while the second highest group is HHs with a manager in partnership TVEs (35.6%). The saving rate of HHs with a manager in self-employed TVEs is 30.5%. This group makes up nearly half of the manager HHs (110hhs). The high saving rates possibly reflect the strong capital demand of these TVEs. In practice, shareholding and shareholding cooperative TVEs exceed partnership or self-employed TVEs in size, hence having a higher capital demand, resulting in high savings.

The group with managers in private TVEs produces the lowest saving rate of 11%. Probable reasons is that private TVEs exceed self-employed TVEs in size and thus cannot be financed by managers (owners) themselves, but only by borrowing from informal or formal financial institutions, which is proven by the data of the three provinces. In Jiangsu, the saving rate of the group with managers in private TVEs is -14.4%, and in Shandong -48.7%. But in these two provinces there are only 8 HHs (6+2), but in Sichuan 21 HHs with high saving rate of 23% on average. Probably this is due to the small size of private TVEs in Sichuan that is nearly comparable to self-employed TVEs, which has to be financed by the owners themselves with their own savings.

In Jiangsu, the saving rate of manager HHs is significantly lower than in Shandong and in Sichuan (18.3%, 32%, and 30% respectively). The first reason for these results was the large group of HHs with managers in collective TVEs showing relatively low saving rate. The second reason is probably the sample itself, because among the sample in Jiangsu, there weren't any

HHs with managers in shareholding and shareholding cooperative TVEs as well as in TVEs with foreign capital. These HHs are probably under-represented.

Relation between TVEs worker HHs and saving rates

In the total sample, the difference of saving rates between HHs with peasant workers in collective enterprises and HHs with peasant workers in state-owned enterprises is large, with the former showing significantly higher saving rates and exceeding – except for Shandong – the latter by 15.9 percentage points (25.3% to 9.6%). The difference is an even larger 23.2% in Sichuan. Wages for workers in collective TVEs are normally lower than in state-owned enterprises. Probable reasons are: 1) Workers in collective TVEs contribute to the investment of the enterprise in forms of buying the job or buying shares; 2) Workers in collective TVEs are forced to save (e.g. to refrain from consumption) in forms of lending money to the enterprise or accepting the delayed payment of their wages.

7 Regression Analysis of the Determinants of Household Savings

The statistical analyses in the above section have provided some descriptions concerning the pattern of the relations between savings and selected factors of rural HHs. However, the weakness of the descriptive statistical analyses is that each determinant has been calculated without varying other determinants. Therefore we have to analyze the determinants of household savings with an econometric model that takes the effects of all determinants at the same time into account. Referring to a new study about the determinants of savings in some transformation countries²⁹, we employed the OLS model **with cross-sectional data for the estimation**.

The specification of household savings model is as follows

$$S_i = \beta_0 + X_{ij}\beta_j + \varepsilon_{ij},$$

$$\varepsilon_{ij} \sim N(0, 1), \quad i = 1, 2, \dots, n, \quad j = 1, 2, \dots, k.$$

S_i : Saving rate of household i .

X_{ij} : i^{th} household with j characteristics.

In order to solve the endogeneity problem between the productive assets ownership and saving rate, we created an instrumental variable for productive assets, using the productive assets ownership as dependent variable and using the following four variables – household activity, education level, age, household size – as independent variables. To test the influence of the village consumption level on HHs, a variable referring to the net income per capita of the village household residents was used as a proxy³⁰. Table 14 shows the results.

In the total sample of the three provinces, the **income level of the village** has a positive impact on the saving rates. In every province this factor has a positive effect, but the significance levels are different. In Jiangsu, the significance level is the highest, but the coefficient is smaller than in the other provinces. In Shandong, the significance level is similar to the total sample, but the coefficient is higher than in Jiangsu. In Sichuan, the significance level is lower than the 10% level, but the province shows the highest coefficient. This means that in poor regions, the village income level has no clear effect on the household savings.

In the total sample, the **education level of the three groups** has a negative impact on saving rates in comparison with reference group (senior middle school and higher). This negative effect of the group with illiterate and half illiterate education level is more significant than the

²⁹ S. Denizer, C., Wolf, Holger and Ying, Yvonne, 2002.

³⁰ Because only the income per capita of villages is available.

group with the primary and middle school education. The coefficient of the first group is also the lowest. This means that the lower the education level of the main labor of the HHs, the lower the saving rates of the HHs. There is a positive relation between the education level and the saving rates of HHs. In Shandong, the effect of education level is similar to the total sample. The significance level in Shandong is higher than in Sichuan. But in Jiangsu, it differs from the other provinces as it is insignificant.

In the total sample, the coefficients of **the four age groups** are negative and for three groups significant. The value of the coefficients of the age group of 31-40 is the lowest, this means that the age group of 31-40 has less savings than other groups. This age group is usually represented by young families with children who have higher living expenditures. Considering that the reference group is the age group of over 60 years, this result likely proved that there is a positive relation between the age of the main labor of HHs and their saving rates. Among the three provinces, only in Shandong the significance level and the coefficient value is similar high as the total sample.

In the total sample, the coefficients of **the group with non-agricultural production** as main activity are positive and the highest. This effect of the group with agriculture as main activity and non-agriculture as second on the saving rates is weaker. These results show that on the one hand non-agriculture is an important positive factor for the savings of the HHs, and on the other hand the HHs with the two activities have higher saving rates than the HHs with only one main activity. Income source combination of agriculture and non agriculture led to stable economic situation und high savings. But only in Shandong, this effect is similar to the total sample.

In the total sample and in every province, the coefficient of **household size** is negative, but not significant. In China there is probably no great difference in household size, there aren't any large families, so that this factor has no influence on the savings of HHs. In the total sample, the coefficient of **farm-land** is negative and the significance level is high. Presumably, the HHs with large farm land are HHs which only focus on agricultural activity, thus, their income is low and they are hardly able to save. However, only in Shandong this effect is similar to the total sample, probably because Shandong is the largest apple production region in China, HHs with large orchards are supported by formal financial institutions with loans and these HHs do not need to save.

In the total sample, the coefficient of **ownership of non-productive assets** is negative and significant, proving that for the majority of HHs the purpose of savings is to purchase durable consumer goods. As expected, the **ownership of productive assets** has positive effects on savings, in the total sample and in every province. This means the HHs who have more productive assets can earn a high income, thus accumulating higher savings. Only in Sichuan it is insignificant, probably the value of productive assets of the HHs in poor regions is not so high, hence not very important for the savings.

The coefficient of **the income from the village collective** for the total sample is positive, but insignificant. In Jiangsu and in Sichuan it is significant. For Shandong, however, this coefficient is far lower than the other two provinces and insignificant. In the total sample, the coefficients of **the income of managers in various TVEs** are positive. The factor of TVEs manager shows a clear positive effect on household savings. In the total sample, although the significance level of the HHs with manager in private TVEs is lower than the 10% level but above the 20% level, it can be used as an explanation factor. This means the HHs with manager in private TVEs have a greater positive effect on savings in comparison with HHs with manager in other enterprise types, and proved that private TVEs need to save for investments. Among the three provinces, only the coefficient of the income of managers in shareholding and shareholding cooperative TVEs in Jiangsu is higher than other provinces and has a lower significance level (not at 10% level, but with 1.334 T-value at 20% level). In the total sample and in the other two provinces this effect is insignificant. This result shows the clear positive effect of the HHs with manager in shareholding and shareholding cooperative TVEs on household savings in Jiangsu – an effect which has to be regarded in the context of the transformation process of collective TVEs, as described in the section 5.2.2. Since Jiangsu is a famous region of collective TVEs before the reform and the main privatization way after the reform followed the steps “first contract-running, then shareholding cooperative form”, the manager group are in many cases the main shareholder, whereas the collective (Town and Village) and the workers are the other shareholders.

The **income of peasant workers** has a positive impact on savings in the total sample and in every province. The coefficient in Jiangsu is higher than in other provinces, and the significance level is only in Jiangsu at the 10% level, in other provinces lower than the 10% level, because rural TVEs are well developed and many households have peasant workers in Jiangsu. This result proves that income from non-farm work is a key factor for capital formation in whole China, and this effect is especially dominant in Jiangsu where TVEs development has a long history.

Table 14: Determinants of Household Saving Rates

N R ²	Three Provinces			Jiangsu			Shandong			Sichuan		
	Coefficients	T	Sig.	Coefficients	T	Sig.	Coefficients	T	Sig.	Coefficients	T	Sig.
(Constant)	13.642	0.602		-18.033	-0.500		13.158	0.580		13.784	0.629	
Income per capita (village)	0.006	2.267	*	0.016	4.386	***	0.631	2.277	*	0.723	1.252	
Education Level												
Illiterate and half illiterate	-83.215	-5.513	***	3.928	0.379		-82.985	-2.739	**	-34.037	-2.491	*
Primary school	-19.682	-2.805	**	-4.068	-0.614		-19.317	-2.739	**	-19.809	-1.900	*
Middle school	-6.623	-1.052		2.438	0.385		-6.505	-1.032		-11.133	-1.065	
Age												
under 30	-28.163	-1.956	*	-5.624	-0.375		-27.992	-1.943	*	-0.918	-0.073	
31-40	-25.769	-2.061	**	-14.151	-1.282		-25.438	-2.031	*	-12.179	-1.022	
41-50	-20.934	-1.703	*	-11.857	-1.118		-20.760	-1.687	*	-2.389	-0.201	
51-60	-18.884	-1.490		-9.873	-0.897		-18.720	-1.476	*	4.769	0.376	
Types of household activity												
Agriculture	37.122	2.089	*	7.421	0.219		37.254	2.095	**	6.368	0.295	
Agriculture as main activity	51.365	2.889	**	15.750	0.469		51.475	2.893	**	-2.114	-0.980	
Non Agriculture as main activity	53.787	2.744	**	-20.409	-0.591		54.200	2.762	**	25.099	1.102	
Non Agriculture	38.105	2.020	*	14.070	0.329		38.668	2.046	*	47.781	1.509	
Home size (4 and more)	-2.145	0.500		-1.298	-0.310		-2.3280	-0.541		3.448	0.669	
Farm land	-2.446	-2.900	**	0.853	1.437		-2.7850	-2.785	**	1.909	1.353	
Assets												
Productive assets	0.0009	2.633	**	0.0014	1.971	*	0.0009	2.463	**	0.283	0.891	
Non productive assets	-0.0004	-2.071	*	-0.0007	-4.640	***	-0.0004	-1.987	*	-0.002	-4.732	***
Income Source												
Village collective	0.0005	0.958		0.0020	3.166	***	0.0006	0.926		0.0049	1.943	*
Manager in shareholding and shareholding cooperative TVEs	0.0004	0.085		0.0624	1.334		0.0004	0.091		0.0016	0.412	
Manager in partnership TVEs	0.0021	0.456		0.0036	0.786		0.0020	0.452		0.0035	0.577	
Manager in private TVEs(1)	0.0012	1.427		0.0006	0.330		0.0031	0.928		0.0011	0.962	
Peasant worker	0.0015	1.177		0.0025	1.724	*	0.0015	1.169		0.0020	1.409	

(1): including the self employed TVEs

*: significance at 10% level, ** significance at 5% level, *** significance at 1% level.

8 Logit Regression Analysis of the Determinants of Household Financing

To test the borrowing constraint of household savings, we have to analyze the determinants of household financing. According to the characteristic data on obtaining credits from the formal financial institutions, there are only 107 HHs which have such loans in the current year, therefore we can only use the total sample (three provinces) as a whole as well as employ the Logistic regression model for the analysis.

The specification of household savings model is as follows:

$$\text{Log} (P_i / 1 - P_i) = \beta_0 + X_{ij}\beta_j + \varepsilon_{ij}$$

$$\varepsilon_{ij} \sim N(0, 1), \quad i = 1, 2, \dots, n, \quad j = 1, 2, \dots, k$$

P_i : Probability that households receive credits from formal financial institutions;

If credits > 0 , $P_i (Y)=1$, otherwise $Y=0$

X_{ij} : i^{th} household with X_j characteristics.

The estimated results are shown in Table 17. The marginal effects of the variable per capita income in village is negative and high significant. The HHs in rich village to obtain loans is lower. The reasons for that are: They are rich and do not want to borrow or take loans; or because they are rich it is difficult to take loans from formal financial institutions which think they can solve this problem by themselves. The marginal effect of the variable **education level** is positive, although its significance level is lower than the 10% level. This means that the education level has positive effects on obtaining loans. The marginal effects for the **age** groups of 31-40 and of 41-50 are positive, those for the other two age groups are negative. But all marginal effects are not significant. This means age is not an explanation factor for obtaining loans. The marginal effect of **household size** is negative and highly significant. Large families have more difficulties to obtain loans, probably because normally they are poor. Generally speaking, rich families let their children live in their own houses and let them register as a new household after their marriage, thus, rich families are usually not large in size. The marginal effect of **farm land** is negative, but not significant, so that farm land is not an explanation factor for obtaining loans. One reason is that the land use right in China is distributed according to the number of the HHs' members, thus, there is only little difference in the size of farm land between the HHs. Another reason is that farm land size in China is very small, so that the farm land size cannot be used as a reason for obtaining loans. The possession of productive and non productive **assets** leads to an increase of the probability to obtain loans in general. For productive assets, the significance level is high, however the value of the coefficient is very low. This means the effect of productive assets on the probability of obtaining loans is very weak.

Among the factors of income source, the income from **managers** in shareholding and shareholding cooperative TVEs has a positive impact on the probability to obtain loans, although the significance level is lower than the 10% level. Perhaps such TVEs are larger or in transformation, or have collective parts, so that they can obtain loans more easily. It is difficult to test the HHs with manager in the other types of TVEs, because the results can only include factors which can be computed with statistical techniques. The variables – income from managers in partnership TVEs, in private TVEs and in TVEs with foreign capital – were excluded as “bad variables” by computing automatically. The marginal effect of the **income from the village collective** is negative and highly significant. This means the probability of HHs with worker or manager in collective enterprises in villages to obtain loans is lower. Usually these HHs have higher income than other HHs. The marginal effect of the income from peasant worker is negative and significant.

Table 15: Determinants of Obtaining Formal Loans of the HHs in the Three Provinces

	Coefficients	T	Sig.	Marginal effects	T	
(Constant)	6.07159	4.080	***	0.143267	3.874	***
Log (Income per capita, village)	-1.46685	-7.199	***	-0.03461	-5.884	***
Education Level						
Illiterate and half illiterate						
Primary school	0.65486	1.202		0.01545	1.192	
Middle school	0.60597	1.096		0.01427	1.090	
Senior middle school and higher	0.65181	1.031		0.01538	1.029	
Ages						
under 30						
31-40	0.10024	0.291		0.00236	0.290	
41-50	0.09621	0.274		0.00227	0.274	
51-60	-0.05876	-0.146		-0.00138	-0.147	
over 60	-0.34479	-0.504		-0.00814	-0.504	
Household size (4 and more)	-0.44129	-2.118	*	-0.00104	-2.070	*
Farm land	-0.01435	-0.319		-0.00033	-0.319	
Productive assets ³¹	0.00002	2.193	*	0.0000005	2.056	*
Log (Nonproductive assets)	0.14083	1.089		0.0033232	1.101	
Income Source						
Village collective	-0.00033	-3.259	***	-0.000007	-4.671	***
Manager in Shareholding and Shareholding-Cooperative TVEs	0.000213	1.158		0.000005	1.152	
Peasant worker	-0.000089	-1.223		-0.000002	-1.209	
N	2196					
Log-L	-424.58					
Chi-squared	102.98					
Significance Level	0.0000					

³¹ The Value of productive assets for many HHs is “0”, so that it can not be computed “Log”.

9 Conclusion

With descriptive statistical analyses and modeling, this paper has provided some evidence concerning the hypothesis that the development of TVEs has led to high saving rates of rural households since the reform. The discrimination from the formal financial institutions forced TVEs to solve the capital shortage problem by themselves. In the process of solving the capital problem, TVEs underwent an evolution into a financial institution. On the one hand, the high capital demand of TVEs has a great impact on the informal financial market whose functions indirectly forced the rural HHs to save. On the other hand, TVEs directly forced their workers and managers to save with various methods, so that most of the HHs with manager in TVEs and with workers in TVEs are involved in this self-enforced capital accumulation process. This main hypothesis was tested by examining four questions. First, is the saving motivation of the HHs with manager in TVEs higher than other HHs? Second, does the transformation process of the collective TVEs force the HHs to save? Third, do HHs with workers in TVEs save more than others? Fourth, is there a credit constraint for rural HHs?

Using second hand data, this paper shows that:

- The intention of setting up a private TVE and becoming an employer is an important saving motivation of households;
- Getting a job in TVEs and a non-farm job is an important saving motivation of households (“buying a job”);
- The reform of collective TVEs forced the households to save, in the way keeping the job by buying stocks, and in the way being the manager by paying the rent or possessing main shares.

Using survey data and statistical modeling analyses, we have showed that households with manager in TVEs have higher saving rates than non-manager households because of the motivation of investing in their enterprises, which is especially obvious in households with manager in private TVEs and in shareholding and shareholding co-operative TVEs. Households with peasant workers in collective TVEs have higher saving rates than others. This implies that collective TVEs used many methods to force their workers to save. The data show that only few HHs can obtain credits from formal financial institutions. The results of the logit analysis provide the evidence that the productive assets has a very weak effect on obtaining the loans. This implies the existence of a credit constraint.

Weaknesses and needs for further research

Since the survey data used in this paper are based on a standard design, and special questions about saving motivations were not considered, therefore the relations between the development of TVEs and household savings cannot be directly confirmed. For example, households with managers or workers in TVEs may have higher savings than those without due to other motivations of HHs instead of investment motivation. Hence, a survey with specific questions about saving motivations can better test it. The existence of financial constraints for the households was confirmed in this research, but, since data from formal financial institutions are lacking, it is also difficult to test whether households don't want to borrow or cannot borrow.

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