

The Development of Mainland China's Township and Village Enterprises: Is the Third Sector Sustainable?*

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This article evaluates the arguments regarding whether the development of township and village enterprises (TVEs) has been successful and whether TVEs can preserve their advantages and become a successful "third sector." After examining TVEs in three areas, this paper finds that TVE productivity growth has resulted from input augmentation, technological progress, and technical efficiency. Through a comparison with state-owned enterprises (SOEs), TVEs are found to be more efficient in terms of relative productive efficiency. Furthermore, as the level of urbanization in China is still low, the TVEs can and should continue to develop in order to both pursue urbanization and absorb the abundant surplus labor in rural areas. Thus this paper argues that the transitional role that the TVEs have played will not diminish soon. However, along with the changes in the macroeconomic environment in China, TVEs still need more market-oriented reforms, such as ownership reform, to allow their development to be sustainable.

Keywords: township and village enterprises; productive efficiency; economic growth; total factor productivity; urbanization; rural industrialization

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Since 1978, China has implemented incremental institutional reforms. Under these changes, township and village enterprises (TVEs) appeared, grew in size, and have made great contributions to China's economy. These rural enterprises have, for instance, made greater contributions than state-owned enterprises (SOEs) as a share of gross domestic product (GDP) in 1995. The annual average growth rate is also higher than national industry in 1978-95 (see table 1). Hence, the development of TVEs has been called "the engine of economic growth" in China.

Given the impressive performance of TVEs, many believe that these enterprises are becoming an important "third sector" complementing agriculture and industry. Hence, some Chinese authorities and scholars proudly claim that they have constructed a successful example of a new three-sector model, one that both focuses on rural industrialization as a new strategy for industrialization and offers a challenge to the theory of economic development.¹

This claim can be evaluated from the perspective of economic development. According to the two-sector model theory of economic development, industrialization and urbanization are the pathways for developing countries to enhance national economic growth. By pursuing industrialization, a nation's economic structure, employment structure, and income distribution will undergo more balanced construction. By pursuing urbanization, a country receives several economic advantages including the availability of skilled and specialized labor pool, more developed infrastructure, increased health and education facilities, and other benefits of economic agglomeration. However, industrialization and urbanization also have such disadvantages as overcrowding, pollution, crime, and displacement of rural migrants.

The claim that rural industrialization is a better development strategy implies that mainland China adopted a different path towards industrializa-

¹ Hu Biliang and Zheng Hongliang, *Zhongguo de xiangzhen qiye yu xiangcun fazhan* (Township enterprises and rural development in China) (Taiyuan: Shanxi jingji chubanshe, 1996), 191.

Table 1
Comparison of Economic Performance of Industry by Ownership

	Annual Average Growth Rate (1978-95) (%)	Shares of GDP (%)			
		1980	1985	1990	1995
National Industry	14.9	44.2	38.3	37.0	42.5
TVEs	19.9	5.6	10.8	13.1	15.5
SOEs	7.8	33.6	24.8	20.2	14.4

Note: Based on comparable prices.

Sources: Calculations based on the data from *Zhongguo tongji nianjian* (Statistical year-book of China), various issues.

tion. Because of unique characteristics—abundant surplus labor in rural areas and low level of urbanization, for instance—China decided not to seek economic growth by blindly pursuing industrialization and urbanization. Instead, China developed an extensive rural industry, developing it into a third sector. The Chinese authorities claim that the development of rural industrialization can absorb surplus labor without migration, lower the disparity between urban and rural areas, accelerate the level of urbanization, and alleviate the transportation burden. In the meantime, rural development can avoid some disadvantages inherent to excessive urbanization such as overcrowding and crime. Actually, the strategy did not result from government policymaking, but rather emerged spontaneously from the evolution of the interactions between players through fair competition and some market-oriented mechanism.

Recently many scholars have been debating whether the development of TVEs has really been successful and whether TVEs can manage to preserve their advantages and become a full-fledged third sector. After an initial description of the formation of the TVE sector in section two, this paper attempts to clarify these arguments by examining three areas (sections three to five, respectively). The first area will examine the question of whether TVEs can continue to develop, maintain technological progress, and improve productive efficiency. Only by efficient development and competitive capacity may TVEs keep their role as the third sector. The second area will comparatively evaluate the performances of TVEs and

SOEs. If the productivity and efficiency of TVEs is found to be higher than that of SOEs, then the third sector status of the TVEs will be maintained. If the SOE sector implements institutional reforms successfully, however, then the process of industrialization and urbanization will be reinforced. On that occasion, the third sector role of TVEs should gradually weaken. The third area will examine the level of urbanization and the role of TVEs in national industrialization. This section inspects the question of whether the level of urbanization has increased to the degree that it has begun to constrain the development of the third sector. We also examine the impact of the TVE sector on national industrialization and rural industrialization, including possible influence on the industrial structure, employment structure, the income gap between urban and rural areas, and the national industrial economy. If the aims of industrialization have been achieved, the TVEs may not necessary retain their position as the third sector. Finally, conclusions are summarized in last section.

The Formation of the TVE Sector

TVEs are nonstate, nonagricultural enterprises in China's rural areas. Their emergence did not result from any particular policy initiated by the central government. Rather, they began as scattered enterprises that emerged in rural areas, far from central government control. Thus, they had the opportunity to operate autonomously and enjoyed more flexibility to develop under market-oriented mechanisms. Over time, they began to use market-oriented processes to maximize their profits, adopted outward-looking economies, shared profits among the staff and workers, and developed their own characteristics based on their unique operating environment. As such, the share of TVEs in the national economy is steadily increasing.

Before we analyze the development of TVEs in its current form, a review of the historical background and the rationale of the developmental strategy is necessary. Putterman's idea that township and village enterprises grew successfully only after the reform-oriented leadership took charge in 1978 is misleading because the development of TVEs was deeply intertwined with its ancestors—the commune-brigade enterprises (CBEs) and

the traditional economy of China.² Hence, we will first investigate the interactive relationship between CBEs and China's traditional economy.

Historical Background (1949-78)

Rationale of the dual economy: From 1949 to 1978, mainland China was recognized as having a dual economy with two unbalanced sectors: the dominant agricultural sector, producing over 80 percent of GDP and the smaller industrial sector, producing less than 15 percent of GDP.³ Under this kind of macro environment, the regime chose to implement the capital-intensive industry and urban-biased developmental strategy rather than the labor-intensive strategy of comparative advantage. By focusing on the development of heavy industries, mainland China attempted to catch up with the advanced developed countries.

To accelerate the growth of industry, Chinese leaders adopted the policy that transferred surplus from the agricultural sector to the industrial sector. This policy was implemented in three steps.

First, the authorities initiated strict price controls, such as lowering the procurement price for agricultural products, increasing the price of light industrial products, purchasing and rationing products by central planning, and implementing a system of mandatory purchases and sales by the state. Through these means, the government took possession of the largest possible agricultural surplus in order to make the largest possible investment in the heavy industrial sector.

Second, the Chinese authorities lowered the consumption of the urban worker by means of low wage levels and the rationing of living necessities, thus capturing resources for investment from the light industrial sector. This policy kept the largest possible quantity of resources in production activities in order to generate maximum economic growth.

Third, the Chinese authorities intended to reform the agricultural system by changing the organizational relationship of production (i.e., the

²Lou is Putterman, "On the Past and Future of China's Township and Village-Owned Enterprises," *World Development* 25, no. 10 (1997): 1639-55.

³Lou is Putterman, "Dualism and Reform in China," *Economic Development and Cultural Change* 40, no. 4 (1992): 467-93.

peasant economy) in order to seek the benefits of economies of scale. Thus, the leadership pushed agricultural collectivization in order to establish a modern agricultural sector. According to this rationale, the modern industrial and agricultural sectors would supposedly form a balanced dual economy after the movement to agricultural collectivization.

During the process of industrialization, the construction of urban industry could quite possibly absorb rural labor into nonagricultural activities before the establishment of the modern agricultural sector, thus causing a mass transfer from farming to nonagricultural activities and generating large cross-regional population movements and urbanization. In order to prevent this excessive urbanization, the Chinese authorities implemented a restrictive household registration system and instituted an isolation policy that prohibited migration from rural to urban areas.

However, these centrally planned institutional arrangements were inefficient because of the lack of competition. According to Hayek, efficient institutional arrangements can emerge only as a result of fair competition and voluntary trade.⁴ Furthermore, Alchian and Demsetz pointed out that without effective arrangements of residual rights, the economy will not perform well.⁵

Role of TVEs in the Chinese dual economy: No matter how well or bad the national economy performed, CBEs (the predecessors of TVEs) developed outside the program and did not play a leading role in the blueprint of economic development. Rural industrial development simply helped to bridge the gap between what central planning could do and what the agricultural sector needed. Thus the function of these rural enterprises was an interim one, designed to shorten the difference in economic terms between current rural-oriented reality and a future in which mainland China was to be both industrialized and urbanized. Under these circumstances, the scale of the TVEs was kept to a small portion of the national economy in the 1949-57 period, and the ratio of output value of the TVEs to the gross in-

⁴Friedrich A. von Hayek, *The Road to Serfdom* (Chicago: University of Chicago Press, 1944).

⁵Armen A. Alchian and Harold Demsetz, "Production, Information, Costs, and Economic Organization," *American Economic Review* 62, no. 5 (1972): 777-95.

Table 2
Production of Nonagricultural Enterprises in Rural Areas

Year	Gross Production Value of Nonagricultural Enterprises (1)	Gross Industrial Output Value (2)	Percentage Ratio of 1/2
1949	1.08	14.0	7.71
1952	1.83	34.9	5.24
1954	2.20	51.5	4.27
1957	2.29	70.4	3.25
1958	6.00	108.3	5.54
1959	10.00	148.3	6.74
1961	1.98	106.2	1.86
1962	0.79	92.0	0.86
1963	0.41	99.3	0.41
1965	2.93	140.2	2.09
1970	9.25	208.0	4.45
1971	10.20	237.5	4.29
1976	27.20	315.8	8.61
1978	49.31	406.7	12.12

Note: (1) and (2) in billion *yuan*; based on current prices.

Sources: *Zhongguo tongji nianjian* (1983), 13; William A. Byrd and Qingsong Lin, *China's Rural Industry: Structure, Development, and Reform* (New York: Oxford University Press, 1990), 9-10.

dustrial output value was kept below 8 percent (see table 2). At that time, TVEs only equaled sideline production appearing in the form of scattered self-sufficient handicraft industries in rural areas, and were thus ignored by central planning. By 1954, some 10 million Chinese farmers had held part-time jobs in this autarkic handicraft industry, generating a 2.2 billion *yuan* output value—less than 5 percent of gross industrial output value (see table 2).

After the disastrous Great Leap Forward Movement (1958-60), the government recognized that the centrally planned industrialization could not satisfy the needs of the whole of society. Hence, the leaders began to allow communes and brigades to set up small-scale industrial enterprises, including CBEs. According to table 2, the output value of CBEs increased from 2.29 billion *yuan* in 1957 to 10 billion *yuan* in 1959 and the ratio of the output value of CBEs to gross industrial output value increased from

3.25 percent to 6.74 percent during the same period.

Although CBEs grew fast, a debate raged within government as to how agriculture and industry should be developed, which of the two should be given priority, and whether small or large-scale operations should be emphasized. In 1960, the central government called for readjustment of the national economy and began to check the development of the communization campaign. As a result, the government decided not to allow CBEs to develop any further. Thus many CBEs discontinued operations: some were later returned to production teams, some were changed into handicraft co-operatives, and the rest were closed down. In the face of the uncertain and discouraging policies, the output value of CBEs declined to 0.79 billion *yuan* in 1962, and remained at a stagnant 3 billion *yuan* over the remainder of the 1960s.

During the Cultural Revolution (1966-69), the national economy suffered greatly. After this revolutionary period, the government attempted to generate an economic recovery. When the State Council in 1970 again urged an increase in agricultural mechanization, the CBEs took advantage of the new policy and produced agricultural machinery and farm tools to meet the needs of farmers. Many enterprises were restored, expanded, and gained stability during the period from 1970-76. By 1978, the number of enterprises had risen to 1.52 million. The government started to set up administrative bureaus and attempted to strengthen the management of these enterprises.

In summary, in the earlier stage of development, the central government implemented industrialization in urban areas and developed SOEs by central planning. The TVEs (formerly the CBEs) were put into a secondary position. The more freedom from central economic planners the TVEs enjoyed, the more rapid was their growth. By using their advantageous independence from the government, CBEs gradually fostered a market environment; obtained several ingredients such as labor, capital resources, and markets for end products; and developed entrepreneurial talents for their own self-development.⁶ The developments in this period helped later

⁶See note 2 above.

TVEs to face the shift to a more competitive, market-mediated economic environment.

The Formation of the TVE Sector in the Transitional Economy (1978-Present)

Generally speaking, the objective of a transition process is to set in motion a whole set of mechanisms that would allocate resources more efficiently. The initial allocation system during this period was excessively administrative and political in nature, while the desired allocation was to rely much more on markets and individual incentives. The difference between these two allocation systems is structural, and not easy to overcome. The process always takes long time.

Owing to the impressive economic performance of the TVEs, China was willing to implement economic reform by trial and error. In 1978 China started economic reforms that began by trying to accelerate agricultural productivity, which heretofore had been very low.

Rural liberalization (1978-84): First, the government promoted a production responsibility system. This system allowed farmers to control their household productive activities and to operate them on the basis of market-oriented principles. Thus, this system enhanced farmer incentives by allowing them to pursue profit and by rewarding autonomy. Second, the price control system was reformed. The state had controlled the agricultural economy via mandatory purchases and sales. These requirements were relaxed, and both agricultural productivity and product value achieved dramatic improvements.

In the period from 1978-83, TVEs grew in terms of total output value. The number of enterprises did not grow, however, with decreases in CBEs registered for every year except 1982. Despite the fact that there was a transition to a preliminary market economy, publicly-owned enterprises still produced the bulk of manufacturing output. Product price ratios reflected the economic rigidity of central planning. After price reform, the CBEs faced a loosening of the quantity control system, lower tax burdens, and a flexible wage system in rural areas, all of which forced them to choose appropriate combinations of products and productive technologies.

With this flexibility, the CBEs became highly profitable, often enter-

ing empty market niches for which SOEs had failed to produce. Yet, due to ideological barriers to entry,⁷ the number of CBEs actually decreased in this period.

Free entry and the emergence of product market (1984-92): The development of the CBEs in the earlier stages depended heavily on financial support and on the abnormal growth in the supply of productive inputs from the agricultural sector. But by 1984, the agricultural sector could no longer adequately support the growth of CBEs. At the same time, the debate as to whether the unfettered growth of the CBEs would be efficient and compatible with socialism resulted in a unanimous conclusion.⁸ In March 1984, the Chinese authorities agreed to rename CBEs as TVEs, owing to the fact that the people's communes had been abolished and a large number of partnerships and individual enterprises had come into being. Since that time, TVEs have received proper status in society and have been allowed to operate at the level of township and village rather than the original administrative level of communes-brigades. Other constraints also were removed, including limits on the purchase of local materials, local processing, and local sales. The household registration system was also relaxed and more migration was allowed in rural areas. As more constraints were removed, the number of TVEs increased and the total product value of TVEs grew at a very high rate in 1984.

Rapid entry of new businesses was the main motor behind the dramatically high growth rates of the TVEs since 1984.⁹ Growth of the new private sector is widely recognized as one of the success stories of the economic transition from socialism to a market-oriented economy. The Chinese case shows that the key feature of this process is the entry of new businesses, rather than privatization per se. The entry of new TVEs creates

⁷Whether the development of TVEs fits the socialist ideological doctrine or not was still disputable. Thus the government did not encourage the entry and emergence of CBEs.

⁸On January 1, 1984, the CCP Central Committee Circular on Agricultural Work stated that governments at all levels should encourage peasants to invest in or buy shares of all types of enterprises and encourage collectives and peasants to pool their funds and jointly set up various kinds of enterprises.

⁹Barry Naughton, "Chinese Institutional Innovation and Privatization from Below," *American Economic Review* 84, no. 2 (1994): 266-70.

Table 3
Ownership Structure of Industrial Production in Mainland China (%)

Ownership	1978	1985	1990	1995
State (Urban)	78	65	55	34
Collectives	22	32	36	37
Suburb	13	16	13	6
Rural Areas	9	16	23	31
Private	—	2	5	13
Foreign-invested	—	1	4	16

Sources: *Zhongguo tongji nianjian*, various issues.

competition and drives the development of markets, leading to a decline in state control and monopoly. Although private business now constitutes an important part of the Chinese economy, collective enterprises, as a form of publicly-owned enterprises, are still much more important than privately-owned enterprises (see table 3). The suburb and rural collectives account for the majority of nonstate manufacturing output.

On June 4, 1989, the democracy movement in Tiananmen Square was suppressed by the Chinese authorities. In response to the turmoil, the communist government acted to reign in liberalization, and the speed of economic development was slowed down. The development of TVEs was also affected by this policy.

Toward a broader marketization (1992-present): From 1992 until the present, Deng Xiaoping's encouragement guaranteed the legitimate status of TVEs and China entered a new developmental stage. TVEs now are adjusting their enterprise structure and product mix, and starting to develop an outward-looking focus. Table 4 records the growth rate of output value, the number of enterprises, and the growth rate of employment.

As to the reason behind the rapid growth of TVEs, Naughton pointed out that these enterprises are an effective institutional adaptation to the Chinese economic environment, and are China's main stimulus for rapid growth.¹⁰ The success of TVEs should be seen in the context of the Chinese

¹⁰Ibid.

Table 4
Annual Economic Growth of TVEs in 1979-96 (%)

Year	Output Value	Number of TVEs	Growth of Employment
1979	11.44	-2.88	2.93
1980	20.34	-3.76	3.10
1981	9.11	-6.11	-1.00
1982	13.28	1.81	4.83
1983	18.10	-1.13	3.91
1984	65.35	350.11	61.01
1985	59.07	101.72	34.00
1986	26.86	23.96	13.73
1987	33.22	15.50	10.94
1988	26.70	7.88	8.41
1989	1.02	-1.03	-1.87
1990	9.44	-0.97	-1.09
1991	18.30	3.10	3.72
1992	48.86	8.98	10.12
1993	68.14	17.97	16.67
1994	25.60	1.70	-2.65
1995	47.12	-11.70	7.02
1996	20.99	6.04	5.03

Note: The growth rate of output value (1979-95) is calculated by using the deflator which is the overall rural retail price index of industrial products.

Sources: Ministry of Agriculture, *Zhongguo xiangzhen qiye tongji zhaiyao* (Statistical summary of Chinese TVEs) (Beijing: Zhongguo tongji chubanshe, 1992); *Zhongguo tongji nianjian*, 1990-97 issues; *Zhongguo xiangzhen qiye nianjian* (Yearbook of Chinese TVEs), 1987-97 issues; *People's Daily*, February 28, 1998, 6.

transition strategy more broadly conceived. That strategy has relied on the initial creation of product markets followed only gradually by markets for assets and factors of production. By the mid-1980s, markets and market prices had existed for nearly all commodities. But markets for land and labor really emerged only in the 1990s, and financial institutions are still in the midst of a gradual process of adaptation to market forces. TVEs were also part of the "solution": they provided an accelerated entry vehicle that helped push the initial commitment to open product markets into a broader marketization of the economy. Table 5 summarizes the three stages of TVE development, as mentioned above.

Table 5
The Three Stages of Development of TVEs since 1978

Period	1978-83	1984-91	1992-Present
Nature	The predecessor of TVEs (CBEs)	CBEs were renamed TVES	TVEs with more flexibility in management
Ownership	Communes, brigades, or unions	Collective township-village enterprises or private owners	Collective TVEs, joint ventures, private owners
Advantage	Limited product market, tax cut, barriers to entry	Free to enter and exit, product market	Factor market, limited financial market
Payment	Equal distribution and fixed wage	Started a flexible wage system which was based on workers' contribution	Wage, bonus, and profit of capital

In sum, the emergence and recent growth of TVEs in China is both striking and unique. In just a decade, industrial activities have expanded tremendously and enterprises have proliferated in Chinese rural areas. These changes have brought about significant shifts in many dimensions, including both income and employment effects. We will discuss these issues in the following sections.

The Growth of TVEs

Economic growth results from input augmentation, productivity growth, efficiency improvement, and technological progress. Some authors claim that the Asian economic miracle came about through input augmentation rather than improvements in efficiency. As only efficiency improvement makes enterprise development sustainable, these critics prophesy that the miracle will not last for long.¹¹ Thus an important distinction is whether

¹¹Paul Krugman, "The Myth of Asia's Miracle," *Foreign Affairs* 73, no. 6 (1994): 68-78; Lawrence J. Lau and Jong-Il Kim, "The Sources of Economic Growth of the East Asian Newly Industrialized Countries," *Journal of the Japanese and International Economies* 8, no. 3 (September 1994): 235-71.

Table 6
TVEs' Annual Growth Rate in the 1990s (%)

Year	1991	1992	1993	1994	1995	1996	1997
Value-Added	18.69	50.91	78.53	36.48	33.56	20.99	18.00
Deficit	-12.00	-22.73	179.41	42.11	254.07	-6.69	34.53
Export Sales	70.78	51.20	83.82	54.95	58.77	11.36	16.51
Total Wage Bill	17.31	29.43	52.64	28.17	45.89	22.00	—
Net Profit	19.20	48.47	82.95	28.97	42.38	19.53	—
Tax Paid	21.80	44.39	74.88	50.57	29.25	14.91	—
Foreign Investment	—	—	—	—	—	15.00	12.00

Sources: *Zhongguo xiangzhen qiye nianjian* (1996), 102; *People's Daily*, February 28, 1998, 6.

or not the development of Chinese TVEs results from efficiency improvement or input augmentation. In this section, we will examine the growth rate of TVEs first by a single factor and then by total factor productivity. Finally, we will examine technological progress and efficiency change of TVEs.

Growth of a Single Factor

In table 4, TVEs' annual growth rate for each single factor in 1979-96 was reported. Table 4 shows that there are the three peaks for the growth of output value, the numbers of TVEs, and employment rates in the years 1984, 1987, and 1993, respectively. The growth peaks resulted from some policy support: in the year 1984, for example, TVEs were renamed from CBEs and received official support from the Chinese authorities, and after Deng Xiaoping's encouragement in 1993, TVEs gained legitimate status to develop. Furthermore, we also find that, in the 1990s, the year of 1993 is also a peak for the growth of added-value, taxes paid, export sales, net profits, etc. (see table 6). After 1993, we also saw the decline of the growth of added-value and taxes paid. Hence, from these data, we observe that from the viewpoint of one single factor, TVEs achieved a very high growth rate in particular years.

Growth of Total Factor Productivity

The growth of one single factor may not be enough to judge the ef-

Table 7
TVEs' Growth and Contribution in 1987-95 (%)

Panel A: The Average Growth Rate of Input and Output in 1989-95																
National				Eastern				Central				Western				
L	K	M	Q	L	K	M	Q	L	K	M	Q	L	K	M	Q	
1989-91	0.5	14.8	9.2	16.9	1.1	16.3	9.8	17.7	-0.1	11.7	7.7	15.2	0.4	14.4	9.1	15.2
1992-95	4.8	38.1	25.6	51.1	1.6	38.2	22.5	48.6	8.1	37.7	32.5	56.6	10.9	39.4	30.5	54.0
1987-95	1.3	13.4	7.6	14.4	0.5	13.9	7.2	14.2	2.0	12.4	8.5	14.8	3.0	12.7	7.9	14.2
Panel B: The Contribution from Input to Output Growth in 1989-95																
National				Eastern				Central				Western				
TPG	KC	MC	TPC	TPG	KC	MC	TPC	TPG	KC	MC	TPC	TPG	KC	MC	TPC	
1989-91	5.01	46.4	23.9	29.7	4.7	48.8	24.2	27	5.6	40.7	22.3	37	3.5	50.2	26.3	23.5
1992-95	19.6	39.5	22.0	38.5	18.5	41.6	20.3	38.1	22.3	35.3	25.2	39.5	19.7	38.6	24.8	36.6
1987-95	4.02	49.1	23.1	27.8	3.6	51.8	22.3	25.9	4.5	44.3	25.3	30.4	3.9	47.4	24.5	28.1

Notes: K: capital; L: labor; M: middle input; Q: output; TPG: the growth rate of total factor productivity; KC: the contribution of capital input; MC: the contribution of middle input; TPC: the contribution of TFP.

Source: Liu Guoliang and Zhong Funing, "Some Influential Factors to the Development of TVEs and Efficiency Differences between Areas," *Zhongguo nongcun guancha* (China Rural Survey) 21, no. 3 (1998): 23-24.

iciency of resource allocation in the process of production; we may want to consider investigating the growth of multiple factors to evaluate the efficiency of resource allocation. The index of total factor productivity (TFP), a productivity measure involving all factors of production and estimated by the production function, is always treated as the evaluation of productive efficiency for the firm. This section will review empirical work carried out by others on China's TFP for the period.

Recent work by Liu and Zhong has covered the data from 1987 to 1995 at the national and regional levels respectively. In their production function, there are three inputs (labor, capital, and middle input) and one output. In table 7, panel A expresses the average rate of inputs and output

in the periods of 1989-91, 1992-95, and 1987-95. Panel A (1992-95) shows that TVEs augmented much higher capital than the average value in the periods 1989-91 and 1987-95, and generated higher growth rate of output value. Liu and Zhong also discovered that the growth rate of TFP (TPG in table 7, panel B) in the period 1992-95 was much higher than that in the period 1989-91 (19.6 percent versus 5.01 percent). That the same result is also observed at the regional level indicates that there is no doubt that productive efficiency of TVEs has improved both at the national and regional levels. The contributions of capital input (KC), middle input (MC), and TFP (TPC) to output growth are reported in table 7, panel B. The results show that the output growth of TVEs is largely attributed to capital input, both at the national and regional levels. In other words, the noted output growth may result from capital augmentation. However, there existed a declining trend in the contribution from capital, both at the national and regional levels, as demonstrated by the ascending trend in the contribution from TFP at both the national and regional levels. The evidence may represent an improvement in efficiency.

By considering the effect of institutional reform, Wang estimated the average growth rate of TFP in 1981-85 and in 1986-92, but reached different conclusions, however. His empirical results show that the growth rate in 1981-85 was higher than in 1986-92 (8.6 percent versus 4.0 percent)¹² because the institutional reform has more impact in the earlier period.

Among different kinds of ownership, Dong and Putterman found that between 1984 and 1989, the total productivity of the enterprises owned by township or village governments was higher than that of private enterprises by 16 and 24 percent respectively.¹³ In other words, private enterprises are not more efficient than collective enterprises as economists expected. One major reason for this is that local governments offered workers higher wages, thus making collective enterprise employees work harder and pro-

¹²Wang Xiaolu, "A Reappraisal of the Growth in TVEs: Effects of Institutional Changes on Economic Growth," *Jingji yanjiu* (Economic Research), 1997, no. 1:31-39.

¹³Xiaoyuan Dong and Louis Putterman, "Productivity and Organization in China's Rural Industries: A Stochastic Frontier Analysis," *Journal of Comparative Economics* 24, no. 2 (1997): 181-201.

Table 8.
Comparison of Collective TVE Efficiency and Technology in 1983-95

Year	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Technological Growth	N.A.	3.77	3.67	0.82	1.43	6.71	0.33	0.13	5.27	10.43	12.36	8.21	3.11
Efficiency Change	7.50	3.90	3.18	-1.11	-1.53	9.17	-2.03	0.48	5.85	13.97	14.88	4.74	3.69

Source: Chen Yong-sheng, "Efficiency and Technological Change in Township-Village Enterprises in Mainland China in 1983-1995" (Allied Social Science Association Conference paper, Chicago, January 3-5, 1998), 15.

duce more. A second reason is that collective enterprise can obtain loans more easily, which makes collective enterprise operate the business more efficiently.

Technological Progress and Efficiency Change

There are two approaches to measure productive efficiency. One is the parametric (econometric) approach, which estimates via the production function and which thus requires functional form. The other method is a non-parametric approach that does not require a functional form. Data Analysis Envelopment (DEA) is a non-parametric approach model. The advantages of DEA include: the ability to deal with multiple outputs; better suitability for policy application; and its maintaining of a slight advantage in the cases of quasi-market systems.¹⁴ Chen applied the DEA approach to measure relative productive efficiency among TVEs at the provincial level to evaluate their technological progress and change in technical efficiency.¹⁵ The model was constructed by three input variables (net value of fixed assets in capital stock, availability of working fund, and number of workers) and three output variables (gross revenue, pre-tax profit, and average wage per worker). Table 8 shows the technological growth and the change in

¹⁴Yu Chunyan did a practical empirical study to prove this. See Yu Chunyan, "A Comparative Study of Alternative Methods for Efficiency Measurement with Application to the Transportation Industry" (Ph.D. dissertation, University of British Columbia, Vancouver, Canada, 1995).

¹⁵Chen Yong-sheng, "The Relative Productive Efficiency of Township-Village Enterprises in Mainland China" (Ph.D. dissertation, University of Texas at Dallas, 1997).

technical efficiency of collective TVEs in 1983-95.

The indexes of technological progress and efficiency change exhibit a similar pattern, with three peaks in 1984, 1988, and 1993, with efficiency change varying more than technical change. It should be mentioned that these three peaks of efficiency and technological growth in TVEs coincide closely with the business cycle of the Chinese economy since 1978. In the Chinese economy, the enhancement of technology and improvements in efficiency concentrate mostly on the marginal increase of economic activity. Especially during years of economic expansion, there is more opportunity to promote advanced technology and efficiency in TVEs and other sectors.

Based on Chen's measurement, there exists a significant amount of technical change over time. The growth among TVEs did not come about merely through input augmentation. Furthermore, in 1995, a TVE could produce 71.9 percent more than in 1983 with the same inputs.¹⁶ Chen also calculated that the average rate of inefficiency was only 7.04 percent. If every TVE in 1995 were to produce at full efficiency, national GDP would have been 1.09 percent higher.¹⁷

Both the technological progress and efficiency change of TVEs show a positive association with the growth of TVEs. Whether this is temporary or permanent remains to be seen: several more years of performance measures are needed to confirm whether the trend will prove to be stable. Nevertheless, this result is indicative that pursuing a macro-economic policy of high economic growth may yield dividends in the form of greater efficiency.

Regional Disparity

On the basis of Chen's measurement, a regional disparity does exist. The regional average efficiency trend is illustrated in figure 1.

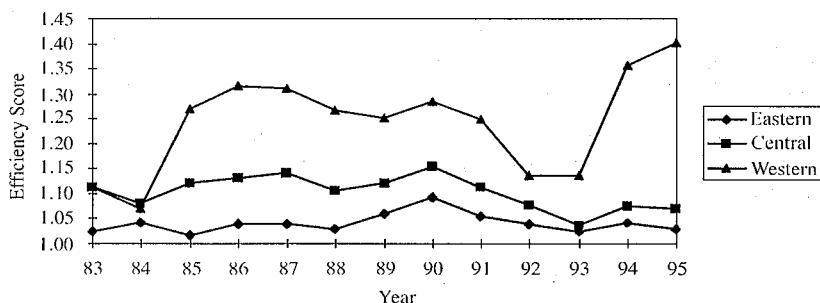
In figure 1, the efficiency score represents the degree of inefficiency given the level of inputs. For example, an efficiency score of 1.45 indicates that enterprises could produce 45 percent more with their inputs. Figure 1

¹⁶Ibid., 145.

¹⁷Ibid.

Figure 1

Comparison of TVE Efficiency among the Three Regions over Time



shows that TVE productive efficiency in the eastern region is higher than the central and western regions in virtually every year. There is no difference in TVE efficiency between the central and western regions at the beginning of the period of economic reform. Along with the reform, TVE efficiency in the central region has been gradually changing, approaching that of the eastern region and distancing itself from the western region. One of the reasons may be explained by the estimation of Liu and Zhong: the contribution of TFP to the output growth in the central region is the highest, that in the eastern region is the second, and that in the western region is the last.¹⁸ By higher total factor productivity growth, the degree of efficiency in the central region should be catching up with that of the eastern region.

Another reason may be attributed to the policy of eastern and western regional cooperation that was implemented by the Chinese government since 1993. Based on Chinese newspaper reports, there are 208 "demonstration regions" that were constructed by cross-regional enterprises. They achieved higher growth rates compared to other TVEs by some 10 percent.¹⁹

¹⁸Liu Guoliang and Zhong Funing, "Some Influential Factors to the Development of TVEs and Efficiency Differences between Areas," *Zhongguo nongcun guan* (China Rural Survey) 21, no. 3 (1998): 23-24.

¹⁹*Jingji ribao* (Economic Daily) (Beijing), August 31, 1997, 3.

Table 9
Average Growth Rate of TFP by Sector in 1985-91 (%)

Year	1985	1986	1987	1988	1989	1990	1991
State	4.942	4.411	3.881	3.350	2.819	2.289	1.758
Rural	3.602	3.872	4.142	4.412	4.681	4.951	5.221

Source: Wu Yanrui, "Productivity Growth, Technological Progress, and Technical Efficiency Change in China: A Three-Sector Analysis," *Journal of Comparative Economics* 21, no. 2 (October 1995): 215.

Comparison of TVEs and SOEs

In order to compare the economic performance of TVEs with SOEs, we contrast their productivity growth by using total factor productivity and their productive efficiency. Wu utilized the production function to estimate the average growth rate of TFP in 1985-91.²⁰ Wu found that productivity growth of TVEs was increasing while that of SOEs was declining. The gap between these two sectors grew larger in 1991 by 3.46 percent (see table 9).

The major reason for the different economic performance is that SOEs employ more skilled workers and relatively advanced technology but suffer from a lack of institutional flexibility. On the other hand, TVEs took advantage of their relative mature market mechanisms, which developed in the previous period.

Furthermore, based on table 9, Wu also compared SOEs and TVEs by decomposing productivity growth into technological progress and technical efficiency. His estimates are presented in table 10. Wu's work shows that within these two sectors, technological progress dominates technical efficiency changes as the main source of total factor productivity growth. Technical efficiency has improved in the rural sector (from -0.54 percent in 1986 to 0.81 percent) but had declined in the state sector.

Chen has compared the relative productive efficiency of state-owned industrial enterprises and township-village industrial enterprises in 1987,

²⁰Wu Yanrui, "Productivity Growth, Technological Progress, and Technical Efficiency Change in China: A Three-Sector Analysis," *Journal of Comparative Economics* 21, no. 2 (October 1995): 207-29.

Table 10
Average Growth Rates of TFP, TP, and TE by Sector, 1986 and 1991 (%)

Year	1986		1991	
Sector	State	Rural	State	Rural
TFP	4.41	3.87	1.76	5.22
Technological Progress	3.35 (76)	4.41	3.35	4.41 (84)
Technical Efficiency	1.06 (24)	-0.54	-1.59	0.81 (16)

Note: The numbers in parentheses are the shares of TP and changes in TFP growth.

Source: Wu, "Productivity Growth," 219.

1989, 1990, and 1992 by using the DEA approach. The efficiency scores in table 11 indicate that enterprises may produce by how much degree more to achieve efficiency. In 1992, for example, by assuming identical technology, SOEs should have been able to produce an additional 89 percent output, while TVEs should have produced only 11.6 percent more. The SOE sector appears to be highly inefficient. Had SOEs been more efficient, national GDP would have been about 16 percent higher. Even if assuming TVEs and SOEs have identical technology, TVEs are still more efficient than SOEs. If we consider that SOEs had access to better technology, the efficiency gap between them could be larger. This serious efficiency loss from the SOE sector led to the major reforms in recent years. TVEs may not be replaced by SOEs in the short run because of their efficient development.

Table 11
Comparison of Relative Productive Efficiency by Sector

Year	TVEs	SOEs
1987	1.222	1.383
1989	1.217	1.544
1990	1.272	1.451
1992	1.116	1.896

Source: Chen Yong-sheng, "The Relative Productive Efficiency of Township-Village Enterprises in Mainland China" (Ph.D. dissertation, University of Texas at Dallas, 1997), 132.

Table 12
The Change of Urbanization in Mainland China

Year	1950	1985	1990	1991	1993	1995	1996
Urbanization	11.2	23.7	26.4	26.4	28.1	29.0	29.4
Per Capita GDP (U.S. dollar)	—	267	313	346	490	581	678
Chenery and Syrquin's Level	28.4	36.2-43.9	43.9-49.0			52.7 above	

Sources: *Zhongguo laodong tongji nianjian* (Labor statistical yearbook of China) (Beijing: Zhongguo tongji chubanshe, 1997), 4; Hollis Burnley Chenery and Moises Syrquin, *Patterns of Development, 1950-1970* (London: Oxford University Press, 1975), 20-21.

TVEs, Urbanization, and National Industrialization

TVEs have been the locomotive of the economic growth of society. Not only have they achieved higher growth rates, but they have also influenced the national economy. In this section, we attempt to investigate the role of TVEs in the process of national industrialization. We will examine the level of urbanization and the impact of TVEs on national industrialization in order to predict the continued existence of the third sector.

Urbanization

Urbanization can be defined as the ratio of urban population to total population. If the level of urbanization increases, the existence of the third sector may not be necessary: rural industrialization will soon be transformed into general industrialization.

Based on the definition of urbanization, we find that the level of urbanization in mainland China has been very low. In 1952 the level of urbanization was 11.2 percent, whereas the world level was 28.4 percent. Although increasing with the process of industrialization, China's urbanization level has been still very low (see table 12). A low level of urbanization limits the economic performance of firms because they cannot benefit from economic agglomeration and their resource allocation will be inefficient. Therefore, rural industrialization will continue to play an important

Table 13

The Change in the Composition of China's GDP (%)

Year	1949	1978	1980	1985	1990	1991	1993	1995	1996
Agriculture	70.0	28.1	30.1	28.4	27.1	24.5	19.9	20.5	20.2
Industry	30.0	48.2	48.5	43.1	41.6	42.1	47.4	48.8	49.0
Tertiary	—	23.7	21.4	28.5	31.3	33.4	32.7	30.7	30.8
TVEs	—	7.2	7.8	16.6	25.2	26.5	42.7	25.0	25.7

Sources: *Zhongguo laodong tongji nianjian* (1997), 5; *Zhongguo jingji nianjian 1981* (Almanac of China's economy 1981), VI-4.

role in the process of economic development. Thus, the third sector must continue to exist.

Impact of TVEs on National Industrialization

In general, the aim of national industrialization includes several aspects. First, the industrial sector is to gradually receive a bigger share in the structure of output value. Second, labor force is to be transferred from the agricultural to the industrial and service sectors. Third, farmer incomes are to be increased, and the gap between the urban and rural areas is to decrease. Based on these three aims, we will examine the contribution of TVEs to national industrialization.

First, we examine change in industrial structure. Along with the development of TVEs, which enhances rural industrialization, the industrial structure in mainland China has indeed been gradually changing. In 1949, the agricultural sector was much larger than the industrial sector. By 1996, however, the industrial sector had become the largest. This trend is expressed in table 13. The change in industrial structure is obvious, with the share of TVEs in China's GDP in 1993 being quite high.

Second is the change in the structure of the labor force. In 1952, the employment structure was extremely imbalanced: industrial employment was just 7.4 percent of total employment. The structure of the labor force has, however, been gradually changing (see table 14). Industrialization of the labor force, defined as the ratio of labor force in rural industry to the total labor force, has occurred. In the employment structure, the composi-

Table 14
The Composition of Employment Structure (%)

Year	1952	1978	1980	1985	1990	1991	1993	1995	1996
Agriculture	83.5	70.5	68.7	62.4	60.1	59.7	56.4	52.2	50.5
Industry	7.4	17.4	18.3	20.9	21.4	21.4	22.4	23.0	23.5
Others	9.1	12.1	13.0	16.7	18.5	18.9	21.2	24.8	26.0
TVEs	—	7.0	7.1	14.0	14.5	14.8	18.6	18.9	19.6

Source: *Zhongguo tongji nianjian* (1997), 94-96.

Table 15
Annual Per Capita Net Income of Urban and Rural Residents (Yuan)

Year	1957	1978	1980	1985	1990	1995	1996
Rural	73	133.6	191.3	397.6	686.3	1,577.7	1,926.1
Urban	235	316	439	685	1,387	3,893	4,377
U/R	3.22	2.37	2.29	1.72	2.02	2.47	2.27

Source: *Zhongguo tongji nianjian* (1997), 291.

tion of TVEs has been continuously increasing. In other words, the ability to absorb surplus labor increased until 1996, although a recent report argues that this ability is declining.²¹

Because TVEs create employment, rural incomes have increased and the gap between urban areas and rural areas has been reduced. Table 15 shows the declining gap ratio.

In addition to the change in industrial structure, employment structure, and income distribution, the share of rural industrialization in rural areas is becoming more important. Table 16 shows the increasing impact of rural industry, indicating that TVEs will remain as the third sector, at least for a while.

²¹*People's Daily*, February 28, 1998, 6.

Table 16
Agricultural Industrialization in Rural Areas

Year	1978	1984	1988	1992	1993	1994	1995	1996
Share of								
Agriculture	68.6	63.2	46.8	35.8	27.5	25.7	28.2	26.4
Share of								
Nonagriculture	31.4	36.8	53.2	64.2	72.5	74.3	71.8	73.6
Share of Rural								
Industry	19.5	23.1	38.1	50.1	56.8	58.4	52.9	54.6
Share of TVEs	24.2	34.0	51.8	70.6	78.9	69.4	79.4	77.1

Source: *Zhongguo nongye tongji nianjian* (Agricultural statistical yearbook of China) (Beijing: Zhongguo tongji chubanshe, 1997), 35.

Conclusion

From the previous analysis, we find that the TVE sector may still retain the status of the third sector, being unlikely to be replaced by national industrialization in the short run. First, the productivity growth achieved by the TVEs not only resulted from input augmentation, but was also due to technological progress and technical efficiency. Only with technological progress and technical efficiency can the development of TVEs be sustainable.

Second, by comparing TVEs with SOEs, we see that TVE total factor productivity is higher than that of SOEs found in previous empirical studies. In terms of relative productive efficiency, TVEs are also more efficient than SOEs. The evidence indicates that TVEs have the capability of facing market competition. Presently, SOEs are also implementing institutional reforms. In order to observe the competition between SOEs and TVEs, more empirical work needs to be undertaken.

Third, the level of urbanization demonstrates that urbanization is only changing gradually. This means that urbanization will not be achieved in the short run. TVEs must therefore continue to develop. In addition, abundant surplus labor still exists in the agricultural sector. TVEs can and should continue to absorb this surplus labor. Since TVEs have made contributions to enhance the level of agricultural industrialization, there is no

doubt for the necessity of the third sector's existence. Therefore, the existence of TVEs will remain for the near future, without weakening in the short run.

Worth noting is that the growth rate of output value has begun to slide. This seems to hint that the rural enterprises will soon face a different developmental period and more reforms will be required. The Beijing government is striving hard to stop this trend, planning to keep the growth at 18 percent in 1998. Several officials have claimed the adoption of the following five goals. First, officials are trying to activate operational mechanisms through the restructuring of setups. This includes the formation of shareholding, stock cooperative undertakings, and enterprise groups, as well as adoption of enterprise leasing, merging, and selling. Second, enterprises are attempting to make an adjustment to their product mix according to market demands, national policy, and resource superiority. A third goal is to rationalize and enhance the cooperation of enterprises. Fourth, officials are anxious to carry out anti-pollution programs. A final goal is to enact various supportive policies and undertakings.²²

These approaches reflect several problems faced by TVEs. These include the facts that: (1) the small scale of some rural enterprises leads to weak competitiveness; (2) the lagging of the reform of some enterprises has weakened their market-oriented mechanisms; (3) low levels of construction result in unreasonable industrial structure and product mix; (4) management of some enterprises has been quite inept; and (5) comparatively high liabilities rate of some enterprises greatly add to their operational costs.

Another major problem involves the collective ownership of TVEs. Collective ownership invites political intervention by the local government in the workings of the enterprises. Whether government intervention is appropriate or not is disputable, although there are many stories of local officials demanding bribes or personal services from rural enterprises.²³ Fairbank has also claimed that local bureaucratic intervention was a major

²² *China Economic News*, April 27, 1998, no. 15:6.

²³ Wing Thyee Woo, "Improving the Performance of Enterprises in Transition Economies," in *Economies in Transition: Comparing Asia and Eastern Europe*, ed. Parker Woo and Jeffrey D. Sachs (Cambridge, Mass.: MIT Press, 1996), 318.

reason why mainland China did not set up a market economy in past centuries.²⁴ Additionally, entrepreneurship will not be adequately promoted in the long run unless there is much wider scope for truly private enterprises. With collective ownership, entrepreneurs will not receive adequate compensation, and the marketplace will do a poor job in promoting good entrepreneurs and punishing the inefficient ones.

For improving the defects of collective ownership, China has been implementing the reforms of ownership. Shareholding cooperatives will be the form to encourage building up. According to news report, there are 3 million shareholding cooperatives existing in rural areas²⁵ and 15 percent of collective TVEs have been transferred to shareholding cooperatives and 1,039 township-village conglomerates set up in 1997.²⁶ Further research must be undertaken in order to evaluate their performance. No matter what kind of ownership reforms occurs in the TVE sector, Putterman argues that adjusting policies and institutions external to TVEs may be more important to fostering TVE efficiency than are these internal institutional changes.²⁷

²⁴John King Fairbank, *China: A New History* (Cambridge, Mass.: Harvard University Press, 1992), 181-82.

²⁵*People's Daily*, February 6, 1998, 2.

²⁶*Jingji ribao*, January 4, 1998, 7.

²⁷See note 2 above.