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The Origins of China's Economic Transition

Xiaolin Pei
Department of Economic History, Lund University

中国经济转轨的真实起源

裴小林

Abstract
In the early 1950s China adopted a Stalinist development strategy and transferred a vast amount of farm surplus into investment in state-owned heavy industry. This created a typical dual economy with heavy industry on one side and agriculture, with its huge surplus of labor, on the other, and in between a vacuum: a lack of the development of light industry. Around 1980, the state increased the price it paid for farm products, causing the farm surplus to flow from the state to peasants. This brought both capital and investment goods to the countryside, with its surplus labor, and induced a quick expansion in rural industrialization which filled the development gap caused by the underinvestment in light industry. Hence it was this reverse flow of the farm surplus that launched China's economic takeoff by changing the unbalanced economic structure to a balanced one. The essence of the reverse flow was that the source of investment (33 percent of the GDP in the pre-reform era) was largely redistributed by the same system that had transferred the farm surplus from peasants to the state. This shows that the model for China's economic reform involved macroeconomic changes in which pre-reform resources were redistributed by the planned system, *pace* Lin et al. (1994), who have tried to rewrite history by emphasizing supposed microeconomic changes in which new resources were allocated by the market system to the labor-intensive sector. It also shows that development in China began with abandoning the Stalinist strategy when the majority of China's population was still rural. Thus, its economic transition could begin with a rapid expansion of rural industrialization. This did not happen in the Eastern European countries because when they abandoned the Stalinist strategy the majority of their population was already urban and industrialized.

This article is a result of overall rewriting of my previous article on the same subject (Pei, 2005). The two articles are fundamentally different. The previous article presents the differences between my explanation of China's economic transition and that of others, while this article further shows how the different explanations are arrived at by different methods and what methods for studying history are valid. In addition, the discussion and debate presented in the previous article are limited to the specific issue of how planned economies transform to market economies. By criticizing the "Chinese reform model" and the "comparative advantage strategy" of Lin et al. (1994), the current article extends the study to the global history of how agrarian societies transform to industrialized societies and the academic debate to the theoretical category of all of development economics.

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Keywords
population structure, Stalinist strategy, farm surplus, investment in township/village industry, economic structural transformation

Biography

Xiaolin Pei received his PhD in economic history from Lund University.

摘要
中国在改革前选择了斯大林发展战略，将全国的农业剩余集中到国家财政再转化为国家投资，制造出一个投资集中在重工业，大量剩余劳动力集中在农业和中间是轻工业投资及消费品空缺的二元经济结构。从1979年开始的提高国家农产品收购价格使农业剩余从国家财政向农村剩余劳动力反向回流，使他们得到了购买重工业投资品的资金，从而使乡镇工业的就业和产值规模迅猛扩张去填补轻工业的发展空白，所以是农业剩余的反向回流在把改革前的不平衡经济结构扭转向平衡时引发了中国的经济起飞。这一反向回流的实质是中国改革前的投资来源（占 GDP 的33%）被改革前转移农业剩余的计划体制渠道进行了大规模的宏观再配置。它说明中国的改革是宏观起步的存量改革，而林毅夫等人主观臆想的“微观起步，增量改革和市场把增量资源配置到劳动密集型产业的中国转轨模式”颠倒了历史。它也说明中国是在其人口仍旧以农村人口为主时就放弃了斯大林发展战略，所以中国的经济转轨能从一场迅猛的农村工业化浪潮开始。但这种浪潮不会在前苏联和东欧国家出现，因为它们的人口主体在它们开始放弃斯大林发展战略时已经城市化和工业化了。

关键词
人口结构、斯大林发展战略、农业剩余、乡镇工业投资、经济结构转换

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It is well known that China's leaders had no blueprint in mind at the end of 1978 when they set out to reform China's economy (Perkins, 1988: 601), yet the reform not only led to immediate high growth, but also to sustained high growth. Although the reform was begun thirty-five years ago, what successfully launched China's economic transition and takeoff has yet to be accurately identified. This not only is an unsolved historical puzzle, but also suggests where one should look for the reasons that made China's transition model different from the East European model.

Even though the reform program and the factors that launched China's economic takeoff have not been identified, researchers all note that China's high tide of rural industrialization from 1983 to 1995 was unique and absent in the East European transition model. They regard this high tide as the major force driving China's high growth and transition. In 1987 Deng Xiaoping himself also admitted that the rapid development of township-village enterprises (TVEs) completely exceeded the state's expectations.[1] How this development came into being has

[1] Before 1996, China's official statistics defined TVEs as township and village enterprises (*xiangcun qiye*), as well as individual household enterprises (*huban qiye*) and partnerships (*lianhu qiye*). Since the period under study here is before 1996, I follow this definition.

evoked a heated debate and prompted varying hypotheses. Qian and Xu (1993) and Sachs and Woo (1994) provide macro explanations, arguing that the TVE growth was caused by an expansion of TVE employment. Most explanations, however, can be described as "micro" and stress organizational efficiency. The issue here has been how to interpret the state's role versus the market's role. Walder (1995) has argued that local governments, which directly controlled the collective TVEs, acted like efficient industrial firms, while Nee (1992) has contended that the hybrid organizational form of TVEs—combining state and private ownership—is the reason why they were more efficient than state-owned enterprises (SOEs). In line with Nee's argument, Lin, Cai, and Zhou (1994) hypothesize that China's gradual reform differed from the East European reform which involved radically changing the macro-policy environment and the social benefit structure. According to this line of argument, China's reform was launched by devolving power to micro-enterprises and encouraging them to create new resources.The market mechanism then allocated these new resources to labor-intensive industry, bringing China's comparative advantage into play and causing the economy to take off.

The next section will first show that the macro explanation is closer to reality than the micro approach, because the growth in TVE output from 1983 to 1995 was indeed caused mainly by a quantitative expansion of TVE employment. If the organizational efficiency stressed by the micro interpretation were a fact, the collective TVEs would not have been privatized in 1995. However, the macro argument is not a causal explanation but a description of a phenomenon, because growth in employment is the result of growth in investment. There would have been no quantitative expansion of TVE employment if there had been no expansion of investment in the TVE sector. Yet the macro argument provides no evidence of investment. Qian and Xu (1993) only argue that the regional experiments with gradual reform were less costly and more feasible in the M-form hierarchy of China than in the U-form hierarchy of East European countries, and this is the key to understanding the phenomenal expansion of China's non-state sector. Sachs and Woo (1994) simply say China is more agrarian and its larger farm sector than that of the East European countries contained more surplus labor, which was available to fuel new industries. However, these arguments have not established the causal relationship between investment and employment. Only when we identify the sources of TVE investments can we identify the nature of the reform program that launched China's economic takeoff.

To uncover the sources of TVE investment, we must seek its relationship with the sources of investment in the pre-reform Stalinist strategy and analyze whether China's economic takeoff is an outcome of the unbalanced economic structure created by that strategy. Economic transition, after all, is a change from one economic state to another. But most studies, perhaps under the influence of ideological bias, start with the assumption that China's pre-reform economy was a hindrance to growth and hence only deal with the reform period. This method reaches a conclusion before a full investigation, which is why the historical puzzle has not been solved. This method also differs from the economic history perspective in my studies, which pay attention to the specific connection between China's

pre-reform and post-reform developments. From this perspective, I have argued (Pei, 1996) that Oi's (1992) and Walder's (1995) definition of the "local state" does not recognize that the people's communes integrated government administration and economic management. Therefore, commune leaders could represent both the state and the rural collectives, and change from serving the state before reform to serving the collectives after reform. It is also from this perspective that I have pointed out (Pei, 1994) that Qian and Xu's (1993) approach reduces the fundamental difference between reform in China and the East European countries to a superficial difference in administrative structure. It is not the different administrative structures but rather the different population structures that explain why an upsurge of rural industrialization emerged only in China. To clarify the contribution of collective landownership to China's economic transition and rural industrialization, and to explain why the transfer of millions of laborers from agriculture to industry did not need markets for factors of production, I have developed a resource allocation model (Pei, 2002). But this resource allocation model is unable to reveal where the TVE investment came from. That question will be addressed in the present article.

Kuznets (1989: 413) stated that "anyone can start a row in economics; it is much harder to find out what is really happening in an economy." Following Kuznets, this article does not start with any assumptions. Instead, it depends on an economic history perspective to search out the sources of TVE investment and begins with things as they were, showing what happened before reform and what changed during reform. It tries to let the original statistical data speak for themselves. The original data reveal the facts from various angles. This perspective not only avoids any ideological bias but also allows for unintended consequences. Furthermore, it analyzes the real process of China's economic transition concretely, including what happened in specific years.

I argue that a structural transition from an unbalanced to a balanced economy induced an expansion in the number of TVE workers from 1983 to 1995, which in turn led to a high growth in output. This expansion and growth in output were realized through a rapid development of light industry, which was an inevitable outcome of the economic structure of the pre-reform era. Before 1979, China followed a Stalinist strategy and transferred a vast amount of farm surplus into investment in state-owned heavy industry, creating a typical dual economy with heavy industry on one side and agriculture, with a vast surplus of labor, on the other side, and in between a vacuum: a lack development of light industry. Therefore, the structure in the reform era could be balanced easily by expanding labor-intensive light industries. This could be achieved by moving investment goods from heavy industry and the surplus labor from agriculture to the vacuum of light industry. Around 1980, a reverse flow of the farm surplus from the state to the peasants brought both capital and investment goods to the countryside, with its surplus of labor, resulting in the expansion of light industry. Hence, this reverse flow was the source of both TVE investment and the reform program that launched China's

economic takeoff. The essence of the reverse flow was that China's pre-reform source of investment (about 33 percent of the GDP) was largely redistributed by the pre-reform era system, which had transferred the farm surplus from peasants to the state. China's economic reform model thus involved macroeconomic changes in which the pre-reform resources were redistributed by the planned system. Lin et al. (1994) have tried to rewrite history by emphasizing supposed microeconomic changes in which new resources were allocated by the market system to the labor-intensive sector. Actually, the path to development in China started with the abandoning of the Stalinist strategy at an opportune moment when the majority of its population was still rural. Therefore, China's economic transition could begin with a rapid expansion of rural industrialization. This did not happen in the Eastern European countries because when they abandoned the Stalinist strategy, the majority of their population was already urban and industrialized.

The next section shows that TVE growth was typically due to the rapid increase in the number of TVE workers. A brief introduction of the structural transition from an unbalanced to a balanced economy is presented in the third section. The fourth section explores how the unbalanced structure made the quantitative expansion of TVEs possible, from which follows a description of how this expansion was realized when the Stalinist strategy was abandoned and investment was reallocated in the early 1980s. The sixth section shows that the "Chinese reform model" and the "comparative advantage strategy" of Lin et al. (1994) amount to rewriting history, because the neoclassical micro-static method they use to explain the trajectory of underpopulated countries where supply always exceeds demand, cannot explain the trajectory of overpopulated countries, where under the physical law of limits to land productivity, demand always exceeds supply (Pei, 2004, 2008, 2014). Thus by criticizing the "model, strategy and method" of Lin et al., this article extends the debate about how planned economies are transformed into market economies to the debate about how overpopulated agrarian societies are transformed into industrialized societies.

Quantitative Expansion of TVE Employment and Industrial Output

In 1978, when China's reform started, there were three sectors in the Chinese economy: state, urban collective, and rural collective. At that time, 82 percent of China's population was living and working in the countryside; because of their number, the nature of this sector shaped China's economic transition as a whole. TVEs were a sub-sector in the rural collective sector. They were then called "communes" and "brigade enterprises" (CBEs), and their share of the output in China's economy was small. However, after the reform, this sub-sector grew extremely rapidly, and ten years later it commanded a significant portion of the economy.

Economic growth is a relation between input and output. According to Solow's (1956) growth theory, in the absence of technological progress, output is determined by the growth rate of the labor force; thus returns are constant, to scale. TVE

growth fits this model exactly. TVEs are typically labor-intensive industries. Their technology is less advanced than that used in the state sector, and clearly is not the reason for their relatively high growth. Even in the transition period, growth in employment still basically explains why TVE output expanded faster than that of China's state and urban collective sectors (see Figures 1 and 2). At the start of China's reform, the number of employees of urban collective enterprises (UCEs) was very close to the number of employees of TVEs (more precisely, CBEs). Between 1978 and 1996, the former held steady while the latter grew rapidly, so that by the end of the period there were 4.5 times as many TVE as UCE employees. Thus the industrial output of TVEs grew much more quickly than that of UCEs, although local governments at the bottom of the hierarchy administered both. This difference falsifies the hypothesis that growth was the result of efficient local governments (Oi, 1992; Walder, 1995).

In 1978 the number of employees in the state sector was 2.6 times that in TVEs; ten years later their numbers were nearly equal, and by 1993 TVE employment had overtaken that in the state sector. As Figure 1 shows, TVE employment caught up with the state sector's in merely five years (1983–1988). It would be most surprising if its sudden expansion in scale did not result in a higher growth rate of output than in the state sector. In fact, a sudden expansion of the scale of production always generates high economic growth, no matter who owns the industry. We should not forget that China also successfully launched rapid economic growth under its planned system by expanding state industry in the First Five-Year Plan of the 1950s. The growth of the collective TVE output declined in the second half of the 1990s when its expansion of scale slowed, even though TVE property rights were better defined than earlier (e.g., the share-holding system was introduced in the collective TVEs in the mid-1990s). This fact render Nee's hypothesis (1992) untenable.

The quantitative expansion of TVEs was the product of a large-scale reallocation of resources. As shown in Figure 1, some 110 million laborers moved from the agricultural to the TVE sector between 1978 and 1996. This huge number, close to half of the entire US population, constitutes one of the largest sustained industrializing movements in history. This sweeping reallocation of resources is the key to understanding China's gradual transition model. As Naughton (1994: 266) points out, "The success of TVE's is due largely to a set of external conditions to which TVE's are an effective adaptation. TVE's are responses to one of the most distinctive characteristics of the Chinese transition as a whole: the early creation of product markets, which exist for a prolonged period without well-developed markets for factors of production or assets." This was indeed the case. As Figure 1 shows, the expansion took place uniquely in the TVE sector, while the state and urban collective sectors lagged far behind.

Even if there was no factor market, the expansion of TVE employment still needed three prerequisites. First, there had to be a strong capital goods industry that could immediately provide machinery, raw materials, and energy for the huge

number of new workers. This did not necessarily need a capital market, because TVEs could buy these goods from product markets. Second, TVEs had to obtain huge investments although there was no capital market. Third, the transfer of investment had to be realized by a non-market mechanism in the absence of a capital market. Without any of these three prerequisites, the TVE expansion would have been impossible. How were these realized in the early 1980s?

Structural Transition

The three prerequisites were rooted in China's pre-reform economy. Therefore, we start with a discussion of situation in the 1950s. Eckstein (1977: 50–51) shows that China adopted a Stalinist strategy in the early 1950s. The strategy consisted of four elements: (1) a heavy-industry-oriented pattern of industrialization and economic growth; (2) a high rate of savings and investment; (3) industrialization at the expense of agriculture; and (4) institutional transformation in agriculture and other sectors of the economy so as to attain the above aims. The three prerequisites of TVE expansion were rooted in three factors of this strategy, namely a heavy industry created by the strategy, a farm surplus to make the strategy possible, and a planned mechanism to transfer the farm surplus from the rural collective sector to the urban state sector.

Figure 1. Employees (Million), 1978–1996.

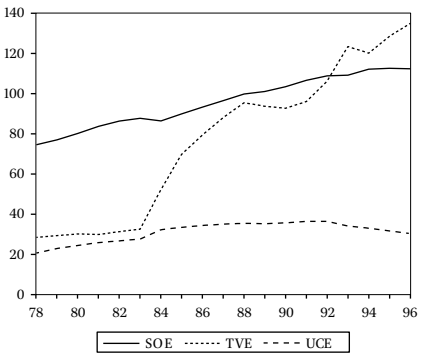
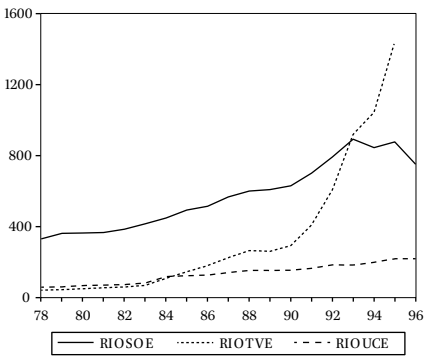


Figure 2. Industrial Output (billion RMB, constant prices), 1978–1996.



Note: SOE = number of employees of state-owned enterprises; TVE = number of employees of TVEs; UCE = number of employees of urban collective enterprises; RIOSOE = real industrial output of SOEs; RIOTVE = real industrial output of TVEs; RIOUCE = real industrial output of UCEs. The industrial output of TVEs in 1996 is not available because of the privatization of collective TVEs.
Sources: SOE, TVE, and UCE are from *Statistical Yearbook of China*, 1996: 90–91, and *China Township Enterprise Statistical Yearbook*, 1993: 143. RIOSOE, RIOTVE and RIOUCE are from and based on *China Industrial Economic Statistical Yearbook*, 1995: 24, *Statistical Yearbook of China*, 1996: 389, 401–3, and *China Township Enterprise Statistical Yearbook*, 1993: 144.

Figure 3. The Economic Structure Created by the Stalinist Strategy.

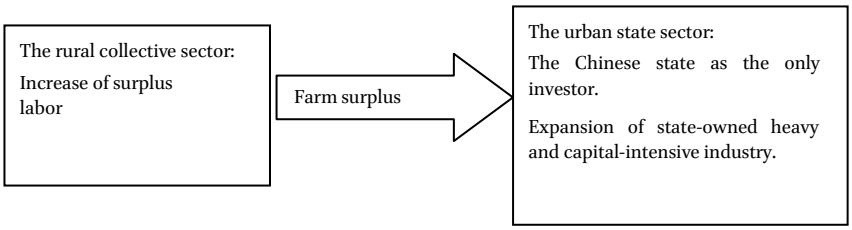
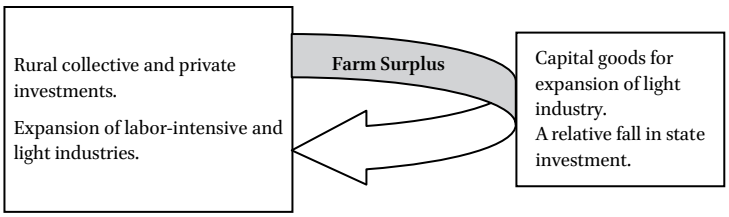


Figure 4. Structural Transition in the 1980s.



As shown in Figures 3 and 4, the transfer of the agricultural surplus was the basis of the Stalinist strategy. This created a typical dual economy with investments concentrated in heavy industry and a vast surplus of labor force in agriculture. In this unbalanced structure, there were inherent possibilities to expand the TVE sector by reversing the flow of the farm surplus from the state sector to the rural collective sector, with its surplus labor, in the 1980s. First, reversing the flow of the farm surplus could transfer the vast surplus labor to industry, because the expansion of labor-intensive TVEs did not need much capital. Second, the vast surplus labor in agriculture could immediately satisfy the demand for labor when labor-intensive light industry expanded. Third, when the farm surplus flowed back, TVEs could buy machinery, raw materials, and energy from state-owned heavy industry. Therefore, as Figure 4 shows, the farm surplus and capital goods flowed from the state sector to the rural collective sector at the same time.

In the pre-reform era, the transfer of the agricultural surplus into state investment was by a planned mechanism. It began with a forced low price for farm products set by the state plan, which then led to cheap food for the urban population and cheap raw materials for state industry. This in turn resulted in low wages and low costs for state industry, and hence high profits. The profits were turned over to centralized revenues and finally invested in heavy industry.

In the early 1980s, a rise in prices of farm products led to, first, price subsidies for food for the urban population, second, a rise in the costs of state industry, and third, a fall of fiscal revenues relative to GDP. This created a huge deficit, a heavy burden on the centralized budget, forcing the state to decentralize the burden by a reformed

fiscal system known as "the fiscal contract" 财政包干. Finally, the fiscal decline relative to GDP reduced the state's share in the social investment structure.

On the other hand, the rise in prices of farm goods resulted in a rise in rural income per capita, which in turn led to the emergence of rural private and collective capital which was invested in labor-intensive and light industries. This explains why the expansion of the TVE sector did not need a capital market—instead, TVEs obtained funds when the farm surplus flowed back to the villages via the same pre-reform-mechanism channel.

The Transfer of the Agricultural Surplus as the Basis of the Stalinist Strategy

Agricultural collectivization and nationalization of the non-agricultural sectors in the 1950s, as Eckstein (1977) shows, built a mechanism for raising and maintaining a high rate of involuntary saving in the agricultural sector, mainly through manipulating price relations between agricultural and non-agricultural goods in such a way that the farming sector was forced to sell cheap and buy dear. These price manipulations enabled the state trading companies to earn large monopoly profits, which were then paid into the state budget and became a source of investment in heavy industry. At the same time, the nationalization of the non-agricultural sectors provided a means by which all net earnings of state-owned enterprises were automatically placed at the disposal of the government and became sources of budgetary revenue. Eckstein makes it clear that transferring the agricultural surplus was the aim, and agricultural collectivization and nationalization of the non-agricultural sectors were the means to realize the aim. This is the key to understanding agricultural collectivization in the mid-1950s.

In fact, the state monopolized the purchase and sale of grain and set low prices on farm products before the collectivization of agriculture and nationalization of industry. On October 16, 1953, the Central Committee of the Chinese Communist Party issued a "Decision on the Unified Purchase and Supply of Grain" and closed grain markets. According to Bo (1991: 329, 370), nearly all the government cadres at the county and district levels 县区两级干部 had no time to do other work because they had to conduct door-to-door visits to 110 million rural households to purchase grain. The state purchased not only surplus grain but also a part of the consumption grain（口粮）of the peasants. This led to very serious problems. For instance, in Lianxi township, Xinghui county, Guangdong province, nine peasants, including the leaders of "elementary cooperatives" 初级农业合作社, were bound and beaten, and land certificates of three households were confiscated when they refused to sell grain to the state. In District 9, Gaoyao county, the homes of 36 households were searched, and 53 peasants were bound and beaten. In Guangdong 111 persons committed suicide and 134 people died in Zhejiang province during the forced purchasing (Chen et al., 1993: 153–54).

This kind of cost was so high that it was very hard to implement the policy. This was one of the reasons for land collectivization and establishing "advanced

Table 1. Investment, Output, and Labor Structures, and Population

	Inv. str. (%)					Outp. str. (%)					Lab. str. (%)				Pop. (%)	
	A	L	H	R-I		A	L	H	p-c-I		A	I	S		R	U
1953–57	7.1	6	36	24	1949	70	22	8	66	1949					89	11
1958–62	11	6	54	31	1952	56.9	28	15	104	1952	84	7.4	9		88	13
1963–65	18	4	46	23	1957	43.3	31	26	142	1957	81	9	10		85	15
1966–70	11	4	51	26	1965	37.3	32	30	194	1965	82	8	10		82	18
1971–75	9.8	6	50	33	1970	32.5	31	36	235	1978	71	18	12		82	18
1976–80	11	7	46	33	1975	28.2	32	40	273	1979	70	18	12		81	19
1978	11	6	49	37	1978	24.8	32	43	315	1980	69	18	13		81	19
1979	11	6	43	35	1979	26.6	32	41	346	1981	68	19	13		80	20
1980	9.3	9	40	32	1980	27.2	34	39	376	1982	68	19	13		79	21
1981	6.6	10	39	28	1981	28.8	37	35	397	1983	67	19	14		78	22
1982	6.1	8	39	29	1982	29.9	35	35	422	1984	64	20	16		77	23
1983	6	7	41	30	1983	29.9	34	36	463	1985	62	21	17		76	24
1984	5	6	40	32	1984	29.7	33	37	545	1986	61	22	17		76	24
1985	3.3	6	36	35	1985	27.1	34	39	668	1987	60	22	18		75	25
1986	3	7	38	35	1986	26.4	35	39	737	1988	59	22	18		74	26
1987	3.1	7	44	34	1987	25.3	36	39	859	1989	60	22	18		74	26
1988	3	8	44	35	1988	24.3	37	38	1066	1990	60	21	19		74	26
1989	3.3	8	45	34	1989	22.9	38	39	1178	1991	60	21	19		74	26
1990	3.9	7	49	33	1990	24.3	37	38	1267	1992	59	22	20		72	28
1991	4	7	47	33	1991	22.4	38	40	1439	1993	56	22	21		72	28
1992	3.7	7	41	34	1992	19.8	38	42	1703	1994	54	23	23		71	29
										1995	52	23	25		71	29

Note: Inv. str. = investment structure; A = agriculture; L = light industry; H = heavy industry; R-I = rate of investment (total investment/GNP). Outp. str. = output structure; p-c-I = per capita income (RMB). Lab. str. = labor structure; A = agriculture; I = industry; S = service. Pop. = population structure; R = rural share; U = urban share.
Sources: *Statistical Yearbook of China*, 1993: 33 (p-c-I), 43 (R-I), 60 (Outp. str.), 158 (Inv. str.); *Statistical Yearbook of China*, 1996: 88 (Lab. str.), 69 (Pop.).

cooperatives." In January 1956, *The Socialist High Tide of Rural China*, edited by Mao, was published (Zhonggong zhongyang bangongting, 1956). The number of advanced cooperatives rapidly increased from 500 in 1955 to 540,000 in 1956, and nearly 90 percent of rural households were organized into these cooperatives. These were not really cooperatives but rather a form of collective organization. All means of production, including land, farm implements, and draft animals, were collectivized. Production, labor, and the distribution of the harvest were collectively managed as well. On October 6, 1956, around the time the advanced cooperatives were formed, the State Council issued "Rules on the Unified Purchase and Supply in Agricultural Cooperatives." This reduced the state's purchasing accounts from 110 million households to 540,000 collectives. This institutional change greatly reduced the costs of the system of unified purchase and supply of grains (Bo, 1991: 277) and made the collective a buffer between the state and peasants.

The rate of savings and investment immediately increased after the land collectivization (see Table 1). The rate was 24.2 percent of the GNP from 1953 to 1957, but grew to 30.8 percent of the GNP from 1958 to 1962. This immediate rise was due largely to the centralization of China's land rents in the state budget. In the elementary cooperatives of the early 1950s, individual households owned land and household incomes were from payments for both land and labor contributed. However, once land was collectivized, households could no longer receive payments for land, and there is no evidence that collectives during the Mao era had a claim to land rent. Land rent was in fact taken by the state.

The transfer of land rent and the agricultural surplus into state investment was realized by the mechanism described in the previous section. This can be diagrammatical described as: low prices of farm products → cheap food and cheap raw materials for state industry → low costs and high profits of state industry → centralized fiscal revenues → high investments in heavy industry. This set of transfers was the basis of the Stalinist strategy, which remained firmly in place until 1979, although in some other respects Mao reformed the Soviet system, such as through decentralization during the Great Leap Forward (1958) and Cultural Revolution (1966–1976).

Under the Stalinist strategy, China's heavy industry indeed grew very rapidly. Table 1 shows the structural changes in investment and output from 1949 to 1995. In the early years, more than 80 percent of China's GNP came from the three sectors—agriculture, light industry, and heavy industry—that dominated the national economy (Ma and Sun, 1981: 99). Therefore, China's official statistics regard this structure as the most important economic indicator. In 1949, when the People's Republic was founded, China was a typical poor agrarian country. Both light and heavy industry were underdeveloped, but the latter was the weakest sector, with a share of only 7.9 percent of the total output. About 70 percent of the total output came from agriculture. Heavy industry was capital-intensive and its growth depended on a high rate of investment. Such investments could only be extracted from the agricultural surplus and savings of the peasants, who made up the vast

majority (89.4 percent) of China's population. From 1953 to 1980, about half of the total investments were in heavy industry, five times the investment in agriculture, and eight to nine times the investment in light industry. Therefore, heavy industry rapidly grew from being the weakest to the strongest sector and its share in output became the largest (42.8 percent) in 1978, while light industry stagnated and agriculture's share of output dropped sharply to 24.8 percent in the same year.

While the output structure changed substantially, as Table 1 shows, the change in the labor structure lagged far behind. The share of industrial labor increased by only 10.2 percent from 1952 to 1978, and the share of agricultural labor decreased by 12.8 percent. Growth in the share of service labor was virtually unchanged. Moreover, the change in the population structure even lagged far behind the change in the labor structure. In the twenty-six years from 1952 to 1978, the share of the rural population dropped by only 5.4 percent despite the rise of a relatively strong heavy industry. China was still an agrarian country, with peasants making up 71 percent of laborers and 82 percent of the population in 1978. This was no doubt due to the capital-intensive nature of heavy industry, which consumed a great deal of the farm surplus but blocked an inflow of surplus labor from the farm sector.

The most serious problem caused by the unbalanced structure was that initially there was little demand for the products of heavy industry. On the one hand, the agricultural surplus was nearly totally taken and peasants had no money to buy farm machinery; on the other hand, the vast surplus labor of the farm sector increased by the Stalinist strategy naturally reduced the need for machinery. The same was true in light industry. Because China had a virtually unlimited supply of labor but relatively little capital in the pre-reform era, one might expect that labor-intensive light industry would have developed faster than capital-intensive heavy industry. However, the state created an accumulation mechanism that produced the exact opposite. Planners not only invested as little as possible in light industry, but also kept the consumption rate among the population as low as possible. From 1971 to 1980 the accumulation rate was as high as 33 percent, while the consumption rate was only about 67 percent (see Table 1). Moreover, this high investment rate was maintained when China's income per capita was still extremely low, ranging from 104 RMB in 1952 to 315 RMB in 1978. Thus, the low income and consumption rate could only satisfy the basic needs of the Chinese people, such as food and cloth. Depressing consumption was intended to ensure a low demand for the products of light industry, which in turn led to a low demand for investment in light industry and hence guaranteed more investments in heavy industry. However, the final result of this logic was that initially heavy industry had nowhere to sell its products.

Chinese economists (Ma and Sun, 1981: 119–25) have criticized this as "heavy industry serving only itself," meaning that heavy industry could only reproduce itself by depending on the demand from heavy industry itself. However, this demand was generated by additional state investments in heavy industry. This in

turn required more agricultural surplus. Thus, the unbalanced structure and its contradictions were reproduced and sharpened. Such was the mechanism behind the Stalinist strategy in the planned era. Finally, two factors or inherent contradictions in the structure brought the Stalinist strategy to an end around 1980. From the supply side of investment, for thirty years Chinese peasants had contributed much of the farm surplus to the strategy but benefited little from it. Their capacity to bear this burden had dried up. From the other side, that there was little demand for the products of heavy industry led to low returns on the thirty years of high investments. As a result, the strategy had reached a dead-end.

This then was why China's leaders started to change the Stalinist strategy and give priority to the development of agriculture and light industry, such as by raising the price paid for farm goods, increasing investment in light industry, and reducing investment in heavy industry. Many researchers think that these practices amounted to only an adjustment of the economic structure rather than a change of the planned system. The fact that at the end of 1978 China's leaders had not seriously considered giving up the planned system seems to support this view. However, the above historical review makes it clear that the policy goal was to transfer the agricultural surplus, and agricultural collectivization and nationalization of the non-agricultural sectors were the means to realize this goal. In this relationship, as long as the goal is changed, changes in the means will naturally take place one after the other.

Although the unbalanced economic structure had problems, we cannot conclude there was no way to solve those problems and that there would never have been returns to the thirty years of investment in heavy industry. Lin, Cai, and Li (1994) argue that the Stalinist strategy was costly to the Chinese economy, because it ignored China's comparative advantage—cheap labor. They regard the strategy as totally negative and suggest that China should have entirely given it up and have adopted a "comparative advantage strategy." Here they seem to ignore the powerful forces accumulated and hidden in the unbalanced structure. First, it was possible to change the Stalinist strategy, but it was impossible to give up the unbalanced structure already created by the strategy. Second, this structure could have been the source of problems in the period when it was created, but it could also unleash tremendous energy to propel the high growth that followed. This is the philosophy of Hirschman, who (1958: 62–66) argues: "the balanced growth theory is essentially an exercise in retrospective comparative statics. . . . If the economy is to be kept moving ahead, the task of development policy is to maintain tensions, disproportions, and disequilibria."

A dual economy structure such as we have described could have been balanced simply by moving both capital from one side and surplus labor from the other side to light industry (see Table 1). In fact, inherent possibilities and forces were automatically unleashed by the unbalanced structure to realize this aim. First, light industry is labor intensive, and its expansion only needs part of the capital originally targeted by the state for investment in heavy industry. Second, surplus

agrarian labor could immediately satisfy light industry's demand for labor. Third, in China's case, behind the thirty years of low consumption was an extremely high potential demand from the Chinese population for consumer goods. This not only drove the rapid expansion of light industry but also made the sale of its products extremely easy. Fourth, again in China, in the reform era heavy industry was no longer the bottleneck sector it had been in 1950s. These factors are the key to understanding the quantitative expansion of China's economy in the reform era, because they made it possible for heavy industry to immediately provide machinery, raw materials, and energy for the rapid expansion of light industry. Thus, the problem of no demand for products of heavy industry was also solved. As a result, the two important resources—rural China's vast surplus labor and the huge investments in heavy industry—could be better utilized by expanding light industry. This is indeed what happened in the reform era.

As Table 1 shows, the share of heavy industry in total investment dropped from 48.7 percent in 1978 to 35.7 percent in 1985. The share of light industry in total investment rose from 5.8 percent in 1978 to 9.8 percent in 1981, a rate of increase of 69 percent in three years. The expansion of light industry led to a rise in the consumption rate, from 63.5 percent in 1978 to 71.7 percent in 1981, and hence a relative fall of total investment to GNP. This expansion also changed the output structure. The share of heavy industry in output declined sharply from 42.8 percent in 1978 to 34.5 percent in 1981. The share of light industry in output gradually increased from 32.4 percent in 1978 to 38.1 percent in 1992. The most important change was in the labor structure. The share of agricultural labor in total labor fell from 70.7 percent in 1978 to 52.2 percent in 1995, a rate of decrease of 26 percent in seventeen years (see Table 1). By contrast, the same share declined from 83.5 percent in 1952 to 70.7 percent in 1978, a drop of only 15 percent in twenty-six years. This difference was due largely to the labor-intensive nature of light industry and the service sector, which employed more surplus labor than capital-intensive heavy industry.

Table 1 also shows that, after a short period of relative decline, the share of heavy industry in total investment rose again from 35.7 percent in 1985 to 48.8 percent in 1990. Accordingly, the share of investment in GNP increased from 28.3 percent in 1981 to 34.3 percent in 1992. And the share of heavy industry in output rose from 34.5 percent in 1981 to 42.1 percent in 1992. This indicates, first, that capital goods were overproduced in the early 1980s, which could easily support the expansion of light industry despite the rapid fall of investment in heavy industry. Second, the expansion of light industry led to increased demand for capital goods and hence reinvestment in heavy industry. Third, this supply could be increased easily, because the huge investment in heavy industry before reform made heavy industry strong enough to quickly produce more capital goods for its own expansion as well as for light industry. Therefore, the post-reform expansion of heavy industry stopped reproducing the pre-reform unbalanced economic structure. The post-reform quantitative expansion feature of China's overall economy is

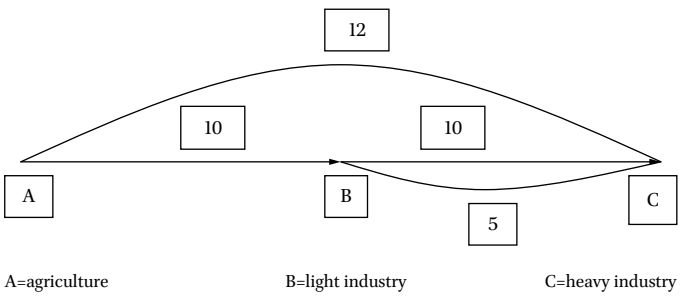
indeed based on this strong productive capacity of heavy industry. Hirschman (1958: 73) argues:

> One of the principal characteristics of our approach has been the direct connection we have established between the investment of one period and that of the next. The complementary effect "calls forth" new investment; to the extent that savings are determined by this process, they play a perfectly passive role. . . . The essence of this model is the division of total investment into investment designed to expand the output of consumers' goods on the one hand, and of producers' goods, on the other. Domar shows that once this division is made the propensity to save has no life of its own so to speak and is completely determined by the relative productive capacities of the two categories. The limit to investment in the Feldman model as interpreted by Domar is not the ability or propensity to save, but the productive capacity of the investment goods sector.

The data in Table 1 support this theory. Although the state policy of forced saving stopped and the share of investment in GNP declined from 36.5 percent in 1978 to 28.8 percent in 1982, the shares of heavy industry in total investment and in output, and the investment rate (total investment/GNP) soon automatically reverted to the levels of the pre-reform era. If heavy industry were still the bottleneck sector as in the early 1950s, there would have been no sudden expansion of light industry, no rapid structural change in labor, and no economic takeoff in the reform era. To probe this further, I use the Chinese case to improve Hirschman's (1958: 78–81, figure 2) model of optimum disorderliness. He argues that "isolated progress in one area is possible, but only for a limited period; if it is not to be choked off, it must be followed by progress elsewhere. . . . Therefore, the question of priority must be resolved on the basis of a comparative appraisal of the strength with which progress in one of these areas will induce progress in the other."

In Figure 5, A, B, and C represent the natural developmental stages if ideal "orderliness" and a smoothest transition are to be achieved. This means that if China had a market economy, the first stage would be the expansion of light

Figure 5. Contrast between the Development Model of Orderliness and That of Optimum Disorderliness.



Source: Hirschman, 1958: Figure 2.

industry, and the second the expansion of heavy industry. However, China reversed the order. To evaluate this, let us select a limited resource (time, capital, etc.), and assume that different amounts of this resource are spent in going from one point to another. We want to minimize the use of this resource. If, say, 10 units of this resource are spent in going from A to B and from B to C, then it is natural to think that going from A directly to C will take a somewhat larger amount (say 12 units), because of the absence of an intermediate preparatory stage. On the other hand, less than 10 units (say 5) should be needed to "fill in" B, because once the later step has been realized the lack of the intermediary steps makes itself felt in so pressing a manner that the decision to undertake them requires far smaller quantities of the scarce resource than when they represented genuine steps forward.

To illustrate, the expenditure of our scarce resource could involve two possible sequences, as follows: (1) A to B to C uses 10 + 10 = 20; (2) A jumps to C, then fills in B, which uses 12 + 5 = 17. Here we note Figure 5 combines Figure 3, meaning A jumps to C, with Figure 4, meaning B is filled in. Because China did not go from A to B and then to C, we have no data to judge whether the first case would use more resources (such as 20) than the second case. But it must be true that the resources used to fill in B (such as 5) are less than the resources used to go from A to B (such as 10). This was why the expansion of light industry was so easy and rapid in China in the 1980s. This was also why in the mid-1980s, just a few years after the start of the reform in 1979, there was a sudden "consumer revolution" with a vast number of refrigerators, washing machines, TVs, and other appliances and consumer goods making their appearance in Chinese homes. Moreover, China's foreign trade has grown rapidly since the early 1990s, which has further driven and sustained this quantitative expansion of labor-intensive and light industries.

All in all, the unbalanced economic structure created by the Stalinist strategy had a dual character. On the one hand, it suffered from disproportions, low returns to investment, etc., in the period when it was created. On the other hand, it could accumulate huge structural tensions which were employed in launching the economic takeoff in the next period. But the influence of ideological bias in almost all previous studies has directed attention to only its negative side and has completely ignored its tremendous potentiality on the eve of China's economic reform. Indeed, the potential per se can explain why without a change in collective ownership of land and state ownership of urban industry, high economic growth could immediately be realized simply by a quantitative expansion of light industry. Now let us look concretely at how the tremendous energy was unleashed and launched China's economic takeoff in the 1980s.

The Redistribution of the Agricultural Surplus as the Origin of TVE Investment

The first reform program that launched China's economic transition was not, as many people think, the introduction of the household responsibility system (HRS) in agriculture, but the rise in prices of farm products. I have shown that the logical chain of

transferring land rent and the agricultural surplus to state investment was: low prices of farm products → cheap food for the urban population and cheap raw materials for state industry → low costs and high profits of state industry → centralized fiscal revenues → high investment in heavy industry. The rise in prices of farm products immediately reversed the logic: rise in prices of farm products → food subsidies for the urban population and a rise in costs of the state sector → a huge deficit or a heavy burden on the centralized budget → getting all the provinces to share the burden and decentralization of the fiscal system 财政包干 → fiscal decline relative to GDP → fall of the state share in total investment. At the same time, the rise in prices of farm goods created another new logical chain: the rise in prices of farm products → a rise in income per rural head and deposits of rural households → the past fiscal funds changed to bank funds → the emergence of a new investment-financing system and rural private and collective capital. Capital was mainly invested in labor-intensive and light industries. This is how some capital originally targeted by the state for investment in heavy industry was shifted to light industry in the 1980s. It is nothing else but the inherent logic of these causal chains that forms the concrete history of China's economic transition. The discussion below follows the logic of these events step by step.

The Third Plenum of the Eleventh Congress of the Chinese Communist Party held in December 1978 decided to begin reforming China's economy. Yet the only meaningful decision that could be implemented immediately was to raise the state purchasing price of farm products. This policy was put into practice in March 1979. The rise in state purchasing price of farm products was 22.1 percent, 7.1 percent, and 5.9 percent in 1979, 1980 and 1981, respectively (see Table 2). The price of food for urban consumers did not rise accordingly. The overall urban consumer price rose only by 1.9 percent, 7.5 percent, and 2.5 percent in 1979, 1980, and 1981, respectively, because the state directed the state grain-trading system to buy dear and sell cheap. In short, there was a rise in the purchasing price of grain but no change in urban consumer prices. State finance made up the loss suffered by the trading system. Nevertheless, the urban consumer prices of meat, eggs, etc., were going up. This was also compensated by the state budget, and urban consumers directly obtained price subsidies from the state.

The policy at this time was to stabilize urban food prices when state purchasing prices of farm goods were rising. First, food was the biggest item in urban consumption around 1980, and food prices were the basis of China's planned price system. If these prices got out of control, there would be runaway inflation and the planned price system would immediately collapse. Second, if the state did not buy dear and sell cheap, it would have had to raise urban wages and pay for the increase, because at the time the urban sector was nearly totally owned by the state. This cost would have been greater than price subsidies if both the planned price and planned wage systems had collapsed, and if runaway inflation and rises in wages took place in waves.

The price subsidy, as shown in Table 2, immediately jumped from RMB 1.1 billion in 1978 to RMB 7.9 billion in 1979, a seven-fold increase in one year. It then

Table 2. Flow of the Farm Surplus from the State to Peasants (RMB), 1978–1996

	A–income (RMB)	P–index1 (%)	P–index2 (%)	Subsidy (billions)	G–s–loss (billions)	Revenue (billions)	Expenditures (billions)	Balance (billions)	Share (%)
1978	113.47	103.9	100.7	1.114	6.514	112.11	111.1	1.01	31.2
1979	145.97	122.1	101.9	7.92	–1.834	110.33	127.39	–17.06	28.4
1980	149.62	107.1	107.5	11.771	–6.024	108.52	121.27	–12.75	25.7
1981	170.58	105.9	102.5	15.941	–9.703	108.95	111.5	–2.55	24.2
1982	203.65	102.2	102	17.222	–14.342	112.4	115.33	–2.93	22.9
1983	221.77	104.4	102	19.737	–21.152	124.9	129.25	–4.35	23
1984	250.36	104	102.7	21.834	–19.696	150.19	154.64	–4.45	22.9
1985	298.28	108.6	111.9	26.179	–50.702	186.64	184.48	2.16	22.4
1986	278.98	106.4	107	25.748	–32.478	226.03	233.08	–7.05	20.8
1987	300.79	112	108.8	29.46	–37.643	236.89	244.85	–7.96	18.4
1988	345.64	123	120.7	31.682	–44.646	262.8	270.66	–7.86	15.8
1989	371.65	115	116.3	37.355	–59.888	294.79	304.02	–9.23	15.8
1990	510.86	97.4	101.3	38.08	–57.888	331.26	345.22	–13.96	15.8
1991	516.9	98	105.1	37.377	–51.024	361.09	381.36	–20.27	14.6
1992	543.74	103.4	108.6	32.164	–44.496	415.31	438.97	–23.66	13.1
1993	589.57	113.4	116.1	29.93	–41.129	508.82	528.74	–19.92	12.6
1994	780.91	139.9	125	31.447	–36.622	521.81	579.26	–57.45	11.2
1995	996.51	119.9	116.8	36.489	–32.777	624.22	682.37	–58.15	10.7
1996	1,192.61	104.2	108.8	45.391	–33.74	740.8	793.76	–52.96	10.9

Note: A-income = rural income per capita from agriculture (RMB, current prices). P-index1 = overall state purchasing price index of farm products, preceding year = 100. P-index2 = overall urban consumer price index, preceding year = 100. Subsidy = government price subsidy paid to consumers for the rise in the price of grain, edible oil, meat, etc. G-s-loss = government subsidies for loss-making grain-trading enterprises and commerce caused by state policy. Revenue = total government revenue. Expenditures = total government expenditures. Balance = revenue – expenditure. Share = revenue/GDP.

Sources: Data of A-income from *Statistical Yearbook of China*, 1986: 674; 1989: 743; 1992: 307; 1995: 279; 1996: 301; 1999: 338. *Statistical Yearbook of China*, 2000: 289 (P-index1, P-index2), 261 (Subsidy). *Statistical Yearbook of China*, 1987: 622 (G-s-loss, 1978–1984), *Statistical Yearbook of China*, 1999: 267 (G-s-loss, 1985–1998). *Statistical Survey of China*, 1996: 39; 1998: 54 (Revenue, Expenditures, Balance). *Statistical Yearbook of China*, 2000: 256 (Share).

grew step by step from RMB 11.8 billion in 1980 to RMB 45.4 billion in 1996. Furthermore, the state grain-trade system, which had always enjoyed large profits (profits were RMB 6.5 billion in 1978), suffered a loss of RMB 1.8 billion in 1979, concomitant with the rise in the purchasing price of grain but no change in urban consumer prices. The losses then rose from RMB 6 billion in 1980 to RMB 60 billion in 1989. In addition, the costs to the state industries that used farm products as raw materials also rose when the purchasing prices of farm goods rose, because the state did not subsidize industry in the same way it subsidized individual urban consumers. Thus, this cost rose by 22.1 percent, 7.1 percent, and 5.9 percent in 1979, 1980, and 1981, respectively, and this in turn reduced industrial profits.

The price subsidy, the losses suffered by the state trading system, and the fall in the profits of state industry either reduced state budgetary revenues or increased expenditures. As Table 2 shows, when the state purchasing price of farm products dramatically rose between 1978 and 1981, revenue fell from RMB 112.1 billion to RMB 108.5 billion, but expenditures increased from RMB 111.1 billion to RMB 127.4 billion in the same period. Thus, the budget became unbalanced. There was a favorable balance with a surplus of RMB 1 billion in 1978. But the next year there was a huge deficit of RMB 17.1 billion when the state purchasing price of farm goods grew by 22.1 percent. What is most striking is that the deficits in 1979 and 1980 (RMB 29.81 billion) were more than the entire deficits of the thirty pre-reform years as a whole (RMB 26.67 billion). Moreover, there were no deficits in nineteen years of the pre-reform era, but there have been deficits in every year of the reform era except 1985.

This became such a heavy burden on China's highly centralized budget that it forced the central government to decentralize the fiscal system. On February 1, 1980, just after huge deficits were sustained at the end of 1979, the State Council issued the fiscal contract document. The aim was to decentralize the fiscal burden (or have all the local governments share expenditures for price subsidies, losses to the state trading system, etc.), but revenues had to be decentralized simultaneously. This bottom-up revenue-expenditure-sharing system encouraged local governments to generate more revenues, which indeed reduced the deficits between 1981 and 1989. But when the state purchasing prices of farm goods rose by 40 percent in 1994, the deficits tripled again (from RMB 20 billion to RMB 57.5 billion).

The rise in the state purchasing prices of farm goods meant the farm sector retained the farm surplus that originally had been shifted to the state budget. This reduced the share of budgetary revenue in GDP. As Table 2 shows, there was a sharp decline of the share from 31.2 percent in 1978 to 22.9 percent in 1984, a fall of one-third within six years. This was due nearly totally to the rise in the state purchasing price of farm goods. Reforming the urban state sector also reduced the share of budgetary revenue in GDP. Yet this was not the case from 1978 to 1984. The urban reform had not really started until the decision of the Third Plenum of the Twelfth Party Congress made on October 20, 1984. We can clearly see a further fiscal decline relative to GDP after 1984, which was a result of both the rise in

purchasing prices of farm goods and the reform of urban state industries. In short, the rise in the state purchasing prices of farm goods was both the origin and the basic reason for the rapid fiscal decline relative to GDP.

All this shows that the decentralization of the fiscal system was not the state's choice. Rather, the state had no other choice when the central budget could not bear the heavy burden of food-price subsidies for the entire urban population. In other words, the decentralization was bound to take place as long as the state raised the purchasing price of farm goods. This logic was already rooted in the Stalinist strategy in the early 1950s, when China's surplus was almost all pooled in the central budget. This determined that the food-price subsidies for the entire urban population had to be borne by the central government, and thus the pressure was bound to undercut the centralized fiscal system and lead to the emergence of decentralization. This further confirms that transferring the agricultural surplus was the policy goal; agricultural collectivization, nationalization of other sectors, the centralized fiscal system, etc., were all means to achieve this goal. But when heavy industry had been set up and thus the goal changed, what had been useful means in the past became a burden. This shift per se led to the phasing out of these institutional arrangements one by one, and formed China's gradual reform model.

The rise in prices of farm goods naturally led to a rise in rural per capita income. The second column of Table 2 shows this income from agriculture. Rural per capita income virtually stagnated from 1957 to 1978. During those years, the agricultural surplus was nearly all claimed by the state, and peasants had little funds to expand production. But from 1978 to 1985, their per capita income from agriculture suddenly tripled, rising from RMB 113.47 to RMB 298.28. This sharp increase had little to do with inflation, because China's inflation rate before 1985 was very low (though it became higher after 1985). According to Qian (1982), the rise in prices of three products—grain, cotton, and edible oils—caused the incomes of peasants to rise by more than RMB 9 billion, an average of more than RMB 11 per rural head in 1980. The rise in the price of these three farm products as well as others, and other kinds of price subsidies (such as subsidies for the over-purchase of farm goods 超购加价) amounted to more than RMB 25 billion, equal to 25 percent of fiscal revenues in 1980. According to Wang and Fan's (1982) fieldwork, 52 percent of the increase in peasants' income came from the rise in prices of farm products in the early 1980s, and the rest was due to a growth in productivity made possible by the introduction of the household responsibility system (HRS).

The rise in prices of farm goods not only had the same function as the introduction of the HRS, which encouraged peasants to produce more, but also reversed the whole set of transfer relations of the Stalinist strategy. However, the HRS could not reverse this logical chain. This once again confirms that transferring the agricultural surplus was the aim and agricultural collectivization the means to achieve this aim. Thus the shift from collective farming to household farming only changed one of the means of the Stalinist strategy. This is why the rise in prices of farm

goods was a more determinant factor than the HRS in launching China's economic transition. In sum, a three-fold increase in rural per capita income within seven years was impossible before reform, and it has not been repeated, an indication that the reverse flow of the farm surplus was a turning point in the history of the PRC. Here we should also note that when the reform started in 1978, 82 percent of China's population was rural. When the income of 82 percent of the population grew by three times and there was little change in their consumption behavior within those seven years, this income expansion provided huge investments to trigger large-scale rural industrialization.

Tables 3 and 4 provide data on China's investments and investment structure. First, we should note that there was no private investment in China before 1980. There were some collective investments in the Mao era, such as in commune and brigade industries. But compared with state investment, such investment amounted to very little. (In addition, we do not have data on investments in commune and brigade industries in the pre-reform period.) Therefore, we can regard the Chinese state, especially the central government, as the only investor in the pre-reform era. This is because the central government budget gathered up most of China's surplus. Moreover, only the State Planning Commission could ratify investments. Second, the investment structure of state, collectives, and individuals emerged in 1980. In the reform era, the rural collective share of total collective investments has been more than 70 percent in most years. The rural private share in total private investments has been 80–95 percent in most years. Therefore, there is no need to separate rural collective investments from total collective investments and rural private investments from total private investments when we discuss the structure and growth rate of investment in the reform era.

Since state investment comes basically from revenues on the state budget, a fall in revenues naturally leads to a decline in investment. Tables 2, 3, and 4 show that when revenues decreased from RMB 112.1 billion in 1978 to RMB 109 billion in 1981, state investment fell from RMB 74.6 billion in 1980 to RMB 66.8 billion in 1981. The growth rate of state investment was –10.5 percent in 1981. Note that these data are totally consistent with the data in Table 1, which show the share of heavy industry in total investment dropped from 49 percent in 1978 to 39 percent in 1981. On the other hand, the emergence of a large private investment of RMB 11.9 billion in 1980 was a direct result of the rise in prices of farm goods in 1979, and its share in total investments suddenly rose from 0 in 1979 to 13.1 percent in 1980. When this unprecedented change happened, most areas of rural China had not yet set up the HRS. Moreover, private investments continued to grow in the following years, increasing by 50 percent in 1981 and 53 percent in 1983. Collective investment also started to grow rapidly after the rise in prices of farm goods in 1979: the growth rate was 150 percent in 1981 and 51.3 percent in 1982. The fall of 10.3 percent in 1983 must have been due to the spread of the HRS in China in the same year. Because land was not really privatized, collective investment grew again by 53 percent in 1984.

Table 3. Amount (RMB billions) and Growth Rate of Investments, 1978–1996

	Total	State	Collective	Rural-c.	Private	Rural-p.	Others	Growth rate (%)		
								State	Collective	Private
1978		66.9								
1979		69.9								
1980	91.1	74.6	4.6		11.9					
1981	96.1	66.8	11.5	8.37	17.8	16.63		–10.5	150.4	49.8
1982	123	84.5	17.4	13.14	21.1	19.85		26.6	51.3	18.2
1983	143	95.2	15.6	11.07	32.2	30.51		12.6	–10.3	52.7
1984	138	119	23.9	17.48	40.9	37.91		24.5	52.7	27.1
1985	254	168	32.8	19.92	53.5	47.84		41.8	37.2	30.9
1986	312	208	39.2	24.54	64.9	57.48		23.7	19.6	21.3
1987	379	245	54.7	36.57	79.6	69.54		17.8	39.6	22.6
1988	475	302	71.2	45.67	102.2	86.52		23.3	30.1	28.4
1989	441	281	57	38.44	103.2	89.2		–7	–19.9	1
1990	452	299	53	36.61	100.1	87.65		6.3	–7.1	–3
1991	560	371	69.8	49.4	118.3	104.3		24.4	31.7	18.1
1992	808	550	135.9	99.5	122.2	100.6		48.1	94.8	3.3
1993	1,307	793	231.7	163.1	147.6	113.8	135.3	44.1	70.5	20.8
1994	1,704	962	275.9	198.9	197.1	151.9	269.8	21.3	19.1	33.5
1995	2,002	1,090	328.9	236.8	256	200.8	327.2	13.3	19.2	29.9
1996	2,297	1,206	366.1	280.2	321.1	254.4	404.6	10.6	11.3	25.4

Note: Rural-c = rural collective investment. Rural-p = rural private investment. "Others" mainly refers to foreign investments.
Sources: *Statistical Survey of China*, 1999: 41–42; *Statistics on Investment in Fixed Assets in China, 1950–1995* (1997): 399, 405, 436.

What was historically significant was the formation of a pluralistic investment structure. Since the collective share of total investment was only 5 percent even after the high rise in prices of farm goods in 1979, and there was no private investment before 1980, the state's share of total investment must have been very close to 100 percent in 1978 and 1979. However, the share suddenly fell to 66.6 percent within four years (1979–1983). This was because the continued rise in prices of farm goods from 1979 to 1982 pushed budgetary revenue relative to GDP down sharply from 31.2 percent in 1978 to 22.9 percent in 1982. Tables 1, 2, 3, and 4 jointly show the rise in prices of farm goods, the fall of revenues relative to GDP, the decline of the state's share of total investment, the drop of investment in heavy industry, and the rise of investment in light industry, which followed one after the other. As a result, the private share of total investments increased from 13.1 percent in 1980 to 22.5 percent in 1983. The collective share rose from 5 percent in 1980 to 13 percent in 1984.

What is most striking is that the rise in prices of farm goods in the early 1980s not only created but also regularized this investment structure. The shares of the state, the collective sector, and private investments were nearly always around 65 percent,

13 percent, and 22 percent, respectively, from 1984 to 1991. This structure continued until 1993 when foreign investments ("Others" in Table 3) started to become sizeable. This means that the rise in prices of farm goods in the early 1980s shifted about 35 percent of investments from the state to the rural collective and private sectors, which formed the investment pattern between 1984 and 1991. This in turn led to the rapid expansion of TVE employment in the same period (see Figure 1).

As Table 4 indicates, the decline of the state's share of total investment led to an important change in the structure of state investment. The state's investment in construction of new projects decreased, while its investment in the expansion and reconstruction of old projects increased. The share of new projects quickly fell from 57.2 percent in 1978 to 30.7 percent in 1983, while the share of expansion and

Table 4. Structures of Social Investment, State Investment, and Number of Industrial Enterprises, 1978–1996

	Social investment (%)			State investment (%)		No. (10,000)	
	State	Collective	Private	New-p.	E. & R.	SOEs	TVEs
1978				57.2	37.4	8.37	79.4
1979				53.4	40.2	8.38	76.7
1980	81.9	5	13.1	51.9	42.5	8.34	75.8
1981	69.5	12	18.5	36.1	59.6	8.42	72.5
1982	68.7	14.2	17.1	34.7	60.7	8.6	74.9
1983	66.6	10.9	22.5	30.7	61.3	8.71	74.4
1984	64.7	13	22.3	30.9	62.9	8.41	481
1985	66.1	12.9	21	30.6	63.1	9.37	493
1986	66.6	12.6	20.8	28.5	61.9	9.68	636
1987	64.6	14.4	21	26.9	58	9.76	708
1988	63.5	15	21.5	25.9	56.6	9.91	774
1989	63.7	12.9	23.4	27.2	55.6	10.2	736
1990	66.1	11.7	22.2	30.5	58.4	10.4	722
1991	66.4	12.5	21.1	29.4	59.6	10.5	743
1992	68.1	16.8	15.1	28.9	53.4	10.3	794
1993	60.6	17.7	11.3	30.5	52.6	10.5	918
1994	56.4	16.2	11.6	29.6	53.4	10.2	699
1995	54.4	16.4	12.8	30.8	49.1	11.8	718
1996	52.5	15.9	14	32.3	53.1	12.8	757

Note: New-p. = construction of new projects. E. & R. = expansion and reconstruction of old projects. No. = number of industrial enterprises.

Sources: Structure of Social Investment (*Statistical Survey of China*, 1999: 42); construction of new projects vs. expansion and reconstruction of old projects (*Statistics on Investment in Fixed Assets in China, 1950–1995*, 1997: 36); number of state-owned industrial enterprises, 1978–1994 (*China Industrial Economic Statistical Yearbook*, 1995: 20); number of state-owned industrial enterprises, 1994–1998 (*Statistical Yearbook of China*, 1999: 421); number of industrial TVEs (*China Township Enterprise Statistical Yearbook*, 1993: 142, and *Statistical Yearbook of China*, 1996: 387).

reconstruction of old projects rose from 37.4 percent to 61.3 percent in the same period. This was just the time when prices of farm goods were beginning to rise, which reduced state investment in new projects. Since new projects often need larger investments than the expansion and reconstruction of existing projects, the state always first cuts the number of new projects when there is a shortage of investment funds. This caused a relative increase in investment in the expansion and reconstruction of existing projects. Like the investment structure of state, collective, and individual, this substructure of investment was also regularized by the rise in prices of farm goods of the early 1980s. The share of new projects was around 30 percent from 1983 to 1996, and the share of expansion and reconstruction of existing projects was around 60 percent from 1981 to 1991. As a result, the growth in the number of state-owned industrial enterprises stagnated. This is especially clear if we compare the number of such enterprises with the number of industrial TVEs. From 1978 to 1996, the number of the former increased by only 43,900 (127,600–83,700), but the number of the latter increased by 6,776,000 (7,570,000–794,000). This is consistent with the data in Figure 1, which show the number of TVE workers rapidly caught up with that of SOEs within five years (1983–1988). In sum, all the above data support what is described by Figure 4: the reverse flow of the farm surplus not only created the expansion of the TVE sector, but also caused state investment and the growth in the number of SOEs to fall relatively. This corrected the unbalanced structure of the Stalinist strategy.

Another historical role of the raising of prices of farm goods is that it changed the dominant position in allocating resources from state finance to the bank system. This was itself a shift from planned to market economies. The rise in prices of farm goods increased both rural income per capita and deposits of rural households. The latter grew rapidly from RMB 5.57 billion in 1978 to RMB 43.81 billion in 1984, or almost eight-fold in six years. This led to several significant changes. First, before reform state finance was the source of investment in fixed assets, and banks only provided working capital loans for enterprises. When the reverse flow of the farm surplus increased deposits of rural households, it changed fiscal funds to bank funds, causing the latter to expand and replace the former's role in allocating resources. This could be described as a shift from the pre-reform system of "big finance vs. small banks" to the post-reform system of "small finance vs. big banks." Second, financial investment was essential free and had the planned feature of resource allocation, while credit funds required the repayment of principal plus the payment of interest. Thus credit funds must seek profits. In other words, credit itself contains market economy relations. This feature and its expansion, and that it had to flow through the banking system to the most profitable areas, solved two interrelated problems. First, the rise in prices of farm goods boosted peasants' incomes faster in the chief commercial grain and cotton areas than in other areas, but TVEs developed most rapidly in Southeast China and suburban areas of big cities. Second, loans often exceeded deposits in more developed and profitable provinces, whereas deposits often exceeded loans in less developed and profitable provinces.

Table 5. Average Annual Growth Rates of Rural Household Deposits and TVE Loans with the Agricultural Bank of China and Rural Credit Cooperatives (%), 1979–1989

	1	2	3 = 1–2
	Deposits of rural households	TVE loans	Gap
Beijing	44.85	50.71	–5.86
Tianjin	45.85	70.32	–24.47
Hebei	41.53	47.66	–6.13
Shanxi	36.85	39.6	–2.75
Inner Mongolia	33.89	21.9	11.99
Liaoning	37.26	40.9	–3.64
Jilin	35.41	33.72	1.69
Heilongjiang	33.13	25.92	7.21
Shanghai	38.84	37.16	1.68
Jiangsu	36.03	40.49	–4.46
Zhejiang	35.2	37.62	–2.42
Anhui	37.27	38.52	–1.25
Fujian	31.66	31.86	–0.2
Jiangxi	35.79	34.41	1.38
Shandong	35.86	38.9	–3.04
Henan	36.64	28.73	7.91
Hubei	32.72	31.02	1.7
Hunan	35.54	26.14	9.4
Guangdong	38.49	44.38	–5.89
Guangxi	35.21	19.93	15.28
Sichuan	37.74	30.02	7.72
Guizhou	36.34	25.32	11.02
Yunnan	36.88	27.19	9.69
Shaanxi	34.18	31.64	2.54
Gansu	37.08	24.51	12.57
Qinghai	29.42	25.57	3.85
Ningxia	36.86	35.1	1.76
Xinjiang	28.35	33.31	–4.96

Source: *Rural China Banking Statistics, 1979–1989* (1991): 99, 105.

As Table 5 shows, growth in rural household deposits had a positive relation with growth in TVE loans, meaning that the rise in the prices of farm goods could have directly caused TVE investment to expand. But this does not mean that there were no regional differences. The average annual growth rate of TVE loans in 1979–1989 largely exceeded that of rural household deposits in Beijing, Tianjin, Hebei,

Liaoning, Jiangsu, Zhejiang, Shandong, and Guangdong. By contrast, the growth rate of rural household deposits greatly exceeded that of TVE loans in Inner Mongolia, Heilongjiang, Henan, Hunan, Guangxi, Guizhou, Yunnan, Gansu, and elsewhere. Thus Southeast China and suburban areas of large cities used not only their own funds, but also the funds of relatively backward provinces to invest in TVEs. In addition, credit provided by the banking system flowed from less developed and profitable areas to the fastest-growing and most profitable areas. Thus, funds were used more efficiently than in the pre-reform era. At the same time, resources or factors of production are also better allocated.

Heilongjiang is a typical commercial grain-producing province. Its rural income per capita is high and it is not a backward area. However, the growth rate of its TVE loans was 7.21 percent lower than the growth rate of rural household deposits. This was caused by the fact that Heilongjiang had a relatively large amount of land per rural head, and hence its comparative advantage was to grow grain and it faced comparatively little pressure to shift labor to industry. By contrast, land per rural head is very limited in Southeast China, where growing grain has no comparative advantage and the pressure to shift labor to industry was very high. Therefore, the flow of rural household deposits from Heilongjiang to Southeast China caused resources to be better allocated and each region to give full play to its comparative advantage. But I must stress that these changes were not designed by the state in advance. They were products of the rise in prices of farm goods, meaning that as long as the value transfer chain of the Stalinist strategy was reversed, fiscal funds naturally become bank funds, which were used to optimize China's resource allocation. This once again confirms the chain of causality: when the aim of transferring the agricultural surplus was changed, all the institutional means to achieve that aim remolded themselves one after the other.

As Table 6, which shows the structure of rural collective and private investments in fixed assets, demonstrates, the share of farm investment in total collective investment declined sharply from 39.6 percent to 16.7 percent when the HRS was set up between 1982 and 1984. This trend has continued since then. On the other hand, the share of industrial investment in total collective investment rose from 30.4 percent in 1982 to 63.1 percent in 1988, and fell after the Tiananmen Square crackdown (54.3–57.1 percent, 1989–1991), and rose again in 1992 (69.6 percent) when Deng gave an important speech during his famous South China tour. Note that industrial investment consisted mostly of production equipment. The two rose and fell together. The share of equipment in collective investment went up from 26.5 percent in 1983 to 43.2 percent in 1988. This was the five-year period when the number of TVE workers rapidly caught up with that of the state sector. Moreover, TVEs purchased equipment basically from heavy industry. Although we have no physical data about how much raw material, energy, and the like, TVEs purchased from heavy industry, I have shown (Pei, 1998: 89–95) that these purchases were also largely from heavy industry. There was a so-called dual-track of prices in the 1980s because TVEs were not a part the planned system, and

Table 6. The Structure of Rural Collective and Private Investments in Fixed Assets (%), 1981–1995

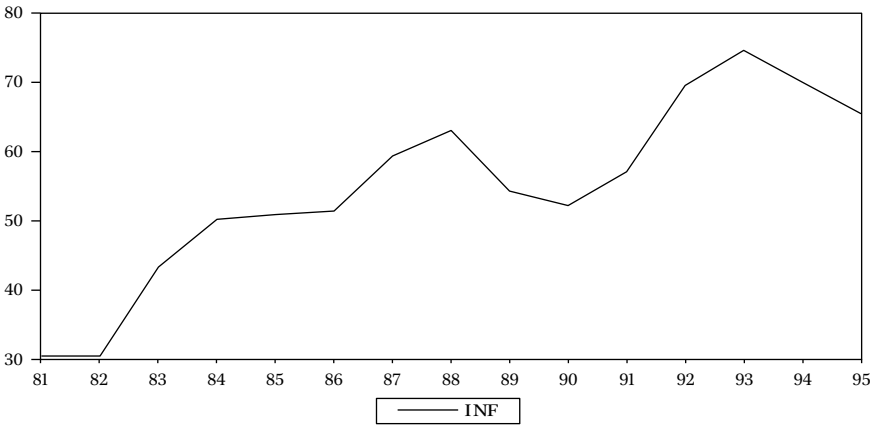
	Collectives				Private	
	Industry	Agriculture	Service	Equipment	Housing	Equipment
1981	30.4	39.6	8.8	27.4		
1982	30.4	39.6	8.8	27.4	81.9	15.1
1983	43.3	30.1	15.2	26.5	70.3	20.0
1984	50.2	16.7	16.1	28.8	63.1	29.9
1985	50.9	10.4	13.1	26.8	65.5	26.8
1986	51.4	8.1	13.3	30.3	67.6	12.5
1987	59.4	11.6	9.4	39.9	70.1	13.3
1988	63.1	9.4	7.6	43.2	67.1	14.3
1989	54.3	11.4	14	37.3	71.9	11.0
1990	52.2	17	15.6	37	74.1	11.3
1991	57.1	14.6	13.7	37	72.8	12.5
1992	69.6	8.8	2.4	39.5	67.5	6.8
1993	74.7	3.4	1.9	41.8	66.8	10.8
1994	70.1	3.2	3.4	41.7	66.0	13.4
1995	65.5	8.7	7.6	14.2	67.2	14.9

Note: Service = schools, hospitals, clubs, etc. Housing = residential housing. Equipment = purchased production equipment.
Source: *Statistics on Investment in Fixed Assets in China, 1950–1995* (1997): 405, 436.

therefore had to pay market prices for raw materials, energy, and so on, from state-owned heavy industry, and the prices were higher than the planned prices.

As Table 6 shows, there was a housing boom sparked by private investment especially in 1982 and 1983. This provided a rural market for construction materials that state industry could not or would not supply. Many TVEs started off by making bricks and other construction materials. Peasants also improved their living standard in the process. The share of production equipment in private investments soon rose (from 15.1 percent in 1982 to 30 percent in 1984) and the share of housing fell relatively (from 82 percent in 1982 to 63 percent in 1984). This was when individual household enterprises 户办企业 and partnerships 联户办企业 were booming. Private investors were starting to produce goods for a broader market. The value of production equipment they bought was RMB 11.33 billion in 1984 and RMB 12.83 billion in 1985, while collective TVEs paid RMB 5.03 billion in 1984 and RMB 5.34 billion in 1985 for the same, showing that the absolute amount of production equipment private investors purchased from state industry in the two years was twice that of collective TVEs. These data are consistent with the data in Table 3 showing that rural private investment was about twice rural collective investment from 1981 to 1991, and with the data of Table 4 showing that the mushrooming of

Figure 6. Expansion of Industrial Fixed Assets in the Structure of Rural Collective Investment, 1981–1995.



INF = The share of industrial fixed assets in rural collective investment.
Source: Table 5, above.

individual household enterprises and partnerships suddenly increased the number of industrial TVEs from 744,000 in 1983 to 4,810,000 in 1984. This is why it is safe to say that if heavy industry had still been the weakest sector in the early 1950s, there would have been no sudden expansion of TVEs.

Finally, Figure 6, using the data in the second column of Table 6, shows the expansion of industrial fixed assets in the structure of rural collective investment. This expansion is clearly consistent with the quantitative expansion of TVE employment and the quantitative expansion of TVE industrial output described by Figures 1 and 2. This is not at all surprising. Instead, it is exactly what economic growth theories repeatedly tell us. Thus, the task of seeking the causality of TVE quantitative expansions in investment, in labor, and in industrial output, set forth in the introductory section, has been carried out.

Rewriting History: The Hypothesis of Lin et al.

What we have found in probing the sources of TVE investments demonstrate that Lin et al. (1994) have attempted to rewrite the history of China's economic reform. They regard the Stalinist strategy as the origin of China's planned system. Their argument proceeds as follows: Because the capital-intensive feature of heavy industry contradicted the reality that China lacked capital in the early 1950s, the market system could not give priority to the development of heavy industry. Thus the state had to use artificially low rates of interest and exchange, low wages, and low prices of consumer goods, energy, raw materials, etc., to reduce the capital formation threshold of heavy industry. This distorted the macroeconomic policy and price

environment and made it possible for the planned system to allocate resources to heavy industry. Moreover, agriculture was collectivized and industry was nationalized so that the state could amass their profits and make the micro-management of their enterprises consistent with the macro-policy environment and planned resource allocation. Hence once the state adopted a Stalinist strategy, it created a three-fold system consisting of a distorted macroeconomic policy environment, planned resource allocation, and the involuntary micro-management of enterprises. Lin et al. believe that this system explains the history of China's economic reform and its features and universal significance. Their explanation, however, reverses the order of this trinity.

In their analysis, first, China's reform started with solving the micro-incentive problem by devolving power to enterprises. Second, this devolution encouraged enterprises to create new resources. Hence China's reform was incremental. When micro-enterprises had the right to allocate new resources, there was a change in the planned system of resource allocation. Third, this change led to the emergence of the two tracks of planned prices and market prices and to a change in the macro-policy environment. Fourth, when market prices guided micro-enterprises to allocate additional resources to labor-intensive industries, the Stalinist strategy was shaken and the comparative advantage of China's cheap labor started to come into play. Accordingly, Lin et al. conclude that the Stalinist strategy hindered growth, while China's high growth after the reform has been a result of a "comparative advantage strategy." "Comparative advantage strategy" thus becomes their central proposition, which is universal in the sense that it applies to any and all countries. But because a crisis in the Stalinist strategy is the final step in this chain of logic, Lin et al. repeatedly argue that the state did not take the initiative to change the strategy and the related macroeconomic policy environment. The lag of the two behind microeconomic reforms led to a "living-chaos" cycle in China's reform. Lin et al. claim this chain of logic to be "perfect." However, all of its steps have, in fact, reversed history.

First, their reconstruction of events reverses history by claiming that China's economic transition was launched by the micro-level reform of devolving power to enterprises. I have shown that the rise in state purchasing prices of farm goods and the related changes that followed one after the other in the early 1980s not only predated any other reforms, but were also macro in nature. The price of agricultural products was the cornerstone of China's price system, and had a huge impact on all residents, urban as well as rural. This is why the rise in prices of farm goods immediately forced the state to subsidize the food prices of the entire urban population, and created huge financial deficits, leading to the collapse of the pre-reform financial system and the rise of the decentralized financial system. Concomitantly, the share of China's revenue in GDP and state investment in total investments rapidly fell, and income per rural head grew by three times within seven years. The fiscal funds of the pre-reform era become bank funds in the post-reform era, and a new investment-financing system naturally followed. In brief,

the rise in prices of farm goods directly changed the basis of the pre-reform macroeconomic environment. The changes it brought about in the financial system, the banking system, the investment-financing system, etc., also changed the resource allocation system. The order of the two macroeconomic changes was the opposite of the order portrayed by Lin et al.

Second, the essence of these changes was a macro redistribution of savings and investment. The debate on the different transition models of China and Eastern Europe was provoked by the following questions: How could the Chinese transition, without privatization, immediately lead to high economic growth? And why did the large-scale privatization in Eastern Europe lead to economic recession? There have been many explanations. "Micro-incremental reform" is one of them. Like many other hypotheses, this one stems from the failure to understand what happened in the Chinese economy in the early 1980s. This is why Kuznets says that anyone can start a row in economics; it is much harder to find out what is really happening in an economy. In fact, the portion of China's GDP in savings was largely redistributed at the beginning of the reform although there was no privatization. The consumption part of the GDP must be consumed, whatever happens in an economy. The savings part of the GDP is the source of investment and the key to growth. In the planned era, fiscal revenue was basically the saving and investment part, because most of China's surplus was concentrated there. Although there was a sharp fiscal decline relative to GDP from 31.2 percent in 1978 to 10.9 percent in 1996 (see Table 2), the investment rate did not fall accordingly (see Table 1). From 1971 to 1980 (the planned era) the investment rate was about 33 percent. This rate was basically maintained from 1979 to 1992. In fact, the rate was even higher, about 35 percent from 1985 to 1988. This was when the number of TVE workers grew most rapidly, evidence that the farm surplus that was shifted from the state budget to villagers was largely invested in TVEs. In short, China's reform was a stock model: it started from reallocating the savings part of the pre-reform GDP. The incremental model of Lin et al. has reversed history. Thus it cannot answer the following questions: How could an incremental reform suddenly create private investment as high as RMB 11.9 billion at the very beginning of China's reform? How could it rapidly increase the share of private investment in the social investments from zero in 1979 to 13.1 percent in 1980?

Third, the two-track price system did not emerge in China in 1979, so the macroreallocation of savings and investment was not the result of the operation of the market price mechanism described by Lin et al., but rather of the planned price system, the fiscal system, and the state-trading system. The inflow of the farm surplus to fiscal revenues was via these systems. They could also make the surplus flow out via the same channels. This is the meaning of "let him who tied the bell on the tiger take it off." However, I must stress once again that the transformation of the farm surplus into investment in light industry was not planned by the state. It was an inevitable result of the fact that the Stalinist strategy created a vacuum of light industry, and the value transfer chain of this strategy was reversed. We know

that the state under Deng Xiaoping had no blueprint when it set out to reform. Its aim in raising the prices of farm goods was merely to reinvigorate 休养生息 the countryside. This plus that Lin et al. regard the Stalinist strategy as totally negative made them blind to the real effect of the prices of farm goods.

Fourth, the reverse flow of the farm surplus could not be automatically transformed into investments. There had to be an industry that could immediately provide rural collectives and private investors large amounts of capital goods. As Tables 1 and 6 show, this was precisely what China's heavy industry did. This is also why the sharp fiscal decline relative to GDP did not lead to a decline of investment relative to GDP. If heavy industry had not existed, the return of the farm surplus to the peasants would indeed have been used only to, as the Chinese put it, "recuperate," and the redistribution of the savings part in the early 1980s would surely have led to a rapid investment decline relative to GDP, and thus there would have been no high growth in the TVE sector and takeoff in China's overall economy. In short, China's history before and after reform bears out the direct connection between the investment of one period and that of the next, established by Hirschman, Feldman (1964 [1928]), and Domar (1957). The propensity to save indeed has no life of its own when the complementary effect calls forth new investments in the next period. For example, the return of the farm surplus actually changed the mandatory savings policy, but the investment rate did not change, because the limit to investment was not the state's propensity to save, but the objective productive capacity of heavy industry.

Therefore, it was the vacuum of light industry, a dire shortage of consumer goods, a huge rural surplus labor force, a relatively strong heavy industry, and a rise in the prices of farm goods that triggered China's economic takeoff. This can be demonstrated by looking at the contribution of the growth of three demands (consumption, investment, and net exports) to the growth of the GDP. The annual growth shares of consumption, investment, and net exports in GDP growth were respectively 64.2 percent, 32.6 percent, and 3.2 percent in the period from 1978 to 1989; 55.9 percent, 33 percent, and 11.1 percent from 1990 to 2000; and 41.4 percent, 53.3 percent, and 5.1 percent from 2001 to 2010. That the contribution of investment to GDP growth was always about 33 percent during the first two stages supports the theory of Hirschman, Feldman, and Domar. Changes in the two stages were only in the relation of consumption to net exports. That the 64.2 percent of growth in GDP came from consumption growth in the first stage confirms that China's economic takeoff was indeed launched by repayment of consumer debts, and had little to do with the "comparative advantage strategy" of Lin et al., because the annual contribution share of the growth of net exports in GDP growth was only 3.2 percent, and because that contribution was negative in 1978, 1979, 1980, 1985, 1986, 1988 and 1989, when China's imports exceeded its exports. The reason the annual growth share of consumption in GDP growth declined to 55.9 percent from 1990 to 2000 and the annual growth share of net exports increased to 11.1 percent is that in the 1978–1989 period heavy industry supported the expansion of

light industry, making it able not only to quickly repay consumer debts, but also produce a surplus of consumer goods. Therefore, it was the expansion of light industry in the first stage that caused the growth share of exports to increase in the second stage and the comparative advantage of China's cheap labor to start to play its role in foreign markets.

From 2001 to 2010, the annual contribution share of consumption to GDP growth declined further to 41.4 percent, the share of investment rose to 53.5 percent, and the share of net exports fell to 5.1 percent, a level very close to that of the first stage. The trend of the three stages shows that the international financial crisis and the decline of foreign demand in the third stage changed the contribution share of exports. That the contribution share of investment did not fall and eventually exceeded 50 percent indicates that the pre-reform heavy industry was both the engine of China's high growth and the origin of its excessive production capacity today. The continued fall in the contribution share of consumption tells us how China's current supply capacity exceeds its domestic demand, and how the explosive force of the first stage to repay consumer debts launched China's economic takeoff. In brief, the conclusion of Lin et al. that China's economic takeoff was launched by the "comparative advantage strategy" has also reversed history. But because their book was published in 1994, when China's exports grew the most rapidly, this conclusion has confused many people.

In fact, Lin et al. have never been able to use data of value and investment to establish the causality of economic growth. This is because their trinity framework excludes the transfer of the farm surplus. Without it, they have not been able to explain how the state reduced the prices of consumer goods, energy, raw materials, the capital formation threshold of heavy industry, etc., and where the surplus of micro-enterprises came from. By ignoring these issues, they cannot explain how the reverse flow of the farm surplus itself could change the Stalinist strategy, because the strategy would not have existed if there were no transfer of the farm surplus. Therefore, their trinity framework is empty, lacking the content of value and its transfer relations. This leads them to cut the direct connection between the investment in one period and that in the next established by Hirschman et al., and then claim that the Stalinist strategy only hindered growth, and that it is their comparative advantage strategy that led to economic growth. To draw an analogy, the forced accumulation of the pre-reform era is like winding a clock, while raising prices of farm goods and devolving power to enterprises are like shouting "Stop!" Failing to stop will break the clockwork. The shout indeed stops the winding and hence prevents the clockwork from breaking. But Lin et al. claim that it is the shout that starts that clock.

In fact, the comparative advantage strategy itself is a false proposition. We have seen that the play of China's comparative advantage has been a result of the forced accumulation raising the very low accumulation rate of the population trap to a very high level. Lin et al. (1994: 90) also admit that Taiwan and South Korea did not choose such a strategy. According to Lin et al., comparative advantage naturally

started to play a role in Taiwan and South Korea when the authorities there allowed the market price mechanism to allocate resources. But this assertion violates history. Almost all the developing countries, including China, South Korea, and Taiwan before World War II, have had market mechanisms and the advantage of cheap labor. But why has the advantage never been able to play its role? Hence the real proposition is: By removing what historical obstacle can an agrarian society jump out of the population trap and take advantage of its cheap labor? We know that in overpopulated Asia only China, South Korea, Taiwan, and Japan have had land reform that removed the landlord class. It was via this revolutionary land reform that these places removed the historical obstacle represented by the landlord class, jumped out of the population trap, and gave full play to their comparative advantage.

The reason for this land reform can be traced to the following macro-dynamic model constructed by Ricardo (1973) two hundred years ago: The interaction between the growing population's increasing demand for food and diminishing returns of land causes more and more labor to be spent on producing each kilo of grain and the value of grain to rise relative to that of all other products. This trend and the equalization of profits induce capital and labor to reclaim wasteland. Because the worst land coming into cultivation is a free gift of nature and requires no rent payment, the value of grain produced in this situation and the value of all other products are only divided into wages and profits. But the value of grain produced on all other farmland is distributed into rents, wages, and profits, because this kind of land is in competition with rent, and because in Ricardo's era British agriculture already had a three-class relation whereby agricultural capitalists rented land from landlords and then hired workers to do the farming. Since a rise in the labor cost of grain is an irreversible trend, the long-term tendency is for wages to rise as well. But the average wage in terms of grain is fixed at the subsistence level. This is why wages must be increased; that is, the higher wages allow workers to buy food when the necessary quantity of labor bestowed on each kilo of grain becomes higher and higher than that of other products. The rise in wages in turn causes profits in all industries to fall. This secular decline of profits will lock an overpopulated country in stagnation as further sources of investment dry up. Thus Ricardo's macro-dynamic model can be simplified as: social average profits tend to fall to zero, wages in terms of grain are fixed at the subsistence level, and only rents are always rising, hence the surplus of a country is concentrated in the hands of the landlord class. Under the trend of profits falling and rents rising, landlords will not use the surplus to develop industry but buy more land. Therefore, the role of the market price mechanism during the population trap is to encourage landlords to hunt rent and hinder industrialization and thus perpetuate the vicious cycle of the population trap.

After land reform, China used the planned system to overcome the negative effects of markets and break this vicious cycle. When the amount of labor inputs per kilogram of grain were increasing, the state used the mechanism of the plan

to fix the price of grain, not allowing it to rise, and then transferred the surplus value of grain by a chain that can be represented as follows: low prices of farm products → cheap food for the urban population and cheap raw materials for state industry → low wages, low costs, and high profits for state industry → centralized fiscal revenues → high investments in heavy industry. It was via this chain that China moved from a very low rate of investment to a very high level. Its economic takeoff was a result of the forced accumulation of the Mao era having reversed the low accumulation of the population trap and ending China's six hundred years of economic stagnation (Huang, 1990). Mao did not necessarily know of Ricardo's macro-dynamic model, but China's many years of land wars and poor physical environment around 1949 confirmed its existence and framed China's choice. The planned system, in other words, was a product of the population trap rather than ideology. Similarly, China's market-oriented reform has been a product of the non-market methods which built China's industrial system and thus made it possible for the positive role of markets to begin to exceed their negative role.

The land reform of South Korea and Taiwan also removed the market's negative effects at the population trap stage. In the early 1950s, when the equal distribution of land replaced the landlord-tenant system and raised total factor productivity (Pei, 2004), the countryside was transformed into a one-class yeoman structure. To sustain this structure, there was a maximum limit on the amount of land that could be owned. For example, in South Korea it was illegal for rural households to have more than three hectares. The market exchange of land and tenancy were also illegal, and thus there was no land and labor market and the social surplus of Ricardo's model was used to industrialize society. This shows that in the population trap, where population grows but land cannot, capital to purchase land creates no wealth for a society. It only transfers landownership rights, reproduces the landlord-tenant system, and intensifies the trend toward land concentration and rising rents. By contrast, capital started to create and accumulate wealth for society when the exchange of land and tenancy were not allowed. In a one-class structure without tenancy, rents were equalized and enjoyed by every family farm. This suddenly raised peasants' income and their ability to buy industrial consumer goods and investment goods, and launched industrialization from the demand side. Since it was the state that broke the landlord-tenant system, it could purchase grain for the urban population at a price under the market price. Thus rents were also enjoyed by the whole society. This stopped the trend of rising food prices and wages and falling profits, and enabled industry to accumulate capital. The rising rent trend of Ricardo's model also disappeared, because in the one-class structure small land-holding peasants would not ask for rents from themselves, but bear the population pressure by themselves. This means that the equal distribution of land can stop rents from rising, because in the landlord-tenant system rents must rise whenever population growth increases the demand for land. Therefore, the equal redistribution of land under collective landownership in rural China was equivalent to using the equalization of rents to block the rise in rents (Pei, 2004). In short,

Taiwan, South Korea, and mainland China have all used the path of social and equal enjoyment of rents to transform the main surplus of agrarian society into primitive accumulation for industrialization. Their ways of lifting themselves out of the population trap are essentially the same.

The social and equal enjoyment of rents can also be traced back to Ricardo, who (1973: 38–41) argued that rent is not a part of the value of food production. Rent should be highest early in human history when land was abundant relative to population and the contribution of natural forces to grain production was larger than that of human forces. However, there was no rent because the contribution of nature was free. Rents appear and become higher and higher when population growth and diminishing returns increase labor costs and decrease nature's contribution contained in each kilogram of grain. Therefore, rent stems from a land monopoly: landlords control the source of grain and thus, when population grows but land does not, they decide whether others will live or die. Here we see the fundamental reason for breaking their land monopoly. Land is not the product of individuals' labor but is a product of nature. Hence individuals should not monopolize land and other natural resources (sunlight, rainfall, etc.) that make crops grow. Both are free gifts of nature to feed everyone. Therefore, the social and equal enjoyment of rents can be used to accumulate capital for industrialization.

Another approach to accumulating capital is to use the low-cost grain of foreign countries to prevent wages from rising and profits from falling. This was observed by Ricardo, who saw the British market playing no role in stopping the trend of diminishing returns. Hence his view of comparative cost is a part of his macro-dynamic model. However, I have argued (Pei, 2008: 237) that Ricardo missed the point that there are limits to land productivity, and that this is the origin of diminishing returns, the failure of the British market, the lower cost of foreign grain compared to British grain, and so on. If yield per unit of land were infinite, farm outputs would, like industrial outputs, not correlate with the size of land but with labor and capital inputs, and the same amount of labor inputs in 1 ha and 100 ha would result in the same output. In that case, there would be no diminishing returns, no theory of comparative costs, no difference in cost between underpopulated and overpopulated countries, etc. This is why I have pointed out (Pei, 2014) that the difference in cost/return ratios between underpopulated and overpopulated countries is a product of the laws of nature and cannot be changed by the market system. On the contrary, it can change the role of the market by making it positive in underpopulated countries but negative in overpopulated countries.

When Lin et al. change Ricardo's comparative costs to a "comparative advantage strategy," they ignore his macro-dynamic model and the history of land reform in Taiwan and South Korea. In order to show that this reverses the history of Taiwan and South Korea and attempts to portray the negative role of the market in the population-trap era as a positive role, I first introduce the following statement of Lin et al.:

> In the macroeconomic policy environment of a comparative advantage strategy, the market determines the prices of products and factors of production. . . . South Korea, Singapore, Hong Kong, and Taiwan are typical cases where high and stable economic growth was realized by giving play to comparative advantages. . . . As in other developing economies, their level of industrialization was very low and GDP per head was only about US$100 in the early 1950s. But it took them only 20–30 years to enter into the ranks of the developed economies by depending on the market price mechanism to allocate resources and foreign markets to develop a trade-oriented economy. . . . Land can be seen as given for both developing and developed countries because it cannot increase and differs [in this respect] from labor and capital. . . . At a low stage of development when the scarcest factor of production is capital (hence the interest rate is always at a high level), agricultural products are land- and labor-intensive products with comparative advantage; along with capital accumulation and the increase of the labor force up to a certain level, land becomes relatively scarce and thus labor-intensive manufacturing industry has a comparative advantage. . . . In the structure of factors of production where labor is relatively abundant, wages are at a low level compared with the interest rate. Such relative factor-price signals cause an industrial structure to form by fully absorbing and using a great deal of the rich labor resources. . . . [Land markets cause] land to flow freely among owners and users of land and in this process different productive uses and the market rents and prices of land are formed. . . . The product market has no long-term product shortage because the flexibility of relative price changes will cause the gap between supply and demand to be quickly filled. (Lin et al., 1994: 87–106)

The economy of Singapore and Hong Kong is basically urban and not relevant to Ricardo's model, but in the early 1950s South Korea and Taiwan were clearly trapped in the vicious cycle of that model. By ignoring their history of land reform, Lin et al. ignore how they broke the cycle, and then portray the negative role of the market during that cycle as a positive role by treating land as "given" and of no difference in overpopulated and underpopulated economies. At a low stage of development, what is scarcest in overpopulated economies is not capital, as Lin et al. claim, but land. It is precisely the shortage of land relative to capital that causes rents and prices of land to rise, labor inputs per unit of land to rise, prices of grain and wages to rise, and profits to fall. Under these trends and when land is scarcer than capital, capital is bound to be used to purchase and accumulate land, and reproduce a landlord-tenant and high-rent system. In overpopulated East Asia, it is also not true that land becomes relatively scarce at the second stage of development. This relative shortage works from beginning to end, such that, for example it induces today's Chinese local governments and housing property companies to use capital to appropriate land. In contrast, at the low stage of development underpopulated countries have abundant land but little labor and capital. This factor structure reduces the prices of land, labor inputs per unit of land, and labor costs per kilogram of grain and raw materials of light industry, and at the same time increases industrial profits. Therefore, capital is not used to acquire land but to invest in industry (Pei, 2008: 254). This is also why Ricardo argued that the low-cost surplus grain of underpopulated countries could stop the decline of British industrial

profits. At a low stage of development, rent is also low and is not even present in underpopulated countries. William Nicholls (1970) demonstrated that the reason why there was no landlord-tenant system in the early history of United States and New Zealand was the almost unlimited supply of land relative to capital and labor. This factor structure made rents and prices of land very low and landowners weak, while making capital and labor strong and their prices high. Landowners could not rent out land or hire labor when there was abundant land for reclamation and possession. Even if there were tenants, the structure of low rents and dear labor and capital would not benefit landowners, so there was no economic force driving the establishment of a landlord class.

It is also unrealistic to say that interest rates are always at a high level. Using a vast amount of data from 1650 to 2005, China's Financial History Research Group 中国金融史课题组 (2005) confirms that it expected the interest rate in China's financial center of Shanghai to fall and anticipated a decline in profits in line with Ricardo's model. We know that the upper limit of interest rates is the social average profit rate and the lower limit is zero. When profits are declining, the interest rate can in no way always be at a high level. It also violates Ricardo's macro-dynamic model to say that when labor is relatively abundant, wages are low relative to the interest rate. Although wages in terms of grain are fixed at the subsistence level in that model, a rise in labor costs per kilogram of grain is bound to cause wages to rise and profits to fall. That overpopulated countries export farm goods at a low stage of development is not because their land has a comparative advantage. China's early exports were tea, silk, etc.—that is, not land-intensive but labor-intensive products. It completely reverses history to say that the flexibility of relative price changes can ensure that the product market suffers from no long-term shortage. A shortage of the most needed product—grain—has always bedeviled developing countries, especially China, the country with the largest population. China's market economy before 1949 and market-oriented reform today have not been able to solve this problem. In sum, all the above problems are caused by the population trap where land is scarce relative to labor and capital. In contrast, the productive factor structure where land is abundant relative to labor and capital, not only gave underpopulated countries (e.g., the United States and Canada) what Lin et al. have described a comparative advantage to export a land-intensive product, grain, at the early stage of development, but also causes them to enjoy this advantage today. Because what Lin et al. describe as structures of prices and productive factors do not characterize overpopulated but underpopulated countries, they (1994: 91) claim that their comparative advantage strategy also applies to natural-resource-rich countries like Australia and New Zealand, and the development of such countries is predicated on that strategy. In fact, Australia's and New Zealand's market system, industrial structure, and high per capita income were all results of their rich natural resources, and have no relation to the choice of strategy. South Korea and Taiwan may have purposely chosen a development strategy, but that strategy was nothing but using non-market methods, e.g. eliminating the

landlord class, equal distribution of land, the ban on market exchange of land and tenancy, and so on, to break free from the economic stagnation of the population trap. This in turn was realized by transforming the capital originally used to acquire land into industrial capital, and using the social and equal enjoyment of rents to change the main social surplus to sources of industrialization, and shifting rural population and labor to industry. It is this shift that reduced much of the population and labor that relied on land to survive and changed the factor structure whereby landlords could always increase rents when land was scarce relative to labor, and peasants competed for tenancy. The history of both South Korea and Taiwan also demonstrates that their comparative advantage of cheap labor was brought into play by shifting much of the rural population and labor to industry. This was a result of non-market methods having overcome the negative role of markets in the population trap, and not a result of land flowing freely among owners and users of land and the different productive uses, and rents and prices of land forming in the land market. If South Korea and Taiwan really followed what Lin et al. claim, they would have remained stuck in the vicious cycle of the population trap and been unable bring their comparative advantage into play. Therefore, a "comparative advantage strategy" is of little use to developing countries, especially those stuck deeply in the population trap.

In sum, the hypothesis of Lin et al. has reversed historical causality. The histories of mainland China, South Korea, and Taiwan have all confirmed that it is the first stage's anti-market resource allocation that brings the next stage's economic takeoff, giving play to comparative advantage and market resource allocation. But by denying and avoiding the history of the first stage, Lin et al. reverse the causality by saying that their economic takeoff and use of their comparative advantage stemmed from the last market resource allocation of the next stage.[2] This way of reversing history cannot support their view of a universal market. East Asia's thousand-year history of the landlord-tenant and high rent system supports Ricardo's model, wherein the market system indeed amasses the social surplus in the landlords' hands and throttles industrialization. From the micro perspective high market rent also reduces tenants' income and investment capacity and perpetuates the vicious cycle of poverty. What breaks this cycle are anti-market methods and revolutionary land reform which removes the landlord class from the historical stage. Second, this way of reversing history cannot render their micro-launched and incremental reform model valid. The histories of mainland China, South Korea, and Taiwan have all demonstrated that their economic takeoff occurred after the macro reallocation of the original social surplus and the change of land

[2] On the one hand, Lin et al. (1994: 2–3) say that in the 1980s China's economic growth, especially in the five provinces of Southeast China, exceeded the historical peak of the growth rate of Taiwan, South Korea, Hong Kong, and Singapore, and achieved an unprecedented miracle; on the other hand they hold that in the 1990s the Chinese state had still not abandoned the Stalinist strategy nor allowed the market to allocate resources. Here Lin et al. contradict themselves and unwittingly reveal that the unprecedented miracle had nothing to do with their comparative advantage strategy.

rents to sources of industrial investment. Third, this way of reversing history also cannot conceal the problems with the comparative advantage strategy. The histories of many countries show that allocating resources via the market price mechanism not only can lead to economic stagnation, but also to the fallacy that development is easiest when the market decides prices of products and factors for production, and any country at any time also has a comparative advantage relative to other countries. Fourth, the more Lin et al. claim their strategy is universally applicable, the more they cut the specific connection between China's development in the first stage and that of the next, and the more their hypothesis deviates from real history and becomes powerless to explain China's economic takeoff. In contrast, the more we reveal the specific connection, the more we reflect real history and the more powerful becomes our explanation of China's economic takeoff.

Conclusion

Since the Chinese state had no elaborate blueprint for reform at the end of 1978, no one purposely designed the model of economic transition described in this article. A huge amount of historical statistical data from a variety of perspectives confirm that a vacuum of light industry, a dire shortage of consumer goods, a huge rural surplus labor force, a strong heavy industry, and a rise in prices of farm goods induced this model. Compared with other developing countries, China's most distinctive feature of the past sixty-five years as a whole has been the very high and stable investment rate, around 33 percent from 1953 to 1990 and as high as 40 percent from 1991 to 1995. The Stalinist strategy created this high rate, as well as tensions and an imbalance between state-owned heavy industry and the vast surplus labor of the collective farm sector. Around 1980, when the rise in prices of farm goods ended the strategy's forced accumulation policy, these tensions were released and inherently sustained the high level of investment. China's vast surplus labor naturally demanded investments in the vacuum of light industry, which created off-farm jobs. To reduce its overproduction, heavy industry automatically supplied investment goods for the expansion of light industry. From the demand side, the dire shortage of consumer goods also drove the expansion of labor-intensive and light industries and absorbed their products. This transition from an unbalanced to a balanced economic structure even led to higher rates of investment when it launched China's economic takeoff.

The farm surplus connected China's vast surplus of labor and heavy industry, so it was its reverse flow that launched China's economic transition and takeoff. From 1979 to 1983, the continued rise in state purchasing prices of farm goods sharply pushed down the share of state revenues in GDP, from 31.2 percent to 22.9 percent, shifting about 13 percent and 22 percent of state investments to rural collectives and private investors, respectively. This macro redistribution of the saving part of China's GDP was not channeled through the market mechanism of Lin et al., but

through the planned mechanism of the pre-reform era. This macro redistribution of the pre-reform source of investment not only quickly ended the centralized investment system and its structure, but also created and regularized the pluralistic structure of state, rural collective, and private investments to 65:13:22 from 1984 to 1991. Therefore, as Figures 1 and 2 show, about 110 million laborers (close to half of the US population) moved from the farm to the TVE sector from 1978 to 1996. What is more striking is that the reverse flow of the farm surplus could transfer 63.1 million rural surplus laborers to the TVE sector and cause its growth in employees and industrial output to take off and overtake that of the state sector in merely five years (1983–1988), when China had no factor market. It was these expansions that rapidly filled the gaps of investment, labor, industry, and output structures created by the Stalinist strategy.

This success was due largely to the fact that the Stalinist strategy was ended at an opportune moment. China started to abandon that strategy when the majority of its population was still rural. But when the East European countries started to abandon the Stalinist approach, the majority of their population was already urban and industrialized. Thus, the East European transition began with privatization while the Chinese transition began with a sudden expansion of rural industry (Pei, 1994). This expansion sustained high growth and allowed China to privatize the urban state and the collective TVE sectors at the next stage, the mid-1990s. But Lin et al. summarize the difference thus (1994: 269–73): China's gradual reform was launched by devolving power to micro-enterprises and encouraging them to create new resources. Then the market channel of the two-track price system allocated these new resources to labor-intensive industry, which had been suppressed by the Stalinist strategy. This caused China's comparative advantage to come into play and the economy to take off. In contrast, the East European reform was launched by the radical method of changing the macro-policy environment and the social benefit structure, thus it did not bring economic growth and gains. Since China and the East European countries had the same traditional economic system and drawbacks, the path of reform should have been the same and the Chinese model of gradual reform in fact could have been followed by the East European countries. In short, Lin et al. claim that if the East European countries had followed their universal model, the history of reform and its effects would have been no different. However, Lin et al. also repeatedly claim that China did not take the initiative to change the Stalinist strategy and its macroeconomic policy environment. The lag of the two behind microeconomic reforms in China led to a "living-chaos" cycle. This is equivalent to saying that an East European-style of reform, allowing the market to allocate resources, could have avoided these problems and better implemented the comparative advantage strategy. But in the end Lin et al. contradict themselves by claiming that the East European reform failed while the Chinese reform created an unheard-of miracle.

In reality, the TVE expansion was an outcome of both the unbalanced economic structure created by the Stalinist strategy and the fact that the sources of

investment in that strategy were reallocated by the planned system. Furthermore, the transfer of millions of agricultural laborers to industry did not require labor markets when it occurred within the borders of collective-owned land and the workers were self-employed (Pei, 2002). These outcomes of the pre-reform economy can answer the question of the sources of China's gradual reform model and economic takeoff, even when the state had no elaborate blueprint. Lin et al. also try to answer the question of where the two results came from when the state had no reform plan, but their answer distorts history and cannot explain why the rural industrial expansion ended in the mid-1990s when the collective TVEs were privatized and the market started to allocate resources. Their "universal model" also ignores the difference in the population structures of China and Eastern Europe and contradicts history: the Hungarian reform in 1968 was not only the model that started from devolving power to micro-enterprises, but it was much earlier than the Chinese reform. However, it did not bring the results claimed by Lin et al. This forced Hungary to shift to radical reform. In an earlier publication (Pei, 1994) I have shown that the different population structures created different reform models. At the end of 1978, when the Chinese state decided to raise the prices of farm goods, the urban share of the population was only 18 percent, but the food price subsidies for this share immediately caused huge financial deficits and led the pre-reform financial system to collapse. Thus we must ask: Could the finances of the East European countries have borne several times this pressure when the majority of their population was already urban? Even if we assume that they could have done so, could this reform model have led to a Chinese type of TVE expansion in these countries?

Although the Lin et al. model contradicts itself and history from beginning to end, Lin and his coauthors conclude that they have explained why China's economy developed slowly before the reform but fast after the reform; why China's reform succeeded but the East European reforms failed; why South Korea, Taiwan, Singapore, and Hong Kong could achieve economic takeoff; and why their comparative advantage strategy is universally applicable, even to natural-resource-rich countries like Australia and New Zealand. In the preface to their book (1994: 1–3), they spell out how they arrived at these conclusions: A framework for analyzing China's reform and development come to their mind when they studied why the reform lag of the macroeconomic policy environment behind microeconomic reforms caused a cycle of "living-chaos." They feel that their framework is perfectly logical in explaining how China's pre-reform economy come into being; why its reform succeeded; why the "living-chaos" cycle and other difficulties long existed; why China's experience is universal; and so on. Therefore, Lin et al. evidently saw no need to study the real history of any of the above-mentioned countries and regions. Their answer and conclusion came directly from their "perfect logic" and preexisted their study. This amounts to replacing history and making history follow one's conclusions. In short, their interest is not uncovering history, but recrafting history as it should be: the

"comparative advantage strategy" will cause economic growth as long as the state allows the market to allocate resources.

This subjective causality amounts to claiming that the state can both choose what kind of market-oriented policies it will adopt and decide what kind of effects will flow from its market-oriented policies. But in fact the state cannot decide what kind of effects will flow from its policies though it can choose what kind of policies to apply. Indeed, in the reform era differences between various areas of China caused the same market-oriented policy to have different effects (Pei, 2014); the effects of raising the prices of farm goods were not designed by the Chinese state and had to be different from those in East European countries; the effects claimed by neo-classical property rights theory did not flow from privatization in the East Europe. Since the state cannot decide what kind of effects will flow from its policies, it should select policies according to their real effects rather than the effects postulated by Lin et al. It is this principle of seeking truth from facts rather than from "perfect logic" that made China's reform successful. From a longer historical perspective, although specific practices in China, the former Soviet Union, Eastern Europe, South Korea, Taiwan, etc., have some differences, all these countries and regions went through the same process of negation of negation by using non-market methods to overcome the negative role of the market in hampering industrialization, and then returned to the market system. This common history both confirms Ricardo's theory and denies the view that the market is omnipotent. The histories of the United States, Australia, New Zealand, and other underpopulated countries also confirm Ricardo's theory, namely that their wealth of land per capita allowed them to avoid the population trap, seriously diminishing returns, and the process of the negation of negation.

One of the reasons Ricardo's theory has stood the test of two hundred years is that during his lifetime there was no dividing line between capitalism and socialism and between market and planned economies, and thus there was no basis for ideological bias which would disturb scientific study. Even so, Ricardo's theory and the Malthusian population theory still missed the law of limits to land productivity. In fact, the cornerstone of their theories, diminishing returns, is a result of this law (Pei, 2008, 2014). If yield per hectare had no limits, farm outputs would, like industrial outputs, not correlate to land size but to labor and capital inputs. If this were so, then the same amount of labor inputs in 1 ha or 10 ha or even 100 ha would result in the same amount of outputs. There would be no diminishing returns, no Ricardo's theory, no population trap, no difference between the positive role of market in the underpopulated countries and the negative role of market in overpopulated countries, and no different history between the two types of countries. Therefore, scientific research should go beyond ideology, policy debates of the moment, reformist or conservatives tendencies, and subjective preferences. Only in this way can we, from historical differences, identify the laws of nature, which are without subjective preference but have the power to shape the role of the market and the course of history.

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