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Kent Deng, LSE
and
Jim H. Shen, SOAS

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Economic History Department, London School of Economics and Political Science,
Houghton Street, London, WC2A 2AE, London, UK. T: +44 (0) 20 7955 7084.

From State Resource Allocation to A 'Low Level Equilibrium Trap': Re-evaluation of Economic Performance of Mao's China, 1949-78

Kent Deng and Jim H. Shen[1]

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Abstract

This paper provides a full picture of how Maoist economy actually performed. We argue that Mao's China neither undertook a structural change towards industrialisation nor generated a sustainable growth from 1949 to 1978.[2] With fatal shortcomings of a planned economic system imported from the Soviet Union – the 'principle-agent' problem and information asymmetry for the bureaucracy, and disincentives for producers – China's economy remained not only deliberately unbalanced but also predominantly rural until the 1980s. More importantly, the Maoist economy was not designed to enrich and empower the masses in society. Instead, all key consumer goods including food, clothing and housing were strictly rationed. The material life of ordinary citizens in China saw no improvement. This paper aims to reveal the harsh reality of the Maoist economy with solid evidence and theoretical explanation.

I. Introduction: The issue

China has a long history of premodern growth in just about all categories: empire building and expansion, high-yield agriculture, a wide range of inventions and innovations, impressive commercialisation and a high degree of proto-industrialisation, a very strong foreign trade record and a relatively comfortable

[1] Kent Deng, Department of Economic History, LSE (k.g.deng@lse.ac.uk); Jim H. Shen, Department of Economics, SOAS hs63@soas.ac.uk.

[2] 1949 was the beginning of Mao's rule of China. Mao died in 1976. However, 1978 was beginning when deregulation of Maoism began, first in the rural sector.

living standard.[3] However, all these were ruthlessly challenged by the rise of Western capitalism marked by the opium trade and the First Opium War (1839-40). If imperial China was noted as a country of political and socio-economic equilibrium,[4] modern China since the Opium War has been a place of chaos and upheavals, some deadly. Mao's era from 1949 to 1978 was such a period.[5]

At the heart of continuous changes lies the issue of what new developmental path China needs to adopt in order to cope with the altered world order and, if possible, to catch up with the wealthy west. The choices available to post-Opium War China were of three types: first, the classical and neo-classical 'weak state-rich population' type; second, the 'strong state-poor population' type which was shared by Russia (under the Tsars and Lenin-Stalin) and Meiji Japan; third, the 'strong state-rich population' type under the modern Western welfare system (see Fig. 1).

[3] Numerous works have documented this, see for example, Needham 1954-2016; Skinner 1964-6, 1971; Fairbank 1965; Hartwell 1966; Myers 1970; Elvin 1973; Fueurwerker 1976, 1984; Chao 1986; Gates 1996; Deng 1997a, 1997b, 1999a, 2015; Wong, 1997; Pomeranz 2000; Hobson 2004; von Glahn 2016.

[4] Deng 1999b.

[5] Mao's era included the brief interim leadership under Mao's hand-picked successor Hua Guofeng (1921-2008).

Figure 1. Developmental choices for modern China

A. Choices of the state type and people's welfare

	Weak state	Strong state
Poor people	Post-Opium War China	Russia and Meiji Japan
Rich people	Ideal of neo/classical economics	Modern welfare states

B. Actions

	Weak state	Strong state
Poor people	1911 Revolution →	Nanjing government 1927-37 Mao's rule 1949-76 (1)
Rich people	N/A	Mao's rule 1949-76 (2)

Note: Solid arrow - commonly agreed change in history (or China's first move). Broken arrow - claims to be tested (also China's second move).

Since China fell in the most inferior position of 'weak state and poor population', it could only go up. Thus Post-Opium War China has the 'advantage of backwardness'.[6] And, the opportunist costs for China to move were extremely low (Panel A of Figure 1). In reality, the classical, neo-classical choice of 'weak state and rich population' was unachievable, so the feasible choices were just two. There is a little doubt that China's early reforms associated with the Westernisation Movement (*yangwu yundong*) and the 1911 Nationalist Revolution pushed China in the direction of the 'strong state-poor population' type. The question here is whether Mao Zedong's leadership China for the better (Panel B of Figure 1). Our findings suggest not.

[6] Gerschenkron, 1962.

II. Historical background of Mao's regime

a. Nationalism in China

In nature, the establishment of the People's Republic of China in 1949 was more of a victory of nationalism (or 'republicanism') than communism. The recovery of China's national sovereignty (in which the communists claimed a considerable share in the heroic war against Japanese invasion and conquest) and the re-unification of the country after the long lasting civil wars (in which the communists finally prevailed) were both categorically nationalist goals. During the 'Period of Recovery of the National Economy' (1949-52), nationalism dominated state re-building agendas in terms of the establishment of law and order, implementation of land reform, balancing of the state budget, stabilisation of market prices, nationalisation of key economic sectors, and so forth.

On the diplomatic and national defense fronts nationalism has always been the keynote of the People's Republic. Until the 1970s, China spared no effort to ally with the nationalist Third World. China broke away with the Soviet Camp in the early 1960s because of the alleged 'socialistic imperialism' of the latter. Military strength was given national priority. As a result, China was the first developing country to possess nuclear and space technologies.[7] Nationalist colours were repeatedly shown in four military confrontations along China's boarders: the Korean War (1950-3), Sino-Indian War (1962), Sino-Soviet War (1969) and Sino-Vietnamese War (1979). So, the early popularity of the communist rule was undoubtedly based on this nationalist thrust.

It is not so surprising that not until the mid-1950, some three decades after the establishment of the communist movement on China's soil, was the party-

[7] This is known as 'two bombs and one satellite wonders' (*liangdan yixing*): atom and hydrogen bombs and an artificial satellite. They were all for the military and had little to do with people's material wellbeing.

promoted socio-economic communism on any noticeable scale. Even so, after the mid-1950, Mao's communism always heavily entwined with nationalism.

b. Choice of the Stalinist model

The Soviet model was adopted smoothly in Mao's China, not because it had been tested properly. Rather, it was because the model had not been tested before while other models had been proven ineffective in helping China getting out of a vicious circle of poverty, inequality and underdevelopment in much of the nineteenth century. The 'demonstration effects' of the Great Depression in the West in the 1930s, the Soviet victory over Nazi Germany during World War Two, and the geo-political split between the Western and Eastern camps after the war helped a great deal in reducing the opportunity cost for the Chinese new political leadership to commit to economic Stalinism.

In addition, there was the agenda of egalitarianism which had a longer tradition in China than either nationalism or communism. The Soviet economic system and practice were therefore mistaken for China's timeless egalitarianism.[8] This is however beyond the scope of this essay.

c. State-determinism

Mao's era was marked by top-down state determinism. This state-determinism was most obvious from the radical changes in ideology and politics. Ideologically, there was a well-choreographed personal cult of Mao as *the* savior of China against old 'social evils' and *the* messiah of the Third World against the Western and Soviet imperialism. In this context, from 1949 to 1976, in his capacity as the lifetime Chairman of the Communist Party, Mao Zedong was in firm control over the party, the military, the bureaucracy and the population in the fashion of theocracy. Politically, 'republicanism' (hence the name 'People's Republic') was replace by a

[8] This overlapping has been coined as 'pseudo-communism' in post-Mao China.

party-state (or in real terms 'Party's Republic of China'). The abandonment of China's traditional examination system for civil servants facilitated proletarian dictatorship. The effectiveness of this dictatorship was demonstrated in six nation-wide purges to eliminate any potential competing power centre against party rule: the Movement against Three and Five Evils (*sanfan wufan, 1951-2*), Anti-Rightist Struggle (*fanyou,* known also as 'One Hundred Flowers Movement', 1957), Socialist Educational Drive (*shejiao,* also known as 'Four Cleansings' *siqing,* 1964-5), the Cultural Revolution (*wenge,* 1966-76), and the Suppressions of the '5 April Protest' (*siwu shijian,* known as the 'Tian-anmen Incident', 1976).[9] In addition, to eliminate different opinions and factions within the party, there was more frequent purges inside the ruling party and the bureaucracy. Such continuous campaigns strengthened the Maoist state politically, which was the precondition for a total control of China's economic resources by the party-state.

In this context, it becomes easy to understand the function and utility of the market in Mainland China was first marginalized and then eliminated, all done systematically.

III. Mao's ideal versus China's track record

a. Reviews on Mao's economy

The mainstream opinion on economic intention and performance of Maoism in circulation has so far been by and large compatible with the official line of the Chinese Communist Party: Despite mismanagement Mao's rule generated fast industrial growth,[10] and laid the foundation for post-Mao miracle take-off in China's economy.[11] Such a view also resonates in the West.[12] It has been a

[9] The better known 'Tian-anmen Incident' took place later in 1989.
[10] Maoist mismanagement has mainly been seen in the rural sector; see Chinn 1979: Putterman 1988; Lin 1990; Kung and Lin 2003; Dikotter 2011; Wemheuer 2014.
[11] Also, see Xue 1979; Wu and Dong 2010.
[12] E.g. Gurley 1970; Shigeru 1983; Lotta 1994; Hutton 2007.

political taboo to view Maoism as rent-seeking at the expense of the interests of the ordinary people. Here, the common problem is to mistake some trees for the forest; or to use some trees to beautify the forest. We challenge such a view.

b. Mao's ideal

Mao's communism certainly promised an enriching egalitarianism with a better material life for everyone: employment, education, health care, pensions and so forth, a new China.[13] All these depended on a new economy and its good performance. For this end, China ran an extensive growth programme under a string of five-year plans. These five-year plans appeared to be developmental, aiming at bridging the 'three major gaps' (*sanda chabie*) between the industrial working class and the peasantry, between urban life and rural life, and between mental labour and manual labour.

This prospect of a good material life eased the pain of sweeping nationalisation of private and corporate industrial assets (which affected the urban elite) and brutal collectivisation (which affected the rural masses). Undoubtedly, the same prospect of a good material life generated some short-term incentives among the Chinese population to work hard for the new Maoist regime until *circa* 1960.

c. General growth track record

In reality, however, people's material life gave way unconditionally to ambitious industrial growth and self-reliance, commonly known as 'import substitution industrialisation' (ISI), as a policy priority during the entire Mao's era. A better material life for everyone became but a lip service. To serve Mao's industrial ambition, private/corporate land and capital were forcefully collectivized and nationalized; China's market-based resource allocation was replaced by state-run resource allocation. It has been commonly agreed that this move was at least too

[13] But, according to the Marxian doctrine of 'depriving the exploiter', this process can never be of a Pareto optimum as the old elite are targeted and become inevitably worse off.

far ahead of its time, if not completely flawed. Society was not ready for the changes. So political cohesion was common.

What followed was the notorious 'Great Leap Forward' (*dayuejin*) during the later 1950s. Mao personally fantasized the possibility of 'surpassing Great Britain and catching up with the United States' (*chaoying gammei*) in a short space of time to forficate China's 'dashing into communism' (*paobu jinru gongchanzhuyi*). What a dream. In reality, however, the 'Great Leap Forward' ended tragically in 'Great Steps Backward' marked by (1) a mass campaign to produce mountains of useless outputs from traditional back-yard furnaces, (2) mass starvation that cost at least 30 million lives; and (3) massive de-industrialisation and de-urbanisation due to the collapse of the alleged great leap.

As the economy and people's morale barely recovered after 1963, Mao gamboled again. This time was the ten-year long Cultural Revolution, something that Mao was proudest of in his life. From the scale and scope of damages inflicted by the Cultural Revolution, the Maoist state became unmistakably illiterate in terms of modern economic growth and development. The economy was virtually on the brink of total self-destruction with the standards of living among ordinary people pushed back for a century.

Obviously, the gap between Mao's ideal and the general track record of the economy under Mao's rule was simply nonnegotiable. However, this essay will not concentrate on the impact of man-made disasters during Mao's rule. Rather, it will look at development in its entirety to sketch out the direction in which the economy went and how beneficial the growth, if at all, was for the general public during that era.

d. Growth and developmental strategy: unbalanced ISI

1. Raison d'être of the Soviet growth doctrine

In 1924, after Lenin died, the Soviet decision-makers were divided in two rival camps: those who supported 'balanced growth' and those who fancied 'unbalanced growth'. Nikolai Bukharin (1888-1938) who seemed to understand economics was the leader of the 'balanced growth camp'. He emphasized, quite rightly, (1) the symbiotic relationship between industry and agriculture; (2) the role of agricultural exports in obtaining advanced technology from the West; (3) the importance of peasant incentives, especially market incentives, to produce more and better. His conclusion: Lenin's market-oriented 'New Economic Policy' should continue. Bukharin sounded very much like President Liu Shaoqi (1898-1969) who proposed to 're-set the clock' (*yao tuigou*) after the disastrous 'Great Leap Forward' and to allow agriculture to revitalize itself under the policy of 'three economic freedoms and one production contract' (*sanzi yibao*). Yevgeni Preobrazhensky (1886-1937), the figurehead of the 'unbalanced growth camp', argued that (1) heavy industry should be given the priority to grow: (2) agriculture must bear the main burden of capital accumulation; (3) ordinary people's consumption needed to be sacrificed; and (4) NEP should be abandoned. This sounds like Mao and his left-wing comrades under the banner of so called 'four modernisations' (*sige xiandaihua*).[14] Stalin shrewdly seized this opportunity of the divided communist party for his take-over of the state power.[15] He skillfully swung between the two groups until his personal control over the party was complete.[16] This piece of

[14] The 'four modernisations' referred to four areas: industry, agriculture, defense, and science and technology. The slogan represented the pinnacle of Mao's unbalanced growth attempts in the early 1970s. The deadline for the four modernisations was set for 1999. Given that there was no mentioning of how to improve ordinary people's living standard, this was just another license to extract resources from the public *à la* the Soviet state.

[15] Stalin first supported Bukharin's 'balanced growth proposal' to defeat Preobrazhensky and his ally Leon Trotsky (1879-1940). Once this was achieved, Stalin framed Bukharin and sent him to a firing squad. After that, Stalin switched back to the 'unbalanced growth approach'. Stalin did not really care about the economy.

[16] After several years of New Economic Policy, 5-7 percent of the Soviet peasantry became wealthy *kulaki* (Nove, 1992: 103) and Soviet agriculture recovered. It proves that the New Economic Policy provided agricultural sector with incentives to produce more and better and to invest more and wider. But the honey-moon between the communists and the *kulaki* was soon over. In 1930-1, 1.5

Soviet history reveals that the unbalanced growth mode was not the only choice available. Rather, it was purely a political decision to serve Stalin's personal desire. And, Stalin was an opportunist.

To be fair, however, there is a technical reason to go for an unbalanced growth mode. In reality, the daily task faced by the Soviet planners was how to balance the inputs and outputs of some 30,000 products (Gregory and Stuart 1994: 152). To work out a general equilibrium for a 'balanced growth' across these products, the total number of equations needs to be solved simultaneously is nine billion. Even if all the nine billion equations are in place, the Soviet planners had a constant problem with plan fulfillment. From 1932 to 1985, there was not a single period in which the Soviet plan was fully realized (Nove 1992: 228; Gregory and Stuart 1994: 152), a 'principle-agent' problem that festered the Soviet economic system from Day One.

The bottom line here is that without market mechanisms, a balanced growth under state planning requires perfect knowledge, both quantitative and qualitative, of all aspects of the economy *ex ante*.[17] If such perfect knowledge is unobtainable, what the planners can hope for will have to be a 'unbalance growth'. So, in reality some sort of an unbalanced growth was the best the Soviet system could achieve.[18]

million *kulaki* - the best farmers and most active agrarian entrepreneurs of the country - were deported to marginal land in Siberia under Stalin's order (Nove 1992: 166).

[17] In the West, the absence of perfect knowledge of the market and its impact have been carefully addressed, typically in the forms of 'asymmetrical problem' (referring to different business entities) and the 'principle-agent problem' (concerning the same business entity). Such issues are politically unacceptable by communist ideologues who deny any private, individual interest and assert a common goal shared among all the citizens at all times.

[18] Lenin's formulae are unsophisticated: (1) Output of capital goods > capital goods replacement + new investment; (2) Output of capital goods > consumer goods; (3) Inputs in capital goods production > inputs in consumer goods production. This is a license for the Soviet planners to have a free hand to make a mess of the economy. And they certainly did.

Overwhelmingly, such unbalance was in favour heavy industry and its related modern armament. We thus define Stalin's unbalance military-cum-ISI as the 'Soviet growth doctrine'. It represents the worst possible choice for modern growth and plants the seed of unsustainability simply because (1) it is bound to distort resource allocation to make growth artificially affordable in the short run and (2) distorted resource allocation will in turn slow growth in the long run (see Fig 2).

Figure 2. Different Combinations of Growth Strategies and Their Ranking

	Unbalanced growth (–)	Balanced growth (+)
ISI (–)	USSR, 1917-89 Mainland China, 1952-78	India, 1945-85
EOI (+)	Post-war South Korea	Post-war Hong Kong Post-war Taiwan Mainland China, post-1978

Note: ISI – import substitution industrialisation with which the market is optional; EOI – export-oriented industrialisation with which the market is essential. In India, 1955 marked a new era when Professor Mahanalobis promoted economic planning by the state. By and large, India pursued a balanced growth with ISI thanks to its functional democracy (Tomlinson 1993). South Korea is known for its heavy government manipulation of prices, known as 'to get prices wrong' in favour of certain industries (Alam 1989; Wade 1990; Amsden 1992). In Hong Kong and Taiwan, family firms form the growth engine where state intervention was moderate.[19]

2. China's adoption of the Soviet doctrine

Evidently, not only did Mao adopt the Soviet unbalanced ISI doctrine soon after he took over political power in China (see Table 1),[20] but also he aimed to outplayed Stalin's track record in his bid for leadership against his rival Nikita Khrushchev (1894-1971) in the international communist movement (see Table 2). The period slogan was 'more, faster, better with less inputs' (*duo kuai hao sheng*). The danger of unsustainability and cheating loomed large.

[19] Rabushka 1979; Chou 1985; Rowen 1998: chs 2, 3, 9 and 14.

[20] To be fair, the 'initial push' for industrialisation was provided by Stalin's Soviet Union. Only after over 140 industrial projects were imported from the Soviet Union, did China's industrialisation adopt ISI in the name of 'self-reliance'.

Table 1. Unbalanced ISI under Mao: Shares in Total Capital Investment, % in Total, 1953-75

Period	Heavy industry (A)	Light industry (B)	A:B
1953-7	36	7	5.1
1958-62	54*	7	7.7
1963-5	46	4	11.5
1966-70	51	4	12.8
1971-5	50	6	8.3
Average	47	6	7.8

Source: Based on Lan 2000: 110–11.

Note: *Figure that was inflated with iron and steel outputs of little utility or value.

Table 2. Speed of Changes, China versus the Soviet Union

Time lag	USSR (A)	China (B)	B – A
From power take-over to rural collectivisation	12 years (1917-29)	5 years (1949-54)	–7
Completion of rural collectivisation	9 years (1929-38)	1 year (1955-6)	–8
From power take-over to the 1st Five-year Plan	11 years (1917-28)	3 years (1949-52)	–8
From power take-over to industrial spurt	15 years (1917-32)	9 years (1949-58)	–6
Average			–7.3

Source: Gregory and Stuart 1994; DNS 1998: 70-88.

e. China's economic structure and its change

In the late Qing, China's urban-rural ratio was 0.2 (from 17% : 83%). In the early 1920s, it improved to 0.27 (21% : 79%) (Jiang 1994: 70). In 1958-78, however, the ratio declined to 0.19 (16% : 84%), worse than the Qing level (Cui 1997: 11). Thus, regardless of what was vigorously promoted during Mao's era, the Chinese population was overwhelmingly rural.

Similarly, China's employment pattern was pre-industrial: Until the very end of Mao's era, the Chinese economic structure was not very different from that of the

Ming-Qing period, nor was it different from that of Tsarist Russia, Meiji Japan or colonial India (see Table 3).

Table 3. Economic Structure Seen from Employment Shares, % in Total

	Total employment	Agriculture	Non-agriculture
China, Ming-Qing	100	80	20
China, 1978	100	71	29
Russia, 1914	100	75	25
Japan, 1872	100	72	28
India, 1901	100	65	35

Sources: Li 1995; Zhang 1998; Charlesworth 1982: 20; Feuerwerker 1984: 299, 302, 312-13; Chao 1986: ch. 3; Minami 1986: 24; Wheatcroft et al. 1986: 273; Marita 1991: 101, 132; Francks 1992: 29; Davies et al. 1994: 112; Gregory 1994: 21, 42.

The alleged fast industrialisation under Mao's rule has to be hugely exaggerated not only in light of the national employment pattern but also in terms of a growth in industrial workers slower than that of China's population (Table 4). Instead of keeping up with population growth, the economy was in a process of 'de-industrialisation' with a growth deficit of –0.27 per annum in relation to China's population.

Table 4. Ultra-slow Growth in Industrial Workforce, in 10^6, 1959-74

Year	Total population (A)	Industrial workers (B)	B/A (%)
1959	672.1	45.5	6.8
1964	705.0	36.4	5.2
1969	806.7	40.9	5.1
1974	908.6	59.1	6.5
Annual %	2.03	1.76	
Annual deficit (B-A)		–0.27	

Sources: Data for the industrial workforce is based National Bureau of Statistics, *Zhongguo Laodong Tongji Nianjian, 1998* (*China's Labour Statistic Year Book, 1998*) (Beijing: China's Statistics Press, 1998): 81. Data for China's population are based on National Bureau of Statistics, *China's Statistic Year Book, 1986*: 91.

It is worth noting that China's low urbanisation rate was strictly and deliberately guarded by Mao's state. Forced ruralisation of population was always on the cards. For example, although in the industrial spurt of 1958-60, 40 million rural residents were employed full time in industrial projects, all the rural industrial projects were soon abandoned in 1962; and another 26 million urban workers with their families were sent to the countryside.[21] In this context, the urban population suffered net losses. Later, in 1966-76, a total of 20 million urban youngsters were resettled in the countryside.[22] This ruralisation scheme affected about 100 million urban people, or over a third of China's urban population.[23] Mao's forced ruralisation scheme did not generate any revolutionary change in rural China and thus proved to be counterproductive and anti-developmental mainly because without technological progress, extra labour only led to diminishing returns to the farming sector. It was loss-loss for both the urban and rural sectors.

[21] Song and Qiao 1998: 183; Li and Zhang 1999: 205.
[22] Pan 1994; Cui 1997: 11.
[23] It is worth noting that Nazi Germany set the precedent of sending youngsters to rural regions.

However, Table 5 suggests in terms of nominal GDP accounting that Mao's economy was heavily industrialised by 1978 with some 48 percent of GDP produced by the secondary sector, far higher than either the developed world's average or that of the developing world. All this was done by a frozen amount of industrial workforce. It has to mean that Mao's industrial workers had to be the most productive on this planet. But so far, few have challenged China's official figures.[24]

Table 5. Economic Structure Seen from Sectoral GDP Shares, % in Total

Economy	Primary	Secondary	Tertiary
I. China, 1978	28.4	48.6*	23.0
Japan, 1920	25.0	20.0	65.0
India, 1965	44.0	22.0	34.0
II. China, 1994	18.8	48.5*	32.7
Developing world average, 1993	17.0	28.0	55.0
Developed countries' average, 1993	2.0	26.0	64.0

Sources: Ray 1979: 17; Lal 1988: 126-7; Rothermund 1993: 177; Gregory 1994: 28, 30; Li 1995; Zhang 1998; Xinhua News Agency 1997, *People's Republic of China Year Book, 1996-97*: 397; National Statistical Bureau 1983, *China's Statistic Year Book 1983*: 24.
Note: * Nominal value only, which should be considerably lower if the arbitrary 'scissors pricing' systematically in favour of manufacturing is taken into account.

What is fishy here is that in as late as 1978 the nominal GDP share of China's primary sector was on the same level as Japan seven decades before at which time Japan was *not yet* fully industrialised. When India's industrial development in 1964 reached a similar level of Japan in 1920 (i.e. 20-22 percent of the total GDP coming from industry), the country was *not yet* fully industrialised, either. Moreover, it is known that Japan traded actively in the inter-war period which

[24] Not until the end of the 1980s did China adopt the international standard of GDP accounting. Official figures prior to that point were all but estimates.

explains its high GDP of the tertiary sector. Mao's China traded very little with the outside world, certainly less than India in 1964. Now, if China in 1978 and India in 1965 had comparable tertiary GDP shares (i.e. 23 percent versus 34 percent), their GDP share for the primary sector should be similar, i.e. around 40 percent. The bottom line is that unless China had become by 1978 the most industrialised economy in the world, compared with either the advanced countries (with 26 percent of GDP for the secondary sector in 1993) or the development world (with 28 percent of GDP for the secondary sector in 1993), we thus have enough reason to suggest that there is no real possibility for China's industrial sector to produce that 48 percent of its total GDP under Mao's rule. Moreover, from the data in Table 3, China's employment pattern was anything but an industrialised one, unless China's industrial workers had become the most efficient in the world by hiring a small number of workers to roll out the highest share of industrial GDP in the world, something that has no evidence to support. Only a cross-group comparison is able to spot this abnormality of China's official statistics.

This puzzling abnormality is demystified if one takes into account the arbitrary 'scissors pricing' imposed as a stealthy tax by Mao's rule systematically to feed on manufacturing.[25] In doing so, China's industrial GDP was artificially inflated; and its agricultural GPD undervalued. In real terms, therefore, the *actual* GDP share of China's primary sector in 1978 should be close to that of India in 1965, i.e. *circa* 40 percent of the country's total GDP. This will in turn reduce China's industrial GDP to *circa* 20 percent. Only then does China's economic performance look normal.

[25] Scissors pricing continued till the 1990s. A study suggested the price gap between non-agricultural and agricultural products was 5:1 in the 1990s (Fan 1995: 39). To correct the distortion, as a rule of thumb, the nominal industrial GDP may be halved; and the nominal agricultural GDP, doubled.

IV. Economic performance

a. General picture for the Mao's growth

It has been widely accepted that during the first 17 years under Mao – or two-thirds of Mao's era – China's economic growth went allegedly well. It has also been agreed that the 'Great Leap Forward' (1958-60) marked the pinnacle of the first wave of growth acceleration under Mao. The 'Great Leap Forward' thus served as a divider between two sub-periods: 1949-60 and 1961-6.

To get an accurate picture of China's economic performance under Mao, methodologically it is very important to eliminate institutionalized GDP inflation. It is known that in 1950-78, China's inflation indexes were 135.9 and 144.7, measured by measured by retail prices and urban consumer good prices, respectively.[26] China's annual inflation rates during Mao's era were thus between 1.82 percent and 2.20 percent, averaging 2.01 percent. This average inflation rate can be used to work out China's real growth rates (see Appendix). Moreover, during the period 1952 to 1980, China's population doubled with an annual growth rate of 2.6 percent.[27] If one takes population growth into account, China's net growth rates look mediocre.

Table 6 shows nominal, real and net growth rates during two sub-periods.[28] The 'Pre-Socialist Period' (or 'New Democratic Period', 1949-55) enjoyed higher growth, part of which was in fact economic recovery after numerous wars in China since the 1910s. Growth declined considerably after 1956 during the 'Socialist Period'

[26] Li 1997: 49-50.

[27] See He 1994: 7. As usual, there is a debate on China's population growth rate. But a consensus has been reached that the growth rate was over two percent per annum during Mao's era; see Jiang 1994: 70; Cui 1997: 10-11; also ZJB 1999: 52, 109, 181, 189, 198, 216, 223, 229, 234, 243, 252, 258, 265, 270. In 1963, the growth rate reached 3.3 percent (ZJB 1999: 189). Most realistically, a rate of 2.6 percent per annum allows a population to double its size in 28 years. This matched perfectly China's demography in 1949-78.

[28] It is another matter of whether the intention was materialized.

(1956-66).[29] The 'Great Leap Forward' from 1959 to 1961 was a part of this slowdown.

Table 6. China's Post-war Annual GDP Growth (%), 1949-66

Period	Nominal	Real	Net
1949-55	14.0	11.3	11.1
1956-66	6.1	2.3	2.3
1949-66	9.2	5.9	5.7

Sources: Based on Tables i and ii in Appendix.

Note: Net GDP is obtained by discounting China's population growth of 2.6 percent per annum (He 1994: 7). Figures in parentheses – GDP without discount.

In comparison, growth in the Soviet Union was more vigorous than China until 1985 (see Table 7).

Table 7. Soviet Post-war Annual Growth (%), 1951-85

Period	Nominal	Real	Real:Nominal
1951-85	6.4	3.7	–2.7
1951-60	10.3	5.1	–5.2
1961-5	6.5	4.8	–1.7
1966-70	7.8	5.0	–2.8
1971-5	5.7	3.1	–2.6
1976-80	4.3	2.2	–2.1
1981-5	3.6	1.8	–1.8

Source: Gregory and Stuart 1994: 236.

Furthermore, in per capita terms, China's economy became stagnant after 1955 thanks to China's population boom (see Table 8).[30] Such stagnation was highly compatible with a frozen economic structure (see Tables 3 and 4).

[29] This slowdown was recognized by scholars (e.g. Wang 1999: 81).

[30] Table 6 shows the same caliber of China's growth during the same period regardless of some nuances.

Table 8. Official GDP Per Capital, 1956 versus 1966

Year	GDP (current prices)	Nominal index	1956 price* index	Real index
1956	US$ 109	US$ 109	100	100
1966	US$ 159	US$ 123	146	113
Annual			3.9%	1.2%

Source: Wang 1999: 82.

Note: * Conversion is based on the average inflation rate of 2.01 percent per year from 1950 to 1978 (Li 1997: 49-50).

Logically, (1) if industrial growth was given government priority, and (2) if the whole economy was stagnant at the same time, there must have been a 'zero-sum game' amongst sectors within China's national economy. This judgement is strongly supported by studies of Chinese agriculture.[31] Evidently, food supply was a constant problem (Table 9). China's food availability under Mao was unable to match its Ming-Qing past,[32] or India after independence.[33]

Table 9. Food Deficits Seen from China's Food Imports, in 10^4 Tons, 1953-78

Period	South China	North China	China's total
1953-5	–688.5	–204.3	–892.8
1956-60	–1950.5	472.0	–1478.5
1961-5	–669.5	2013.5	1344.0
1966-70	–942.0	796.5	–145.5
1971–5	–952.5	1159.0	206.5
1976–8	22.8	1106.4	1129.2

Source: Rural Economy Institute (ed.), *Dangdai Zhongguo Nongye Biange Yu Fazhan Yanjiu* (*A Study of Agricultural Reforms and Development in Contemporary China*) (Beijing: China's Agriculture Press, 1998), p. 251.

Note: Negative value means food exports due to surpluses.

[31] See Ling 1997; DNS 1998; Zhang 1998.

[32] During the Ming-Qing Period, Chinese agriculture was able to produce comfortably 25 percent food surplus most of the time to feed China's 20 percent population in the urban sector; see Feuerwerker 1984: 299, 302, 312-13.

[33] Since independence, India has never suffered from any large-scale famine; see Sen 1981; Nolan 1993.

Evidently, 1956 and 1978 served as two turning points. From 1956 onwards, North China suffered continuous food shortages. In 1976, South China faced the same problem. As food is a basic human need, the lack of it says a lot about the economy-wide performance under Mao.[34]

b. Poor capital efficiency

Similar to the problem in the Soviet Union, Mao's China had deteriorating capital efficiency. From 1953 to 1980, China's average return-to-investment ratio was 0.30 and its return-to-reinvestment ratio was only 0.18, a clear case of diminishing returns to the capital invested.[35] To combat the problem Mao's economic operators resorted to wasteful over-investment, often in regions and sectors where the returns were declining sharply. In 1958-78, the aggregate state investment was 500 billion *yuan*, of which 80 percent (400 billion) was allocated in the 'rear' or 'outback' provinces to achieve 'pseudo-development'.[36] This 'pseudo-development' went hand in hand with resources ruthlessly wasted.[37] Table 10 shows its pattern: the speed of fixed capital investment in the outback regions increased three times as fast as in the coastal region; decline in capital efficiency in the outback regions was twice the rate of its costal counterpart.

[34] Deliberately we avoid quoting the large-scale starvation associated with Mao's 'Great Leap Forward' which cost over 30 million lives from 1960 to 1962 as the main evidence of China's food deficits; see Bernstein 1984; Kung and Lin 2003; Yang 2008; Dikötter 2010. The point is that even if the '1959-61 Great Famine' is taken out of the equation, China's agriculture still did not perform well by China's own premodern standards.

[35] See He 1994: 8. China's low capital efficiency is clearly reflected by its energy use. As recent as the 1990s, China's energy input-to-output ratio was twice that of the US and 6 times that of Japan (Zhang 1994: 65).

[36] Cui 1997: 19.

[37] This sounds like a *cliché* but still holds truth: opposite to what Karl Marx predicted, it is the inflexibility of the centrally planned command economy that lost the developmental race with modern capitalism (see Harriss 1995: 22).

Table 10. Geographic Allocation of Capital Investment and Returns, in Billion *Yuan*

Year	Coastal investment (K)	Coastal returns (R)	Outback regions' investment (K)	Outback regions' returns (R)
1952	10.7 (100)	23.8 (100)	4.2 (100)	10.5 (100)
1978	140.0 (1380)	257.5 (1082)	179.3 (4269)	165.6 (1577)
	R:K		R:K	
1952	2.2 (100)		2.5 (100)	
1978	1.8 (82)		0.9 (36)	
Annual efficiency	–0.8%		–4.0%	

Source: Cui 1997: 19.

The main evidence also comes from the fact that the outback region-biased investment failed to change regional differentiation of the economy: not only had the coastal-outback region income gap increased by 33 percent by 1978,[38] but also most outback region regions remained poverty-stricken in the late 1990s.[39] These days, such investment behaviour is called 'pointless investment' (*mangmu touzi*).

Unfortunately, the legacy of 'pointless investment' (*mangmu touzi*) continued in the post-Mao period with severe symptoms. First, until the early 1990s when China's economic reforms were in full swing, of the total of 2,200 billion *yuan* of fixed capital already invested, one third was unproductive. Second, one-third of all the state-owned enterprises – the beneficiaries of state capital investment – were on the brink of bankruptcy.[40] So, wasteful investment was the hallmark of economic Maoism.[41]

[38] Hu *et al.* 1995: ch. 2, especially p. 54.
[39] Zhou and Lu 1997; Zeng and Guan 1998.
[40] Pan 1995: 51.
[41] In the state sector, the 'asymmetrical problem' and the 'principle-agent problem' loomed large. The former took the form of unrealistic and inaccurate planning; and the latter, discord and non-cooperation of firm managers. Indeed, if these two problems could be solved under communism, capitalism would be replaced everywhere.

Wasteful investment was also widespread in the farming sector. In 1953, China's total grain output was 177 million metric tons; in 1978, it reached 300 million tons.[42] But this was achieved by 3-4 times increase in labour input and with the help of modern chemical fertilizers.[43] Conceptually, the agricultural sector must have suffered diminishing returns so bad that the marginal product of labour was almost certainly negative.[44]

Wasteful investment with low returns constitutes the first part of a low level equilibrium tap. We call it 'equilibrium' because there was no possibility for the Maoist economy to break it free from inside of the system.

c. Imbalance between industry and agriculture

The Soviet unbalanced ISI growth model necessitates tapping the agricultural sector for labour and capital accumulation needed by the industrial sector in a closed economy. Under Stalin's reign, this was known as 'super-industrialisation' and 'industrial dictatorship'. Even so, it is rational to sustain the agricultural sector at all times for 'golden eggs' in a closed economic system. However, as shown in Table 11, growth in agricultural output was as little as 0.6 percent a year. Consequently, China changed from a net grain exporter to a net food importer (Table 9). The misfortune of China's agriculture was turned around only in the 1980s after Mao's people's communes (*renmin gongshe*) were abandoned in rural China.

[42] Cui 1997: 10, 11, 15.
[43] Xie 1999: 30.
[44] A conservative estimate suggests a rate of -0.2 percent per year during 1957 to 1978. (Zhao 2000: 99).

Table 11. Output Growth in China, Annual %, 1952-78 versus 1978-83

Sector	Gross rate 1952-78	Net rate* 1952-78	Gross rate 1978-83	Net rate* 1978-83
Industry (A)	11.2	8.6	7.9	5.3
Agriculture (B)	2.7	0.1	7.9	5.3
A:B	4.1	86.0	1.0	1.0

Source: Based on Ellman 1975: 845; Lippit 1987: 107; *China's Statistic Year Book 1985*: 239; He 1994: 7-8.

Note: ***** Net value is obtained by discounting China's population growth at 2.6 percent per year under Mao's rule (He 1994: 7).

d. Economic cycle and crises

During the inter-war period (1919-40) when the worldwide economic recession hit the West hard, the Soviet planned economy became an alternative system to achieve growth and prosperity. Even so, when one examines carefully the Soviet performance during that period, there was a five-year growth cycle (see Table 12).[45]

[45] Marx's early prediction that the communist system can secure economic growth without a business cycle and economic crises has proven to be a fairy tale.

Table 12. Growth Cycle in the Soviet Union, 1927-1940

Cycle	Year	% Increase of the previous year
I	1927	6.0
	1928	8.7
	1929	16.6
	1930	21.1
	1931	16.8
	1932	11.2
II	1933	6.6
	1934	15.0
	1935	19.6
	1936	-
	1937	20.0
	1938	-
	1939	-
	1940	10.0

Source: Based on Bandera 1984: 21.

Mao's economy performed worse than the Soviet Union: Not only did Mao's economy have a four to seven-year cycle, it also had negative growth that the Soviet economy never experienced (see Table 13). The intervals between crises became shorter and crises lasted longer.[46] Clearly, Mao's China fell into a low level equilibrium trap. And the Maoist economy was unable to break it free from inside of the system.

[46] To indicate this point, in all there were five such intervals between major drives: *five* years between the 'Movement against Three and Five Evils' (1951-2) and 'Anti-Rightist Struggle' (1957), *one* year between 'Anti-Rightist Struggle' and the 'Great Leap Forward' (1958-60), *two* years between the 'Great Leap Forward' and the 'Rectification of Communes' (*zhengshe,* 1962), *three* years between the 'Consolidation of People's Communes' and the 'Socialist Education Drive' (*shejiao,* 1964-5*)* and *one* year between the 'Socialist Educational Drive' and the 'Cultural Revolution' (1966-76). The Cultural Revolution lasted for 10 years, longer than all the other purges put together (8 years) and more intensifier by affecting the unprecedented amount of the Chinese population in peace time.

Table 13. Growth Cycle in Mao's China, % Increase of the Previous Year, 1954-1966

Cycle	Year	Nominal rate	Real rate*	Net rate¶
I	1950	19.0	16.5	13.9
	1951	16.7	14.4	11.8
	1952	18.5	15.9	13.3
	1953	20.4	17.5	14.9
II	1954	5.5	3.1	0.5
	1955	5.3	2.7	0.1
	1956	11.9	9.0	6.4
	1957	2.9	0.1	–2.5
	1958	23.1	19.7	17.2
	1959	9.3	6.0	3.4
III	1960	–0.2	–3.4	–6.0
	1961	–18.4	–21.1	–23.7
	1962	–7.2	–10.5	–13.1
	1963	8.2	4.3	1.7
	1964	16.6	11.9	9.3
	1965	19.0	14.1	11.5
	1966	14.3	9.3	6.7

Source: *China's Statistic Year Book 1983*: 13-14, 22-3.

Note: * Conversion is based on China's average inflation rate of 2.01 percent per year from 1950 to 1978 (Li 1997: 49-50). ¶ Net value is obtained by discounting China's population growth at 2.6 percent per year under Mao's rule (He 1994: 7).

It is worth noting that the economy-wide crisis during 1959/60 to 1962 was so severe that by 1962 capital investment declined by 89 percent; iron and steel output, 68 percent; number of state-owned firms, 46 percent; returns to capital investment, 30 percent; and labour productivity, 40 percent.[47] If these were not enough, 26 million urban residents were mobilized and resettled in rural regions.[48] Mao's economic suicide occurred between 1966 and 1976 during the Cultural Revolution whose damage was many times greater than the previous crises put together, including that of the Great Leap Forward.[49]

[47] Lu 1999: 44; Li and Zhang 1999: 188, 201.

[48] Song and Qiao 1998: 183; Li and Zhang 1999: 205.

[49] The Cultural Revolution created ample opportunities for large number of 'working class' members (factory workers, commune farmers and army soldiers) to leave productive forces and

Earlier, from 1955 to 1957, China's agricultural production and rural income significantly declined in the wake of forced rural collectivisation (see Table 14), an institutional shock which stripped peasants off their property rights and reduced their incentives to work and invest.[50]

Table 14. Decline in Farming Yields, 1955 versus 1957

Year	Wheat Kg/*mu*	Soya Kg/*mu*	Oilseed Kg/*mu*	Sugar cane Kg/*mu*	Beet Kg/*mu*	Tobacco Kg/*mu*	Large animals (10^4)
1955	57.5	53.0	47.0	2647	926.5	79.0	8775
1957	57.0	52.5	40.5	2599	628.0	48.0	8323
Change	–0.5	–0.5	–6.5	–48	–298.5	–31	–452

Source: DNS 1998: 88.

As Mao's collectivisation triumphed, there was no visible improvement from 1957 to 1977 (see Table 15).

become sinecurists as the ultimate reward for being Mao's loyalists: officials without any qualification and usually completely incompetent (called *tigan*, literally 'upgrading to the official rank'). On the other hand, intellectuals and professionals (managers, administrators, journalists, lawyers, doctors, teachers/professors, scientists, and technicians) were forced to leave their posts for years to endure hard labour in order to be de-intellectualized and de-professionalized (called *laogai,* literally 're-molding soul through hard labour', and *he gongnong dacheng yipian,* meaning 'completely identified with manual workers and peasants'). Even the future intellectuals and professionals were not spared. School and university graduates were sent to countryside in the name of re-education in order to be de-intellectualized and de-professionalized, too (called *zhishi qingnian shangshan xiaxiang*, literally 'sending students down to the countryside'). Meanwhile, law and order broke down nationwide and political violence (known as *wudou,* literally 'armed fighting'), unlawful killings and imprisonment became rampant from 1966 to 1970 which led to nationwide marshal law (called *junguan,* literally 'under army's direct control') with the aim to make China a militarized society (*quanmin jiebing,* meaning 'everybody is made a soldier'). All these measures went hand in hand with a high degree of cronyism involving Mao's wife Jian Qing and nephew Mao Yuanxin. To a great extent, therefore the Cultural Revolution was a 'Great Cronyist Revitalisation' to benefit Mao's own friends and relatives. From economic development point of view, though, such policies of anti-specialisation (in terms of downgrading intellectuals and professionals) and anti-meritocracy (regarding cronyism and allowing manual workers to replace professionals) were utterly irrational.

[50] See Ling 1997; Zhang 1998. This resonates Stalin's collectivisation. By 1933, Russia's grain output dropped 30 percent; cattle, 44 percent; horses, 50 percent; pigs, 55 percent; and sheep and goats, 65 percent. A large-scale famine broke out. Four million died of starvation (Nove 1992: 165-6).

Table 15. Agricultural Output Value, in Billion *Yuan*, 1957-77

Year	Current price	Index (A)	1950 price*	Index (B)
1957	53.7	100	48.1	100
1977	80.7	150	28.7	60
Nominal annual %		2.0		–2.6
Net annual %¶		–0.6		–5.2

Source: *China's Statistic Year Book 1985*: 239.

Note: * Conversion is based on China's average inflation rate of 2.01 percent per year from 1950 to 1978 (Li 1997: 49-50). ¶ Net value is obtained by discounting China's population growth at 2.6 percent per year under Mao's rule (He 1994: 7).

So, in 1953, China's total grain output was 177 million metric tons for a population of some 450 million, or 393.3 kilograms per head. In 1978, the total grain output reached 300 million tons for a population of 962.5 million, only 311.7 kilograms of grain per head. This was a drop of 21 percent in per capita terms.[51] Here, once again, we call it 'equilibrium' because there was no possibility for the Maoist economy to break it free from inside of the system.

V. People's income and material life

a. Forced savings to finance ISI

1. State extraction through cross-sectoral arbitrage

To run ISI, a country needs to finance growth internally. But internal financial constraint existed all the time. The Soviet solution, which can be traced back a temporary tactic of Lenin's New Economic Policy in 1922-23,[52] was the aforementioned 'scissors pricing tax'. The gap between the two sets of sectoral

[51] Cui 1997: 10, 11, 15.

[52] See Gregory and Stuart 1994: 62-5. The original assumption of the Soviet planners was that the Russian peasantry would have the propensity to maintain their consumption pattern even if they had to pay higher prices for the same industrial goods and services. However, the Russian peasantry did not swallow the bait. The government procurement of grain remained at 50-57 percent of the WWI level even after the grain output recovered; see Gregory and Stuart 1994: 65. An urban food shortage crisis soon re-occurred.

prices was the rent made by the state for capital accumulation. Under Stalin, such arbitrage and rent-seeking became a permanent measure from 1929 to 1953.[53] From the viewpoint of consumers in the economy, revenues from the scissors pricing tax can be viewed as forced savings imposed by the state. This policy was copied from the very beginning of Mao's era and remained unchanged until its end (see Table 16).

Table 16. China's Price Indices, 1950-56

Year	Industrial goods	Food stuff	Rent %
1950	100	100	0
1952	110	90	20
1954	123	78	45
1956	125	77	48

Source: National Price Commission 1964: 21.

This government arbitrage also explains (1) why the agricultural sector produced only 28 percent of China's total GDP with 71 percent of China's total labour force,[54] and (2) why the non-agricultural sectors 'generated' 48.6 percent of China's total GDP with 29 percent of China's total labour force (see Tables 3 and 4). This scissors distortion made China's agricultural GDP per capita 61 percent below the economy-wide unity ratio and its non-agricultural GDP per capita 88 percent above the ratio. In comparison, China's Qing economy had a better balance. The agricultural sector provided 80 percent of China's total employment and produced 70 percent of China's total GDP.[55] This means that the per capital GDP of agriculture was only 12.5 percent below the economy-wide unity ratio. Under Mao the sectoral per capital GDP gap was five times of the Qing. In other words, by the Qing standard, China's agricultural sector would have produced at least 60

[53] Gregory and Stuart 1994: 90.
[54] The rural population in 1978 was as high as 83 percent of China's total; see Ling 1997: 102.
[55] Wang 1973: 80; Feuerwerker 1984: 299, 302, 312-13.

instead of 28 percent of the country's total GDP. The rent was thus worth 32 percent of China's total GDP.

It is known that Mao's agricultural taxes were set at 10-12 percent of the total output, accounting for 2.8 to 3.4 percent of China's total GDP.[56] Now we know that this alleged low extraction rate was deceptive. The real extraction rate was about 10 times that of the stated amount. In this regard, Mao's state was not only more efficient a rent-seeker than China's imperial state but also more efficient than governments of Tsarist Russia, colonial India and Meiji Japan.[57]

Quantitatively, the total sum extracted by Mao's state from the agricultural sector from 1958 to 1978 was in the region of 990 billion *yuan*,[58] almost twice of the aggregate investment of 500 billion *yuan* in industry during the same period. It is known also that the total asset of the agricultural sector (excluding land) was only 15 billion *yuan* in 1978.[59] So, the state squeezed annually 167 percent profit out of the value of the agricultural asset to finance the industrial sector's growth. It is thus no exaggeration to state that Mao's industrial sector free-rode on the back of China's agriculture.

But the consequence was a deteriorating agricultural sector and an impoverished peasantry. Till the end of the 1980s, the Chinese peasantry received incomes 45 percent lower than it deserved.[60] It is not difficult to understand the depression befallen upon the agricultural sector as the 'rent-donner' in the economy. To correct the distortion, the grain price increased five times during the 1990s.[61]

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[56] Cui 1997: 13; Chen 2001: 14.
[57] China's old tax norm was around 10 percent of the total output (Deng 1999b: App. G; Feuerwerker 1984: 299-300). For rural taxes in Russia, India and Japan, see Gatrell 1986: 199, 200; Francks, 1992: 30-1; Rothermund 1993: 83-4.
[58] Cui 1997: 13, 19; Lu 1999: 46.
[59] Guo 1998: 54.
[60] Chen and Han 1995: 14-15.
[61] Fan 1995: 39.

Meanwhile, easy capital and heavy protection did not make Mao's industrial sector creative and innovative. Instead, they led to widespread conservatism. The acid test came in the 1990s in the process of 'marketisation of prices' for the industrial sector. Heavy slash on the artificially created nominal value of China's state-owned assets was inevitable. Overnight, a total of 500 billion *yuan* state-owned industrial assets evaporated.[62] The party of the false economy was over.

b. Wages in decline

Forced savings came partly from wages under Mao's rule. Nominal wages were frozen. With inflation, real wages eroded severely. By 1978, the real average wage in the industrial sector had been halved from its 1957 level (see Table 17).

Table 17. Nominal and Real Annual Wages in the State Sector, in *Yuan*, 1957–78

	Nominal	Index	Real (1957 price)*	Index
1957	637	100	637	100
1961	537	71	493	77
1965	652	93	539	85
1970	609	88	429	67
1976	605	86	327	51
1978	644	88	310	49

Source: Based on V. D. Lippit, *The Economic Development of China* (Armonk, New York and New York: M. E. Sharpe, 1987), p. 150; *cf*. Zhao, "Path, Stages and Main Lessons."
Note: *Conversion is based on the average inflation rate of 2.01% per year for the period of 1950 to 1978 (Li, 'Macro Control', pp. 49–50).

The deteriorating real wage is positively confirmed by the declining supporting capacity per wage worker during the Mao's period (see Table 18). As a result, the average size of the working class family shrunk by 35 percent. This basically means the urban working class was not better off.

[62] See Zhang *et al.* 1996: 132, 142-3. At the moment, we put aside the thorny issue of official embezzlement which also affected asset value accounting. For early reports, see CCTV 2000; Chen 2000.

Table 18. Decline in Dependent-Supporting Capacity per Wage Worker, 1957–77

	Average size, persons	No. of dependents/family
Pre-1949	6.9 (100)	4.0 (100)
1957	4.5 (65)	3.3 (83)
1964	5.8 (84)	3.4 (85)
1970	–	2.5 (63)
1977	4.5 (65)	2.1 (53)

Source: For pre-1949, see Cao, *Demographic History*, vol. 6, p. 516. For 1989 and 2000, see National Bureau of Statistics, *Statistic Year Book, 2003*, pp. 341, 345. Others, see Cui, "Urban-rural Relationship and Urbanisation," pp. 17–18.

To compensate for the decline in real wages, Mao's economic planners followed closely Stalin's model of 'total employment': more and more workers were employed to share the same task but for a minimal wage.[63] This policy created an enormous problem for the industrial sector known as the 'unneeded labourers' in the state-owned sector, accounting for 30 to 37 million of the total out of 100 million employees of the sector.[64] Rural China was no better. In the early 1980's, unneeded labourers in the rural sector reached 300 million, or about a third of China's rural population.[65] Unneeded labourers formed a heavy burden on China's economic growth. They caused diminishing returns to set in and labour productivity to decline.

c. High taxes, low wages and low consumption

Meanwhile, to combat diminishing returns and declining labour productivity, the Maoist policy-makers opted for a super-high rate of capital formation for more annual capital investment to compensate losses in the labour efficiency.

In a closed economy, this means first of all heavy taxation. Apart from the aforementioned scissors pricing tax and declining real wages, the government

[63] Gregory and Stuart 1994: 273.
[64] As at the mid-1990s, see Gu 1998: 61; Niu 1998: 56.
[65] Xia and Zhu 1996: 48.

taxed the industrial sector heavily: the tax burden on the industrial sector was extremely high at an average rate of 86 percent (as at 1980).[66] Nobody was able to avoid the tyranny of Maoist extraction which in turn sustained the super-high rate of capital formation for more annual investment (see Table 19). The loop is now complete.

Table 19. High Investment and Low Consumption under Mao

Year	New investment GDP%	Index I	Consumption GDP%	Index II	I:II
1952	21.4	100	78.6	100	1.0
1955	22.9	107	77.1	98	1.1
1958	33.9	158	66.1	84	1.9
1961	19.2	90	80.8	103	0.9
1964	22.2	104	77.8	99	1.1
1967	21.3	99	78.7	100	1.0
1970	32.9	154	67.1	85	1.8
1973	32.9	154	67.1	85	1.8
1976	30.9	144	69.1	88	1.6
Average	26.4	123	73.6	74	1.3

Source: Based on Lippit 1987: 155.

Without a doubt, high capital investment, low wages and low consumption formed different parts of the growth engine for the Maoist economy. It is no secret that (1) the Soviet type of planned economy never gave priority to an increase in wages nor did it to consumer goods and (2) the subsistence level of living was the only parameter for economic planners to gauge ordinary people's material well-being. In other words, the Soviet planners had no desire or incentive to improve the material life of the masses. The ideal life for the ordinary Soviet citizens was Khrushchev's infamous 'goulash communism' promised in a farming campaign in the late 1950s.[67] In the entire Soviet history, therefore, a consumers' revolution

[66] Yang 1995: 44.
[67] Nove 1992: ch. 12.

did not occur. Did Mao's economy perform any better than its Soviet counterpart? The answer is negative.

As an example, food availability for ordinary citizens was kept artificially low in a famine diet during the whole of Mao's era. To maintaining an adult at the subsistence level requires a minimum of 182.5 kilograms of husked grain a year (0.5 kilograms of grain a day). For un-husked or unprocessed amount, it becomes 237 kilograms, as about 30 percent of the food weight will lose to the husking process. This is a famine diet. Anecdotally, compared with Khrushchev's 'a goulash per day' and Kim's 'an apple per day' (North Korea), Mao offered in the 1960s-70s 'liquid food for the slack season and solid for the busy one'.

In 1978, Mao's government procured a total of 141.7 million tons of foodstuff (47 percent of the total output) from China's rural sector. At that time, China's agricultural residents were 683.4 million. Therefore, the state took away 207.3 kilograms of grain from each rural resident. The retained food in the rural sector was 231. 7 kilograms of un-husked or unprocessed amount per head, 2.3 percent below the famine diet.

On the urban front, the amount of 141.7 million tons of un-husked or unprocessed amount of foodstuff had to meet the needs of industrial material inputs as well as urban human consumption. The state set strict food ration of at 180 kilograms a year of husked grain a year for students and office workers, and 240 kilograms for heavy labourers. The state wanted to fix human food consumption so that more grain was made available for industrial production. In addition, it is the state policy that human calorie intake depended chiefly on grain, meat being regarded as a luxury because it takes land to produce meet.[68] The famine diet definitely applied to urban China, too.

[68] Mao's food rationing applied to people from cradle to grave. In 1978, each urban adult was granted basic food items and quantities for each calendar month; see Ling 1997: 101. As the threat

The ultimate reason for low food availability in Mao's China was a lack of production incentives from the peasantry, which is shown from China's food deficits (see Table 9). In 1961-78, China's net food shortage totaled 59.8 million tons, or 3.5 million tons a year.[69] Not until 1984 (when China's total grain output reached 400 million tons) did China's per capita grain output bounce back to its 1953 level, at 380 kilograms per head.[70] Soon, China's decades' long food rationing was finally lifted.[71]

The term 'low level equilibrium' is valid regarding workers' wages and ordinary people's consumption. Also there was no possibility for the Maoist economy to break it free from inside of the system.

d. Prolonged poverty

It was taboo to talk about poverty during Mao's era even though the phenomenon was visible and nation-wide. In terms of 'relative poverty', the period between 1957 and 1978 was marred by deteriorating standards of living among the majority of the population. In rural China, by 1978, two-thirds of the rural population became poorer than 20 years before; and the remaining one-third poorer than 40 years earlier.[72] Indeed, the entire peasantry became seriously worse off under Mao. Nation-wide, things were not much better: meat and cooking oil consumption declined by about a third; urban housing, 20 percent; retail shops, 70 percent.[73] In terms of 'absolute poverty', by 1978, half of China's population had lived on or below the official poverty line.[74] Table 20 shows the breakdown.

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of hanger was constant, the life expectancies in Mao's China had to be low regardless of what the official propaganda has claimed.

[69] Lu 1999: 46.

[70] Wang 1996: 45.

[71] It was not until the mid-1980s that the rationed grain consumption in urban China finally reached 250 kilograms of husked grain and 25 kilograms of meat per head per year; see Chen and Han 1995: 10.

[72] Ling 1997: 102-3.

[73] Zhao 2000: 100.

[74] Chen Zongsheng, *Shouru Chabie Pinkun Ji Shiye* (*Income Differentiation, Poverty and Unemployment* (Tianjin: Nankai University Press, 2000), pp. 132–3.

Table 20. China's Population below the Official Poverty Line, % in Total

Scope	1978	1988
Urban	10.7 (100)	8.3 (78)
Rural	65.1 (100)	15.7 (24)
National	49.3 (100)	15.9 (32)

Source: Chen 2000: 132-3.

It is thus not surprising that the majority in Mao's China had a hand-to-mouth existence. In the 1960s to the 70s, China's overall Engel's coefficient was as high as 0.7.[75] In 1978, when Deng Xiaoping's reforms began, China's overall Engel's coefficient was 0.72.[76]

But ultimately, poverty was caused by excessive extraction of the Maoist state. As shown in Table 21, the state sector possessed too much while the general public owned too little, which is highly compatible with the data in Table 26. The situation began reversing only after 1978.

Table 21. Distribution of GDP, Late Qing, 1978 and 1995

	Government	SOEs	State total	Citizens
Late Qing			24.0	76.0
1978	33.5	16.1	49.6	50.4
1995	13.2	18.3	31.5	68.5

Sources: Stover and Stover 1976: 10; He 1997: 62.
Note: SOEs - State-owned enterprises.

e. Equity and equality

In terms of poverty alleviation and elimination, Mao's regime did not score well at all. But what about equality? After all, Mao's China was portrayed itself to the outside world as a country of egalitarianism without private ownership and market profiteering.

[75] He 1994: 8.
[76] Cui 1997: 12.

The term 'equality' can be interpreted in many ways. But in essence, it is a normative concept which means that citizens are or should be treated equally or fairly with basic dignity. Thus, it is closely related to people's rights which in turn give people bargaining power. There can also be a vision of positivism: equality can mean that everyone is treated equally badly as in the case of subjects under a tyrant. It is thus important to use the term 'equity and equality' to avoid any misconception of the agenda.

It is commonly agreed that under collectivisation Chinese farmers were stripped of their (1) landholding rights, (2) production decision-making rights, (3) marketing rights, (4) travelling and migration rights. What to produce, how to produce, when to produce and for whom to produce were all decided by the party-state. Such a system created personal bondage of producers to the party-state.[77] This resembles the Tsarist state serfdom or rather than personal freedom-cum-Marxian communism.

Without their rights and bargaining power, China's rural population, about 70 to 80 percent of China's total, did not have access to the state provision of education, health care and pensions. This was not trivial in terms of what the rural population was able to get back from the hundreds of billion *yuan* they paid in taxes (including scissors pricing). The increased inequality can be shown in Gini coefficient (Table 22).

Table 22. Trend of Gini Coefficient, 1952-83

	Gini coefficient	Index
1952 (early Maoism)	0.25	100
1978 (late Maoism)	0.31	124

Source: Zhang 1994: 41.

[77] Cui 1997: 11-12.

All the evidence suggests a 'zero-sum' gamed between the state and individual citizens, and between the privileged urban sector and the disadvantaged rural sector. Such a zero-sum determined poverty and inequality under Mao's rule.

VI. Model for China's low level equilibrium trap

In the Maoist economy, the state allocated most resources including land, capital, technology and labour and creamed all the surpluses above subsistence wages. Thus, there was a 'zero-sum' game between the state profit and ordinary people's incomes.

Now, to capture such an economic system in which ordinary people's living standards are dictated by returns for the state ownership of land, capital and technology in a straightforward bilateral relationship, we opt for a 'representative-agent model' which has two key factors: (1) g = 'planned capital investment by the state' and (2) c = 'planned private consumption'.

From well documented policy and practice, the Maoist state purposely maximised g at the expense of c to the point that people's consumption was kept to a biological minimum (i.e. a 'famine diet' approach). We therefore define the ceiling of private consumption as c_{max}. The Maoist private consumption level satisfies the following condition: $c \leq c_{max}$. The factor correspondent to c is 'state spending' g, as a proxy for state capital investment in the economy.

We define the utility function for the representative agent as u (c, g).[78] To suppose the representative agent derives positive but diminishing marginal utility from planned private consumption, therefore $u_c > 0,\ u_{cc} < 0.\ u_g > 0,\ u_{gg} < 0.$

[78] The model developed in this section is the simplified version of the one by Gong and Zou 2002. This approach is also in line with the spirit of Arrow and Kurz 1970; Barro 1990; Turnosvsky 1995; Turnovsky and Fisher 1995; and Devrajan, Swaroop and Zou 1996.

We adopt the stochastic technology approach to model the growth of output,[79] and define the output flow over the period (t, t + dt) as follows:

$$dY = f(k)\,dt + h(k)\,dy,\ \ f'(k) > 0,\ f''(k) \leq 0 \qquad (1)$$

Where a determinant f (k) is the mean rate of output per unit of time; h (k) is a stochastic component to reflect various random influences on production;[80] dy represents a stochastic shock which is temporally independent from a normal distribution with mean 0 and variance $\sigma_y^2 dt$:

$$E(dy) = 0,\ Var(dy) = \sigma_y^2 dt$$

The return of government spending in heavy industry can be captured in a stochastic process:[81]

$$dg = g(t)\,dt + m(k)\,dz \qquad (2)$$

Where dz is an intertemporally independent and normally distributed random variable with mean zero and variance $\sigma_z^2 dt$.

There are two types of capital assets in our model: k for heavy industry, and b for agriculture. The returns to k and b are R_k and R_b, respectively, written as follows:

$$dR_k = \frac{dY}{k} = r_k dt + du_k$$

$$dR_b = r_b dt$$

[79] This approach was adopted by Eaton and Gersovitz 1981; Gertler and Grinols 1982; Grinols and Turnovsky 1998; and Turnovsky 1993, 1995.
[80] Same as Gong and Zou 2002.
[81] As the same as the approach of Gong and Zou 2002, we extend the model specifications in Bertola and Drazen 1991; Turnovsky 1995.

Where r_k represents the mean return to capital; du_k is the stochastic term with mean 0; and r_b is the deterministic return to agriculture. The reason for a deterministic return to agriculture is due to the state scissors-pricing policies to extract surpluses from the agricultural sector to finance a growth in industry in general and a growth in heavy industry in particular.

We further denote τdY as government expenditure earmarked for industry. Such expenditure comes from all revenues extracted from (1) the agricultural sector and (2) the daily consumption of the general public, both urban and rural

$$\mathrm{dg} = \tau \mathrm{dY} + \mathrm{db} - \mathrm{bd}R_b$$

Moreover, the budget constraint for the Maoist state can be expressed as follows:

$$\mathrm{dw} = [(1-\tau)\, r_k n_k w + r_b(1-n_k)\, w - c]dt + wdv \qquad (3)$$

Where w = k + b shows the total wealth of the state; n_k and n_b are the holding shares of capital goods and consumer goods:

$$n_k = \frac{k}{w},\ n_b = \frac{b}{w} \qquad (4)$$

Here, dv is a stochastic process which can be defined as:

$$\mathrm{dv} = (1-\tau)\, n_k du_k \qquad (5)$$

The state imposes a planned private consumption path, c (t), as well as asset holding shares n_k and n_b to maximize its discounted utility as follows:

$$\mathrm{Max}E_0 \int_0^{\infty} u\,(c, g)\, e^{-\rho t} dt$$

All this is subject to the budget constraint (15) and the portfolio constraint:

$$\begin{cases} \mathrm{dw} = [(1-\tau)\, r_k n_k w + r_b(1-n_k)\, w - c]dt + wdv \\ n_k + n_b = 1 \\ c \le c_{max} \end{cases}$$

To obtain analytical solutions to planned private consumption and asset holdings, we specify the production function, the return to government spending on heavy industry, and the utility function as follows:[82]

$$\mathrm{dY} = \mathrm{Ak}\ (\mathrm{dt} + \mathrm{dy}) \qquad (6)$$

$$\mathrm{dg} = \mu_g g dt + \sigma_g g dz \qquad (7)$$

$$\mathrm{u}\ (\mathrm{c},\ \mathrm{g}) = \frac{c^{1-\gamma}}{1-\gamma} g^{-\lambda} \qquad (8)$$

Where A, μ_g and σ_g are constants; μ_g is the mean rate of the return to state investment in heavy industry; and σ_g is the volatility in the same return. Components λ and γ satisfy the following conditions: $\gamma > 1$ and $\lambda > 0$. Here, γ is the inverse value of intertemporal substitution in planned private consumption and it is greater than one because the state set people's consumption level *ex ante* to make sure little was left for private savings or demand for extra consumer goods above the subsistence. In addition, as inputs in consumer goods production are fixed, all the available resources go straight to the heavy industrial sector.

To substitute the Budget Constraint (3) with Equation (6), we rewrite the budget constraint as the following:

[82] The same as the approach adopted by Gong and Zou 2002.

$$\frac{dw}{w} = \left[(1-\tau)An_k + r_b(1-n_k) - \frac{c}{w}\right]dt + dv$$

To solve it, we introduce a value function V (w, g, t), and define V (w, g, t) = X (w, g) $e^{-\rho t}$ and a differential operator:

$$\text{L (X (w, g, t) } e^{-\rho t}) = \{-\rho X + X_w[(1-\tau)An_k w + r_b(1-n_k)w - c] + X_g\mu_g g + \frac{1}{2}X_{ww}n_k^2 w^2\sigma_y^2 + \frac{1}{2}X_g g^2\sigma_g^2 + \frac{1}{2}X_{wg}n_k wg\sigma_{yg}\Big\}e^{-\rho t}$$

The problem here is tantamount to the maximisation of the following Lagrangian expression with respect to c (t) and n_k:

$$\underbrace{Max}_{c(t),n_k}\{u(c,g) - \rho X + X_w[(1-\tau)An_k w + r_b(1-n_k)w - c] + X_g\mu_g g + \frac{1}{2}X_{ww}n_k^2 w^2\sigma_y^2 + \frac{1}{2}X_g g^2\sigma_g^2 + \frac{1}{2}X_{wg}n_k wg\sigma_{yg}\Big\}$$

The first conditions are:

$$u_c(c,g) = X_w \quad (9)$$

$$X_w[(1-\tau)Aw - r_b w] + X_{ww}n_k w^2\sigma_y^2 + \frac{1}{2}X_{wg}\,wg\sigma_{yg} = 0 \quad (10)$$

Based on Equations (9) and (10) and with the optimal values of c (t) and n_k, the value function must satisfy the following Bellman Equation:

$$\text{u (c, g)} - \rho X + X_w[(1-\tau)An_k w + r_b(1-n_k)w - c] + X_g\mu_g g + \frac{1}{2}X_{ww}n_k^2 w^2\sigma_y^2 + \frac{1}{2}X_g g^2\sigma_g^2 + \frac{1}{2}X_{wg}n_k wg\sigma_{yg} = 0 \quad (11)$$

From Utility Function (8), we define the value function as the following:

$$X(w, g) = \delta w^{1-\gamma} g^{-\lambda}$$

Where the coefficient δ can be determined by a partial differentiation of the value function, and hence:

$$X_w = (1-\gamma)\,\delta w^{-\gamma} g^{-\lambda}$$

$$X_g = -\lambda \delta w^{1-\gamma} g^{-\lambda-1}$$

$$X_{wg} = (1-\gamma)\,(-\lambda)\,\delta w^{-\gamma} g^{-\lambda-1}$$

$$X_{ww} = (1-\gamma)\,(-\gamma)\,\delta w^{-\gamma-1} g^{-\lambda}$$

$$X_{gg} = \lambda\,(\lambda + 1)\,\delta w^{1-\gamma} g^{-\lambda-2}$$

Substitute the first-order condition shown in Equations (8) and (11) with the above expressions, we have

$$\frac{c}{w} = [\delta(1-\gamma)]^{-\frac{1}{\gamma}} \qquad (12)$$

$$n_k = \frac{[(1-\tau)A - r_b] - \frac{1}{2}\lambda\sigma_{yg}}{\gamma\sigma_y^2} \qquad (13)$$

And,

$$[\delta(1-\gamma)]^{-\frac{1}{\gamma}} - \rho + (1-\gamma)\left\{(1-\tau)An_k + r_b(1-n_k) - [\delta(1-\gamma)]^{-\frac{1}{\gamma}}\right\} -$$

$$\lambda\mu_g - \frac{1}{2}\gamma(1-\gamma)n_k^2\sigma_y^2 + \frac{1}{2}\lambda(\lambda+1)\sigma_g^2 - \frac{1}{2}\lambda(1-\gamma)n_k\sigma_{yg} = 0. \qquad (14)$$

Therefore,

$$\frac{c}{w} = [\delta(1-\gamma)]^{-\frac{1}{\gamma}} = \frac{\rho - (1-\gamma)[(1-\tau)An_k + r_b(1-n_k)] + \lambda\mu_g}{\gamma} + \frac{\frac{1}{2}\gamma(1-\gamma)n_k^2\sigma_y^2 + \frac{1}{2}\lambda(\lambda+1)\sigma_g^2}{\gamma} + \frac{\frac{1}{2}\lambda(1-\gamma)n_k\sigma_{yg}}{\gamma} \qquad (15)$$

From Equations (4) and (2), we derive explicit stochastic differential equation for (15) which captures ordinary people's wealth during the Maoist period. We then factor in expectations in Equation (11) to obtain the expected growth rate of private consumption and state-run capital accumulation and investment:

$$\phi = \mathrm{E}\frac{dw}{w} = \{[(1-\tau)]An_k + r_b(1-n_k) - [\delta(1-\gamma)]^{-\frac{1}{\gamma}}\} \qquad (16)$$

From Equation (16) we work out comparative statics to see how the growth rate of the economy (people's wealth) is linked to the mean rate of return to state spending on heavy industry. We differentiate ϕ regarding to μ_g and obtain the following:

$$\frac{\partial \phi}{\partial u_g} = \frac{-\lambda}{\gamma}$$

Under Mao's rule, $\gamma > 1$, we thus conclude that

$$\frac{\partial \phi}{\partial u_g} = \frac{-\lambda}{\gamma} < 0 \qquad (17)$$

Equation (17) leads to the following proposition in this paper:

Proposition 1: *Under Mao's rule, a rise in government investment led to a decline in people's wealth due to a lower value of intertemporal substitution in consumption which was pre-determined by the state prevention of above subsistence spending in society and by the interlinking famine diet imposed on ordinary citizens.*

VII. Final remarks

We have established a new way to capture the nature and performance of China's economy under Mao's rule: a low level equilibrium trap. First of all, throughout Mao's era, China had problematic growth and problematic development: the

growth was unbalanced and unsustainable. China seemed to start with an equilibrium by 1954 and ended up with a severe disequilibrium in 1978. This was largely due to a lack of understanding of modernisation and a lack of imagination (under a lazy leadership everything being copied from Stalin). Mao's Great Leap Forward was not the end of the beginning of fast growth. Rather, it was the beginning of the end of a state resource allocation and a low level equilibrium trap. Economic Maoism was proved unsuited to China, a country that had a very long history of a market economy and market allocation of resources. Thus, despite the alleged surge in economic growth, Mao's China remained largely rural. A structural change in the economy was but negligible. This becomes most obvious when the real growth stances are revealed.

Secondly, the industrial sector became parasitic on the agricultural sector. Much of the nominal gain in industrial GDP was to a great extent as a result of the deliberative price distortion and should thus be severely discounted. Meanwhile, the nominal share of the agricultural GDP needs to be multiplied. This distortion led to perpetual poor performance in both the farming sector which was not awarded and the industrial sector whose capital windfall had little to do with its own improvement.

Thirdly, Mao's economy was not designed to enrich and empower the masses in society and the latter in turn responded to his policy with apathy and low morale. This created economy-wide disincentives to work.

All these findings fundamentally challenge the notion that Mao's period was a period of great economic growth and development.[83] Now, judging by China's general track record, growth/developmental strategy, economic structure, economic performance and people's living standards, Mao only achieved a low level

[83] There are numerous works with romantic pro-Mao views, see for example Riskin 1987.

equilibrium with excessive state rent-seeking and economic mismanagement. In short, the Maoist state was a liability, not an asset, for China's growth and development.

It was not until 1978 that a developmental state was revitalized in Mainland China when Deng Xiaoping launched his reforms with a clearly stated goal for the first time since 1949 of improving ordinary people's living standards (*xiaokang,* literally meaning 'modest prosperity'). This marked the beginning for China to move toward an ideal combination of 'strong state and rich population'.

Appendix: Growth statistics and estimates, 1949-66

Table i shows China's nominal growth; and Table ii, China's real and net growth. The gap between the two sets is obvious.

Table i. China's Nominal GDP Growth, 1949-66, in Billion *Yuan*

Year	Total GDP	Index
1949	35.8	100
1950	42.6	119
1951	49.7	139
1952	58.9	165
1953	70.9	198
1954	74.8	209
1955	78.8	220
1956	88.2	246
1957	90.8	253
1958	111.8	312
1959	122.2	341
1960	122.0	341
1961	99.6	278
1962	92.4	258
1963	100.0	279
1964	116.6	327
1965	138.7	387
1966	158.6	443
Annual %		9.2

Sources: Based on *China's Statistic Year Book 1983*: 13-14, 22-3; ZJB 1999: 24, 40, 51, 64-5, 76-7, 99-100, 108-9, 128, 141, 155, 168-9, 181-2, 189-90, 197-8, 206, 261.

Table ii. China's Real and Net GDP Growth, 1949-66, in Billion *Yuan*

Year	Real GDP	Index	Net GDP	Index
1949	35.8	100	35.8	100
1950	41.7	116	40.6	113
1951	47.7	133	46.5	130
1952	55.3	154	53.9	150
1953	65.0	182	63.3	177
1954	67.0	187	65.2	182
1955	68.8	192	67.0	187
1956	75.0	210	73.0	204
1957	75.1	210	73.1	204
1958	89.9	251	87.6	246
1959	95.3	266	92.8	259
1960	92.1	257	89.7	250
1961	72.7	203	70.8	198
1962	65.1	182	63.4	177
1963	67.9	190	66.1	185
1964	76.0	212	74.0	207
1965	86.7	242	84.4	236
1966	94.8	265	92.3	258
Annual %		5.9		5.7

Source: The same as Table i.

Note: Real growth rate is obtained by a discount of the average inflation rate of 2.01 percent a year from 1950 to 1978 (Li 1997: 49-50). Net growth rate discounts the real growth rate further with a rate of 2.6 percent of annual population growth during 1950-80 (He 1994: 7).

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