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Mechanisms and Performance of the Maoist Economy: a Holistic Approach, 1950–1980

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Abstract

This article probes the performance and mechanisms of the Maoist economy from 1950 to 1980, a period commonly regarded as a turning point that ushered in a new path for China's industrialisation and modernisation. Commonly, however, the welfare effect of this new path has been overlooked. The present research aims to fill this gap.

Methodologically, this article re-conceptualises, re-examines, and re-assesses the Maoist economy with qualitative and quantitative evidence. This study applies a holistic two-pronged approach with (1) capital accumulation and re-investment, material production and consumption, and (2) mathematical conceptualisation and empirical modelling. The key findings suggest that the Maoist economy was a closed one with industrial dependence on agriculture in an urban-rural zero-sum game with inevitable constraints on workers' incentives for growth to continue. In the end of the Mao's era,

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agriculture declined, the size of industrial workforce stagnated, and the population was poor.

This was not the end of the story, however. This failed industrial transition was itself highly influential as a subsequent point of reference used to justify the post-Mao reforms and opening up as a radical game changer that put China on a very different trajectory of growth and development.

Keywords

Quesnay-Mao closed economy – economic policies – scissors-pricing arbitrage – economic zero-sum game – consumption austerity – growth stagnation

1 Introduction and Motivations

The period of economic Maoism from 1950 to 1980 has been debated ever since Mao's death which ushered in Deng Xiaoping's path-breaking economic reforms. The debate arose partly because of the static nature of the economy and opaqueness of the state affairs under Mao's rule; partly due to the need for a different developmental model to generate growth and development that China was lacking.[1]

1.1 *Debate and Motivation regarding "Late Development" towards Modernity*

The present study has been inspired by the ongoing debate on late development towards modernity, a topic that has frequently been discussed with reference to East Asia, with extensive analysis of both Meiji Japan before the First World War and the post-war growth successes of the "tigers:" South Korea, Taiwan, Hong Kong and Singapore.[2]

1 K. Deng, *China's Political Economy in Modern Times: Changes and Economic Consequences, 1800–2000* (London: Routledge Press, 2011): chs. 9–10.

2 E.g. World Bank, *The East Asian Miracle* (New York: Oxford University Press, 1993); R. Wade, *Governing the Market: Economic Theory and the Role of Government in East Asian Industrialisation* (Princeton: Princeton University Press, 1990). For country cases, see e.g. G. Rodan, *The Political Economy of Singapore's Industrialisation: National State and International Capital*. Basingstoke: MacMillan, 1989); A. H. Amsden, *Asia's Next Giant: South Korea and Late Industrialization* (New York: Oxford University Press, 1989); Yeon-ho Lee, *The State, Society, and Big Business in South Korea* (London: Routledge, 1997); Li-min Hsüeh, Chen-kuo Hsu, and

On the one hand, there seems to be some degree of inevitability for humanity to become "modern;"[3] and catching up growth and development needs to be encouraged.[4] In this context of economic transition, Meiji Japan and the Asian tigers, once "late developers" in history, benefited from a "visible hand" of the state in resource allocation as well as an open market for international trade and foreign direct investment.[5] On the other hand, there has been the notion that late development may be subject to in a pyramid-shaped "world system" dominated by a small number of technically and industrially advanced economies—called the "core," currently the G7. "Traditional economies," be they hunting, gathering, or farming, may opt for growth without development towards modernity, and still partake in the world market as a "vent for surplus,"[6] riding on world commodity trade without radical changes in indigenous economic structures. This view has been widely accepted.

Moreover, there has been a debate on growth ceilings for late developers, e.g. "development dependency," and, more recently, "middle income trap."[7] In

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D. H. Perkins, *Industrialization and the State: The Changing role of the Taiwan Government in the Economy, 1945–1988* (Cambridge [MA]: Harvard Institute for International Development, 2001).

3 K. Marx and F. Engels, *Communist Manifesto* (New York: Russell and Russell, 1963); B. Warren, *Imperialism: Pioneer of Capitalism* (London: Verso, 1980); W. W. Rostow, *The Stages of Economic Growth, a Non-Communist Manifesto* (Cambridge: Cambridge University Press, 1966).

4 A. Gerschenkron, *Economic Backwardness in Historical Perspective* (Cambridge [MA]: Harvard University Press, 1962); K. Lee, *Schumpeterian Analysis of Economic Catch-up: Knowledge, Path-Creation, and the Middle-Income Trap*. (Cambridge: Cambridge University Press, 2013); F. Malerba and K. Lee, "An Evolutionary Perspective on Economic Catch-Up by Latecomers." *Industrial and Corporate Change* 30/4 (2021): 986–1010.

5 The state role was obvious in Hong Kong as well, considering Hong Kong's heavy dependence on fresh water and staple food from Mainland China with artificially set prices well below the free market levels. In particular, for decades fresh water from the mainland was free of charge. See C. Howe, "Growth, Public Policy and Hong Kong's Economic Relationship with China." *China Quarterly* 95 (1983): 512–33.

6 H. Myint, "The 'Classical Theory' of International Trade and the Underdeveloped Countries." *The Economic Journal* 68/270 (1958): 317–37.

7 A. G. Frank, "Development of Underdevelopment or Underdevelopment of Development in China." *Symposium on China's Economic History* 4/3 (1978): 341–350; F. H. Cardoso and E. Faletto, *Dependency and Development in Latin America* (Berkeley: University of California Press, 1979); A. R. Puntigliano and Örjan Appelqvist, "Prebisch and Myrdal: Development Economics in the Core and on the Periphery." *Journal of Global History* 6/1 (2011): 29–52; Immanuel Wallerstein, *The Modern World-System* (Berkley: University of California Press, 2011); A. Pierre-Richard, "Caught in the Middle? The Economics of Middle-income Traps." *Journal of Economic Surveys* 31/3 (2016): 771–91; K. Pruchnik and J. Zowczak, "Middle-income Trap: Review of the Conceptual Framework." *Asian Development Bank Institute Working Paper* No. 760 (2017, Tokyo).

this regard, Meiji Japan and the Asian tigers are considered exceptions as they have all managed to upgrade themselves to "semi-periphery economies." But the pyramid top—G7 plus Asian tigers—may "kick away the ladder" to prevent other late comers from climbing up,[8] and hence giving the rise to the notion of *the West versus the Rest*.[9]

Furthermore, there is an auxiliary model for late development which is associated with "establishing communism in one country." It was put forward by the Russian revolutionary leader Vladimir Lenin (1870–1924) as a new communist doctrine.[10] However, judging by its track record, the Soviet economy remained by and large open, both during the period of Lenin's "New Economic Policy" (NEP, 1921–28) which re-established the open market that had previously existed under the Tsar,[11] and in the form of the "Soviet Bloc" with an elaborate international trading network under Joseph Stalin (1878–1953, r. 1924–53), known as the "Council for Mutual Economic Assistance" (COMECON, 1949–91) with ten member countries across East Europe, East Asia (Vietnam) and Central America (Cuba) plus 13 observers in the Middle East, Africa and South America.[12] Inefficient it might have been but COMECON was nevertheless an international trading network headed by a modern superpower—the USSR.[13]

Against this backdrop, there was an international outlier: A country that withdrew from international trade but at the same time was committed to modernisation. This was Mao's China. A peasant son, Mao was a shrewd politician and military commander who disliked the market economy all his life. During his early career in the communist movement, Mao was influenced by Li Dazhao

8 H.-J. Chang, *Kicking Away the Ladder: Development Strategy in Historical Perspective* (London: Anthem Press, 2002).

9 S. Hall, *The West and the Rest: Discourse and Power* (Durham, North Carolina: Duke University Press, 1992); N. Ferguson, *Civilization: The West and the Rest* (London: Penguin, 2011); M. Vernengo and D. Fields, "DisORIENT: Money, Technological Development and the Rise of the West." *Review of Radical Political Economics* 48/4 (2016): 562–68.

10 E. van Ree, "Lenin's Conception of Socialism in One Country, 1915–17." *Revolutionary Russia* 23/2 (2010): 159–81.

11 R. W. Davies, *From Tsarism to the New Economic Policy: Continuity and Change in the Economy of the USSR* (Ithaca, NY: Cornell University Press, 1991); R. Service, *A History of Twentieth-Century Russia* (Cambridge [MA]: Harvard University Press, 1997): 124–12; P. Kenez, *A History of the Soviet Union from the Beginning to the End* (Cambridge: Cambridge University Press, 2006): 47–8; V. N. Bandera, "The New Economic Policy (NEP) as An Economic System." *Journal of Political Economy* 71/3 (1963): 265–79.

12 M. Kaser, *Comecon: Integration Problems of the Planned Economies* (Oxford University Press, 1967); L. Crump and S. Godard, "Reassessing Communist International Organisations." *Contemporary European History* 27/1 (2018): 85–109.

13 K. Lányi, "The Collapse of the COMECON Market." *Russian & East European Finance and Trade* 29/1 (1993): 68–86.

(1888–1927), the founder of the Communist Movement in China who openly asserted that "from now on what people can see everywhere in the world will be the victorious banner of Bolshevism."[14] Mao went a step further from Li by saying that "only socialism can rescue China."[15] However, in the 1920s to 1940s Mao's economic project was on a much smaller scale than Lenin's by running a communist experiment in one province inside China instead of a vast country like Russia.[16] Mao called his strategy "building a separatist communist regime inside China by military force" (*wuzhuang geju*).[17] Mao's communist base was entirely rural in which neither trade nor industry was necessary. Despite the disapproval of the communist overlord Stalin, Mao's peasantry-cum-power grabbing proved successful, as history would reveal.

After his military victory against his rival Republicans (or "Nationalists" as commonly labelled), Mao committed to making China as a second Soviet Union with modern industries. By the terms of Mao's 1956 "General Guideline" (*zong luxian*) for his party and state, China opted for "more, faster, better growth with less inputs [than the Soviets]" (*duo kuai hao sheng*).[18] It is worth noting that at this moment, Mao now competed with Nikita Khrushchev (1894–1971, r. 1953–64) in the post-Stalin contest for the new leadership of the international communist movement. It was documented that, in August 1958

14 Li Dazhao, "Bu-ershiweike de Shengli" (Victory of Bolshevism), in Li Dazhao, *Li Dazhao Wenji* (*Collected Works of Li Dazhao*) (Beijing: People's Press, 1984): vol. 1, p. 600.

15 Mao Zedong, "Guanyu Zhengque Chuli Remin Neibu Madunde Wenti" (On the Correct Handling of Contradictions Among the People). In *Mao Zedong Wenxuan* (*Collected Works of Mao Zedong*), ed. Institute of Documents of the Chinese Communist Party Central Committee (Beijing: People's Press, 1999): vol. 7, p. 214. And, Mao Zedong. 1992. Gongzou Fangfa Liushi Tiao (Sixty Methods of the Party Work). In *Mao Zedong Wenji* (*Selected Works of Mao Zedong*), ed. Institute of Documents of the Chinese Communist Party Central Committee (Beijing: Central Archives): vol. 8, pp. 51–52.

16 Mao's base camp in Jiangxi in 1929–1934 had a total of 42,000 square kilometres and a population of five million. This was merely 0.4 percent of China's total territory and 1.1 percent of China's total population. See Zhang Xianwen (ed.), *Zhonghua Minguo Shi* (*A History of the Republic of China*) (Nanjing: The University of Nanjing Press, 2005): vol. 2, p. 236.

17 Zhou Enlai, "Guanyu Dangde Liudade Yanjiu" (Assessment of the Sixth National Congress of the Communist Party). In *Cong Yida Dao Shiliuda* (*Memoirs of Participants in the First to Sixteenth Congress of the Chinese Communist Party*), ed. Li Ying (Beijing: Central Documents Press, 2003): vol. 1, p. 316.

18 Anon., "Wei Quanmiandi Tizao Wancheng He Chao-e Wancheng Wunian Jihua Er Fendou" (Our Campaign for Comprehensively Over-fulfilling Our Five-year Plan Ahead of the Schedule) *Renmin Ribao* (*People's Daily*), 1st January, 1965, p. 1.

at Beidaihe,[19] Mao set the target for his Politburo to multiply China's iron and steel outputs within a short space of time. His aim was to surpass Stalin:

> On 7th May [1958], Chairman Mao delivered a speech again on how to surpass the Soviet Union. He commented that it took the Soviets 20 years and six months to increase their steel output from four million tons to 51 million tons. "In my view," he said, "it won't take us so long to get 51 million tons."[20]

An order was issued instructing officials who did not perform in the iron and steel campaign were to be severely disciplined.[21]

So came the "Great Leap Forward." From 1958 to 1962, 90 million rural labourers from 120 million households, or one worker per 1.3 households, were drafted for three years to run one million backyard furnaces,[22] all according to the principle of self-reliance (*zili gengsheng*), a synonym for a closed economy.[23]

Meanwhile, on the eve of Mao's 1949 takeover, China had been associated with "high-level equilibrium" whose production factors—capital, land, labour and technology—were all geared towards agriculture.[24] Therefore, in neo-classical economic terms, China's indigenous economy sits on the Production Possibility Frontier (PPF) as the starting point when Mao's leap project began (Figure 1).[25]

In Figure 1, *prime facie*, China's original equilibrium at Point α which combined outputs of food ($O\text{-}F_0$) and manufactures ($O\text{-}M_0$) sustained about

19 Beidaihe, or the Beidai River, has been an exclusive beach resort for top ranking communist officials.

20 Song Haiqing, *Renmin Gongshe Xingwang Lu* (*Rise and Fall of the People's Commune*) (Urumqi: Xinjiang Youth Press, 2000): vol. 2, pp. 403–4.

21 Li Rui, *Lushan Huiyi Shilu* (*Records of the 1959 Lushan Conference*) (Beijing: Spring-Autumn Press, 1989): 63.

22 Song, *Rise and Fall*: vol. 2, pp. 406, 409; Xue Muqiao, *Xue Muqiao Huiyilu* (*Memoir of Xue Muqiao*) (Tianjin: Tianjin People's Press, 1996): 255–6. If we assume that 80 percent of Chinese were rural and one-third of the rural population were able-bodied workers, about 50 percent of the rural workforce was fraughted to produce iron and steel.

23 An external reason was double embargoes imposed on China in the 1950s throughout the 1970s from the West due to China's role in the Korean War and from the Soviet Union thanks to Mao's challenge to the Soviet leadership in the wake of Stalin's death.

24 For the concept, see Mark Elvin, *The Pattern of the Chinese Past* (Stanford: Stanford University Press, 1973): 313.

25 Admittedly, the neo-classic model has limited explanatory power to fit a traditional economy in.

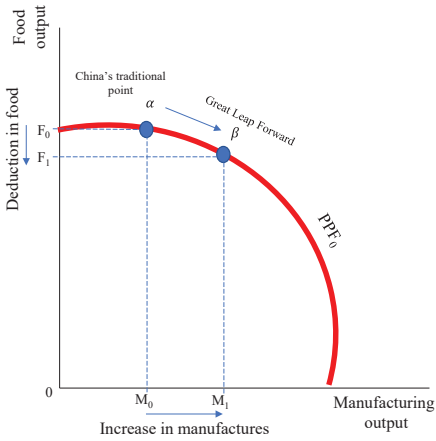

FIGURE 1
Fixed production possibility frontier and malignant leap forward
Notes: Point α is China's existing "high-level equilibrium point" for outputs. Point β is a new equilibrium point determined by Mao's ambition to expand manufacturing output from M_0 to M_1. At β the food output declines.

400 million people. Point β along the same PPF represents Mao's Great Leap Forward by a forceful increase (that is, a doubling) of China's manufacture output (notably iron and steel) from M_0 to M_1 at the expense of food output from F_0 to F_1. Such reduction led to widespread food deprovision;[26] and 30 to 40 million Chinese died of starvation in 1959–1961 as a result.[27]

In the ideal world, a famine can be avoided by shifting PPF_0 to PPF_1. Point β' along a new PPF permits the same food availability together with doubling manufactures (Figure 2). However, such a shift in PPF requires new capital and new technology which were unavailable for China between the 1950s and 70s thanks to China's role in the Korean War which backfired in the West and left China isolated internationally.

Turning back to Figure 1, one wonders how the shift from Point α to Point β was possible without causing the food price to shoot up. The answer lies in Mao's centrally planned resource allocation which replaced the market and shifted burden of financing industrial growth onto peasant shoulders. The

26 Here, the reader is reminded of the debate on 'entitlement' which puts society-wide food availability ahead of political leaders' egocentric economic growth and development. See Amartya Sen, *Poverty and Famines: An Essay on Entitlement and Deprivation* (Oxford and New York: Oxford University Press, 1982).

27 See J. Becker, *Hungry Ghost, China's Secret Famine* (London: John Murray, 1996): ch. 18; Jin Hui, "Sannian Ziyanzaihai Beiwanglu" (Memorandum on the Alleged Three Years of Natural Disasters, 1959–62), *Shehui* (*Society*) 4–5 (1993): 13–22; Cao Shuji, *Da Jihuang, 1959–1961 Niande Zhongguo Renkou* (*Great Famine and China's Population in 1959–1961*) (Hong Kong: Times International Publishing Co., 2005); Yang Jisheng, *Mubei—Zhongguo Liushi Niandai Dajihuang Jishi* (*Gravestone for the Great Leap Famine Victims, Evidence from History*) (Hong Kong: Tiandi Books, 2008).

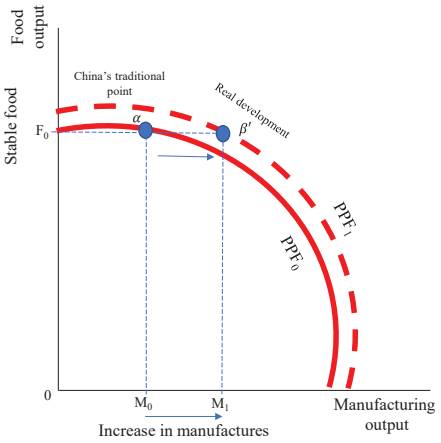

FIGURE 2
Flexible production possibility frontier and benign leap forward
Notes: Point α is China's original "high-level equilibrium point" along the old PPF_0. Point β' is a new equilibrium point along the new PPF_1 with inputs of new capital and new technology. Now, food output remains unchanged but manufacturing output multiplies.

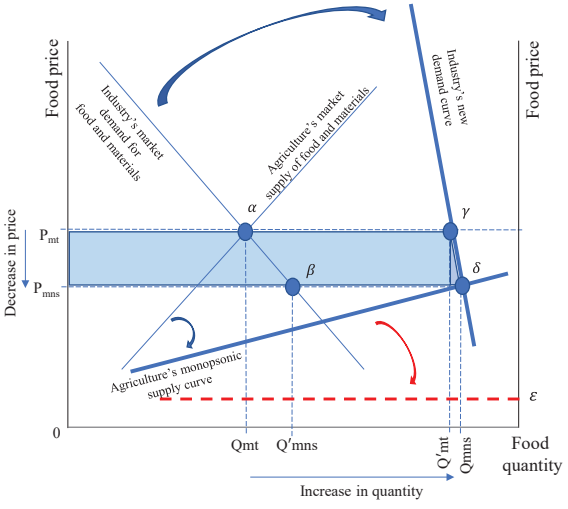

FIGURE 3
State takeover of the food market
Notes: (1) P_{mt}—Market price, P_{mns}—Government monopsonic price; (2) Q_{mt}—Market quantity, Q'_{mt}—Market hypothetical quantity after the demand curve shifts; (3) Q_{mns}—Government target quantity, Q'_{mns}—Government-cum-transitional quantity. Moreover, the communist planner has strong incentives to turn the food-supply curve clockwise further until, in theory, it become horizontal (marked by the dash line at a low price level of ε) whereby food supply becomes cheap and limitless.

mechanisms are highlighted in Figure 3, which illustrates the government takeover of an existing food market in the name of a planned economy.[28]

Before the takeover, China's fully functional market for food has its demand and supply equilibrium at Point α where the market clears itself. The corresponding market price and market quantity are P_{mt} and Q_{mt}, respectively. The state takeover imposes mandatory price and quantity on the supply side: P_{mns} and Q_{mns}, respectively. Meanwhile, the supply curve is artificially made flatter

28 Admittedly again, the neo-classic model has limited explanatory power to fit in a transition from a market to a non-market economy.

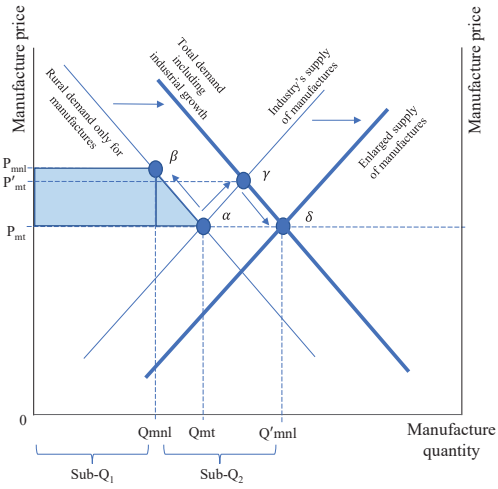

FIGURE 4
State take-over of the manufactures market
Notes: (1) P_{mt}—Market price, P_{mnl}—Government monopolistic price; (2) Q_{mt}—Market quantity, Q_{mnl}—Government monopolistic quantity for the rural population only, Q'_{mnl}—Government monopolistic quantity including industrial growth; (3) Sub-Q_1 and Sub-Q_2—Sub-quantity Type 1 for rural consumption and Sub-quantity Type 2 for industrial growth, respectively; (4) a parallel shift of the supply curve due to the absence of new technology.

(or less elastic), meaning that disproportionately more food is now supplied with less price increases. Ideally, the new supply curve becomes as *horizontal* as possible (becoming increasingly inelastic) and provides indefinite quantity of food for the communist utopia, defined as "from each according to his ability, to each according to his need."[29] Now, the demand side responds to the shock of the state takeover by absorbing an increased food Q'_{mns} at Point β. But this is merely a transitional point because the government mandatory target is set at Point γ. Eventually, the demand side identifies the government monopsonic price and mandatory quantity as the only signal to respond. Hence, Point γ moves closer and closer to Point δ. Consequently, the demand curve becomes steeper. Ideally, the demand curve should be completely vertical and absorb any given amount of food planned by the state. The shaded area represents the targeted gain *via* the government control. Call it either "consumer surplus" or "economic rent" if you will. But the beneficiary is exclusively the industrial sector.

In comparison, changes in the manufactures market are less complicated. Figure 4 begins also with a fully functional market for manufactures with an equilibrium at Point α where the market clears itself.

The government manipulation manipulation manifests itself simultaneously in two directions. On the one hand, it artificially sets a monopolistic/discriminative price level for rural costumers (P_{mnl}) and consequently reduces the quantity (from Q_{mt} to Q_{mnl}) for the rural consumption. Here, the dominant

29 The German phrase: "Jeder nach seinen Fähigkeiten, jedem nach seinen Bedürfnissen;" see https://en.wikipedia.org/wiki/From_each_according_to_his_ability,_to_each_according_to_his_needs, accessed 8th January 2024.

postulations are that (1) supply of manufactures is always limited and that (2) mundane consumption of industrial goods by the general public is a deadweight to the economy, meaning that there will be no room for the afore-mentioned principle of "from each according to his ability, to each according to his need" as far as manufactures are concerned. As a result, the rural population pays a higher price for a smaller quantity of manufactures as a control mechanism.

In Figure 4, the shaded area represents "consumer loss" which becomes monopolistic profit of the state. For this part, the state unilaterally shifts the supply curve to the right via state investment to provide more manufactures for domestic industrial growth. Now, the original market becomes sub-divided; and the two sub-markets behave differently. One is subject to monopolistic pricing (P_{mnl}); and the other follows a non-monopolistic "fair price" (from P_{mt}, to P'_{mt} and back to P_{mt}). Also, division appears between the amount ear-marked for rural costumers (Sub-Q_1) and that ear-marked for industrial growth (Sub-Q_2). The former is fixed; and the latter has room to grow.

Now, if one puts changes in food and manufacture markets together, the food price level declines and manufactures' price level for the rural population increases. Such opposite movements are captured by the notion of "scissors-pricing," a point that is to be discussed later in detail.

Before we proceed further with our analysis, we should note that Mao's approach was a major setback for China that had been an organic component of the world system for at least one century, if one counts the Treaty of Nanking (1842) as China's official opening up for freer trade with the outside world.[30] As late as the 1930s, China played a major role in responding to the United States' decision to increase in monetary silver to a quarter of its total monetary value as required by the "Silver Purchase Act of 1934."[31] China responded. By 1935 a total of 77 million Chinese silver dollars had been shipped to the United States.[32]

30 P. A. van Dyke, *The Canton Trade: Life and Enterprise on the China Coast, 1700–1845* (Hong Kong: Hong Kong University Press, 2005); Manhong Lin, *China Upside Down: Currency, Society, and Ideologies, 1808–1856* (Cambridge [MA]: Harvard University Asia Center, 2006); P. C. Perdue, *The First Opium War* (Cambridge [Mass.]: Massachusetts Institute of Technology Press, 2011); Haijian Mao, *The Qing Empire and the Opium War: The Collapse of the Heavenly Dynast* (Cambridge: Cambridge University Press, 2016).

31 The 73rd Congress of the United States, "Silver Purchase Act of 1943," online *vide*: https://en.wikisource.org/wiki/Silver_Purchase_Act_of_1934, accessed 2nd January 2024.

32 Bank of China, "Shijie Yinshi Julie Dongdang, Zhonghang Lizu Baiyin Wailiu, 1933 Nian–1935 Nian" (Extreme Volatility in the World Silver Market and Bank of China's Curbing Silver Outflow, 1933–1935), online *vide*: https://www.boc.cn/aboutboc/ab7/200809/t20080926_6918.html, accessed 2nd January, 2024. A Chinese silver dollar of the time weighed 26.6–26.9 grams with a silver content of 86 percent. Thus, 77 million silver dollars equaled 60.2–60.9 million ounces of pure silver.

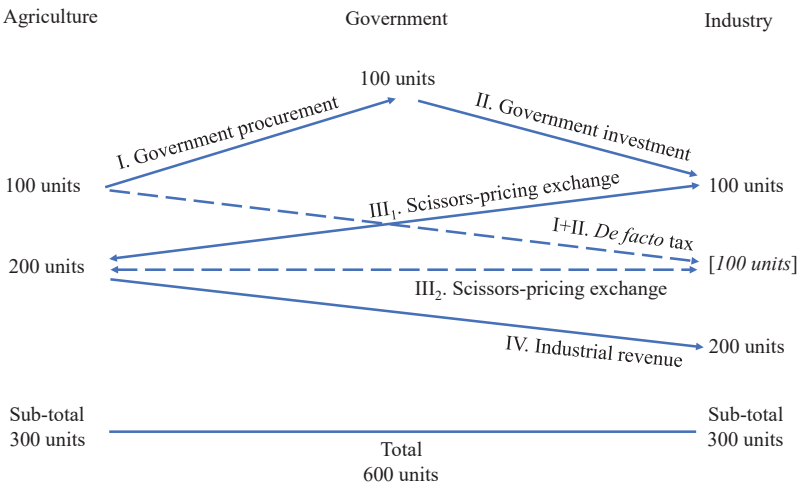

FIGURE 5 Stylised Quesnay-Mao closed economy
Note: (1) Solid arrows = real flows in the economy; broken arrows = simplified flows. Thus, Arrows I and II can be simplified by I+II. *De facto* tax; Arrows III_2 serves the same purpose of Arrows III_1. (2) Quesnay's original zigzag flows are based on equal exchanges, a principle which was not observed by Mao's model due to price manipulation in both state monopsony procurement (Arrow I) and rural-urban scissors-pricing (Arrows III_1).

We should also note that, despite certain similarities between the Chinese and the Soviet economies, the present study avoids reference to the Soviet Union as the dominant benchmark for China. This is because Maoist planning was far cruder thanks to China's excessive agricultural sector (which accommodated over 80 percent of China's total population until 1980) whose traditional technology and the mercy of climatic conditions were not plannable by a political centre. To conceptualise the behaviour of Mao's economy, an appropriate theoretical framework seems to be *Tableau Économique* by François Quesnay (1694–1774) associated with the school of French physiocracy for a closed and largely rural economy, and hence the "Quesnay-Mao Model" (Figure 5).[33] However, there is a fundamental difference between Quesnay and Mao: The former explained an economy *ex post* with an idealised attitude; and the latter remoulded a living economy *ex ante* by force.

33 E.g. R. L. Meek, *The Economics of Physiocracy* (London: Allen & Unwin, 1963): Pt. 3. Quesnay's system accommodates the role of the state and limited industrial growth, see R. V. Eagly, "A Physiocratic Model of Dynamic Equilibrium." *Journal of Political Economy* 77/1 (1969): 66–84; and A. L. Müller, "Quesnay's Theory of Growth: A Comment." *Oxford Economic Papers, New Series* 30/1 (1978): 150–6.

1.2 *Maoist Top Priority after 1949*

Although a closed economy suited Mao's rule, by and large economic growth was not prioritised in government policies. First of all, despite the positive light shed by many authors on Maoist economic performance,[34] overwhelming evidence indicates that Maoism was a political and ideological movement that did not prioritise economic growth and development in state affairs. Rather, it devoted most of time and energy "remoulding and purifying society" (*gaizao shehui*) with a notion of "continuous revolution" (*jixu geming*),[35] which turned out to be Mao's real commitment. One thus comes across a long list of political campaigns: (1) "the 1950–3 Suppression of Anti-revolutionaries" (*zhenfan, sufan*) under which 4.6 million citizens were accused and 710,000 executed;[36] (2) "the 1951–2 Three-Anti and Five-Anti Movement" (*sanfan wufan*) that purged 1.2 million citizens;[37] (3) "the 1955 Purge of the Hu Feng Anti-Party Clique" (*hufeng fandang jituan*) which began his open oppression of the intelligentsia, affecting thousands of intellectuals;[38] (4) "the 1957 Anti-Rightist Movement"

34 As summarized neatly by Mark Selden as (1) a self-sufficient economy free from foreign control, (2) the elimination of capitalist exploitation and the creation of a highly egalitarian society, (3) the feeding of one billion people and the provision of basic welfare for all, (4) rapid industrialisation, (5) the solution to the peasantry problem of unemployment and social marginalization; see his "Mao Zedong and the Political Economy of Chinese Development." *China Report* 24/2 (1988): 125–39. See also, S. Heilmann and E. J. Perry (eds), *Mao's Invisible Hand* (Cambridge [MA]: Harvard University East Asian Center, 2011).

35 Mao Zedong. 1992. Gongzou Fangfa Liushi Tiao (Sixty Methods of the Party Work). In *Mao Zedong Wenji* (*Selected Works of Mao Zedong*), ed. Institute of Documents of the Chinese Communist Party Central Committee. Beijing: Central Archives: vol. 8, pp. 51–52.

36 Anon., *Mao Zedong Sixiang Wansui* (*Long Live Mao Zedong's Thought*) (Beijing: Peking University, August 1969, SOAS Library Copy): 15; Bai Xi, *Kaiguo Da Zhenfan* (*Sweeping Suppression of Anti-revolutionaries in the Early Days of the People's Republic*) (Beijing: Chinese Communist Party History Press, 2006): 494.

37 Allegedly against embezzlement, waste, and bureaucracy among officials; and against bribery of the government officials, tax evasion, stealing from the state, cutting corners in state-contracted works, and spying on state economic secret by the private sector. For the data, see Liao Luyan, "Guanyu Jieshu Wufan Yundong He Chuli Yiliu Wentide Baogao" (Report on the Ending of the Five-Anti Movement and Its Residual Issues), 17th October, 1952 (Beijing: Central Archives); An Ziwen, "Guanyu Jieshu Sanfan Yundong He Chuli Yiliu Wentide Baogao" (Report on the Ending of the Three-Anti Movement and Its Residual Issues), 18th October, 1952 (Beijing: Central Archives).

38 "The 1955 Hu Feng Pure" was a total fabrication from start to finish, a sinister dry run for much wider purges. It was the first time when the Maoist secret police flexed their muscles. It set up the model for the following purges. It victimised 2,100 well-educated intellectuals of whom majority were in fact communist party members and communist supporter. None had their freedom back until 1980 (if they were still alive). See Li Hui, *Hu Feng Jituan Yuan-a Shimo* (*A History of the Fabrication of the "Hu Feng Clique"*) (Wuhan: Hubei People's Press, 2003); Sheng Guofan, *Wo Suo Qinlide Hu Feng An, Faguan Wang*

(*fanyou*) that persecuted over 500,000 (or 10 percent) of the educated;[39] and finally (5) "the 1966–76 Great Proletarian Cultural Revolution" (*wuchan jieji wenhua dageming*), designed to wipe out modern education, persecuted over 100 million (10 percent of China's total population of 1976).

Inside Mao's own ruling party, the CCP, purges took place with the same intensity. These campaigns included (1) "the 1959 Lushan Purge against the Party Right-Wingers" associated with Marshall Peng Dehuai and his army comrades (*lushan huiyi*), (2) "the 1964 Four Cleansings" (*siqing*) against officials below the provincial level,[40] and (3) purges of Liu Shaoqi (in 1966), Lin Biao (in 1971), and Deng Xiaoping (in 1966 and 1975) during the Cultural Revolution.[41] To accommodate victims of the purges, the Mao's authorities copied the Soviet Gulag system.[42] The only period in which no new political crusade was launched were five years (1958, 1960–63, and 1965), which together amounted merely to 18 percent of Mao's active rule (1949–76).

Moreover, victims of Mao's campaigns, often the best-educated minds and prime-aged workers in society, totalled 105.2 million; and over half (60 million) were estimated dead,[43] including 40 million during the notorious Great Leap Famine when Mao decided to push for an iron-and-steel take-off.[44] Such

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Wenzheng Koushu (*My Personal Experience of the Hu Feng Clique, Memoir of Judge Wang Wenzheng*) (Beijing: Chinese Communist Party History Press, 2007).

39 Official figures, see Cong Jin, *Quzhe Fazhande Suiyue* (*Period of Tortuous Development*) (Zhengzhou: Henan People's Press, 1989): 61; see also Li Rui, *Li Rui Tan Mao Zedong* (*Li Rui's Memoir on Mao Zedong*) (Hong Kong: Time International Publishing Co., 2005): 2. See also Di Ren and Mai Dao, *Mao Zedong He Tade Junshi Gaocan* (*Mao Zedong and His Military Aide*) (Beijing: Red Flag Press, 1993): 132.

40 Li, *Memoir on Mao*: 147–8.

41 See Central Liaison Department of the Chinese Communist Party (ed.), *Dangnei Shici Luxian Douzheng Ziliao* (*Materials of Ten Two-Line Struggles within the Chinese Communist Party*) (Beijing: The Central Liaison Ministry of the Chinese Communist Party, 1972). Gao Gang was seen by Mao as a treat because Gao's close link with Stalin; see Zhang Hua and Su Caiqing (eds), *Huizhou Wedge, Zhongguo Simian Wedge Benxi Yu Fans* (*Recollection of the Decade of Cultural Revolution, Analyses and Soul-Researching*) (Beijing: Chinese Communist Party History Press, 2000): vol. 2, p. 605.

42 For a case called "The Narrow Valley" (*Jiabian Gou*) in the Gobi Desert in remote Gansu, see survivals' accounts: He Fengming, *Jingli–Wode 1957 Nian* (*The Year 1957 When A Disaster Struck on Me*) (Lanzhou: Dunhuang Literature and Art Press, 2001); Yang Xianhui, *Jiabian Gou Jishi* (*Diary in the Narrow Valley*) (Shanghai: Shanghai Literature and Art Press, 2003).

43 Estimates, see Li, *Memoir on Mao*: 2; Hu Ping, "Ping Mao Zedong Re" (The "Mao Zedong Fever"). In *Cultural Revolution*, ed. Song: vol. 2, p. 951. See also J. Chang and J. Halliday, *Mao, the Unknown Story* (London: Vintage Books, 2005): 3.

44 J. Becker, *Hungry Ghost, China's Secret Famine* (London: John Murray, 1996): ch. 18; Jin Hui, "Sannian Ziyanzaihai Beiwanglu" (Memorandum on the Alleged Three Years of Natural Disasters, 1959–62), *Shehui* (*Society*) 4–5 (1993): 13–22; J. K. Kung and J. Y. Lin, "The Causes

multitudes suggested inevitable human cost, economic cost, and opportunity cost, as well as negative externalities to the China's national economy. In the case of the Cultural Revolution, it was announced in 1978 by Premier Hua Guofeng (1921–2008) that "From 1974 to 1976, ..., we lost 100 billion *yuan* in industrial GDP, 28 million tons of steel, and 40 billion *yuan* worth fiscal revenue. Our entire economy was on the brink of collapse."[45] Also, it has been agreed that the Cultural Revolution cost China 800 billion *yuan*,[46] equivalent to China's total state-owned capital stock in 1979.[47] Ironically, such devastation was instructed in Mao's own playbook, as he wrote "I achieve a total control over society (*tianxia dazhi*) after making a total pandemonium (*tianxia daluan*). I do this every seven to eight years."[48] The end result? According to John Pomfret, an American exchange student in China who travelled extensively in the country in the early 1980s when China was just re-opening to the outside world, "China was as close as I could imagine to living on another planet. Though it had some of the elements of modern life, ... [it was] a nuclear-armed power whose people lived in unheated hovels."[49] Thus, the notion of "Mao being pro-growth" is still subject to debate today.[50]

Even after the mismanagement of the political life and economy was finally acknowledged at the end of the 1970s, the Chinese official line for assessing Mao has however been that Mao was 70 percent correct politically and

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of China's Great Leap Famine, 1959–1961." *Economic Development and Cultural Change*, 51/2 (2003): 51–73; Cao Shuji, *Da Jihuang, 1959–1961 Niande Zhongguo Renkou* (*Great Famine and China's Population in 1959–1961*) (Hong Kong: Times International Publishing Co., 2005). By far, the best works have been (1) Yang Jisheng, *Mubei—Zhongguo Liushi Niandai Dajihuang Jishi* (*Gravestone for the Great Leap Famine Victims, Evidence from History*) (Hong Kong: Tiandi Books, 2008), and (2) F. Dikötter, *Mao's Great Famine: The History of China's Most Devastating Catastrophe, 1958–62* (London: Bloomsbury, 2010).

45 Hua Guofeng, "Tuanjie Qilai, Wei Jianshe Shehuizhuyide Xiandaihua Qianguo Er Fendou" (United to Build a Socialist Modern Power), *Renmin Ribao* (*People's Daily*), 27th February, 1978, p. 1.

46 Jiang Yuanming, *Wangshi 1966 Xiezhen* (*Memory of 1966*) (Tianjin: Hundred-Flower Art Press, 1998): 3.

47 For China's 1953 GDP, see National Bureau of Statistics, *Zhongguo Tongji Nianjian, 2002* (*China's Statistical Year Book, 2002*) (Beijing: China's Statistics Press, 2002): 51. For the state assets, see Xi Xuan and Jin Chunming, *Wenhua Dagemin Jianshi* (*A Short History of the Great Cultural Revolution*) (Beijing: Central Party History Press, 1996): 349, 352.

48 Mao Zedong, "Gei Jian Qingde Xin, 1966 Nian 7 Yue 8 Ri" (A Letter to Wife Jiang Qing on 8th July 1966), in Anon., *Zhonghua Renmin Gongheguo Chunqiu Shilu* (*Records of Changes of the People's Republic of China*) (Beijing: The People's University Press, 1992): 691.

49 J. Pomfret, *Chinese Lessons* (New York: Henry Holt, 2007): 13.

50 K. Deng, *Mapping China's Growth and Development in the Long Run, 221 BC to 2020* (London: World Scientific Press and Imperial College Press): ch. 7.

economically.[51] As a result, Mainland China has run an orchestrated campaign of praises on Maoist accumulations of capital (physical and human), construction of infrastructure and ambition for industrialisation/modernization.[52] The devastation inflicted by Maoism has either been downsized, vindicated or overlooked with a few exceptions.[53] Such an attitude has been infectious beyond China's borders. Many in the West have opted to highlight how central planning under Mao's rule permitted "speedy changes", be it total output (GDP), or economic structure, or mass education, or gender equality, and so forth.[54]

51 E.g. H. Schmidt-Glintzer, "70 Per Cent Good, 30 Per Cent Bad—China Has Found A Simple Formula to Assess Mao Zedong's Legacy." *Politics of Memory* 10.08.2017, online *vide*: https://www.ips-journal.eu/in-focus/the-politics-of-memory/70-per-cent-good-30-per-cent-bad-2216/, accessed 2nd August 2022.

52 E.g. Dong Zhikai, *Xinzhonghua Gongye Jingjishi, 1958–1965* (*An Economic History of Industry of New China, 1958–1965*) (Beijing: Economic Management Press, 1995); Liu Zhongli, *Dianji—Xinzhongguo Jingji 50 Nian* (*Laying the Foundation—50 Years of the Economy of New China*) (Beijing: China's Financial Economics Press, 1999); Dong Zhikai and Wu Li, *Zhonghua Renmin Gongheguo Jingjishi, 1953–1957* (*An Economic History of the People's Republic of China, 1953–1957*) (Beijing: Social Science Literature Press, 2011); Zheng Yougui, *Zhonghua Renmin Gongheguo Jingjishi, 1949–2019* (*An Economic History of the People's Republic of China, 1949–2019*) (Beijing: Contemporary China Press, 2019).

53 Yang, *Gravestone*. For early works that opened the discussion, see B. K. Ashton, H. A. Piazza and R. Zeitz, "Famine in China, 1958–61." *Population and Development Review* 10/4 (1984): 613–45; T. P. Bernstein, "Stalinism, Famine and Chinese Peasants: Grain Procurements during the Great Leap Forward." *Theory and Society* 13/3 (1984): 339–77.

54 A string of early samples includes D. Perkins, *Market Control and Planning in Communist China* (Cambridge [MA]: Harvard University Press, 1966); A. Eckstein, W. Galenson, and T. Liu (eds), *Economic Trends in Communist China* (Chicago: Aldine Pub. Co, 1968); N-R. Chen and W. Galenson, *The Chinese Economy under Communism* (Chicago: Aldine Press, 1969); E. L. Wheelwright and B. McFarlane, *The Chinese Road to Socialism* (New York: Monthly Review Press, 1970); C. Hoffmann, "The Maoist Economic Model." *Journal of Economic Issues* 3/5 (1971): 12–27; J. Gray, "Mao Tse-Tung's Strategy for the Collectivization of Chinese Agriculture: An Important Phase in the Development of Maoism." In *Sociology and Development*, eds E. De Kadt and G. Williams (London: Tavistock Press, 1974): 39–108; A. Eckstein, *Chinese Economic Revolution* (Cambridge: Cambridge University Press, 1977); T. G. Rawski, *Economic Growth and Employment in China* (London: Oxford University Press); Chu-yuan Cheng, *China's Economic Development, Growth and Structural Change* (London: Routledge Press, 1982); N. Lardy, *Agriculture in China's Modern Economic Development* (New York: Cambridge University Press, 1983); R. Bideleaux, *Communism and Development* (London: Methuen, 1985); V. Bodrova and R. Anker, *Working Women in Socialist Countries: the Fertility Connection* (Geneva: International Labour Office, 1985); C. Bramall, "Inequality, Land Reform and Agricultural Growth in China, a Preliminary Treatment, 1952–55." *Journal of Peasant Studies* 27/3 (2000): 30–54; B. Naughton, *The Chinese Economy: Transitions and Growth* (Cambridge [MA]: MIT Press, 2006): ch. 3; Y. Y. Kueh, *China's New Industrialization Strategy: Was Chairman Mao Really Necessary?* (Cheltenham: Edward Elgar, 2008): ch. 2.

1.3 *Official Self-Contradictions*

Now that we have identified the undisputed priority of Mao's rule, we begin to understand why authorities needed to air-brush economic growth and development as the state policy primacy. *Prime facie*, China seems to have become heavily industrialised, as the industrial GDP share appeared to be unusually high by international standards for a developing economy (see Table 1). One may take these numbers at face value for the time being.

Moreover, available official figures create the impression that Mao's engine for growth was heavy industry (Table 2). It is also commonly agreed that the initial push came from an aid package of heavy industry from Stalin's Soviet Union.[55] As a result, the Maoist economy seems to have succeeded in achieving

TABLE 1 Sectoral shares compared, % of total

Case	A	B	C	D
China, 1978	16.0	28.4*	48.6*	23.0*
Japan, 1920s	18.0	15.0	20.0	65.0
India, 1960s	17.3	44.0	22.0	34.0
3rd World, 1993†	–	17.0	28.0	55.0

Note: *Official figure. †Global average. A = Urbanisation rate, B = Agricultural GDP. C = Industrial GDP, D = Services GDP

SOURCES: R. K. RAY, *INDUSTRIALIZATION IN INDIA: GROWTH AND CONFLICT IN THE PRIVATE CORPORATE SECTOR, 1914–47* (OXFORD: OXFORD UNIVERSITY PRESS, 1979): 17; D. LAL, *THE HINDU EQUILIBRIUM, CULTURAL STABILITY AND ECONOMIC STAGNATION* (OXFORD: CLARENDON, 1988): VOL. 1, PP. 126–7; D. ROTHERMUND, *AN ECONOMIC HISTORY OF INDIA, FROM PRE-COLONIAL TIMES TO 1991* (LONDON: ROUTLEDGE, 1993): 177; P. R. GREGORY, *BEFORE COMMAND: AN ECONOMIC HISTORY OF RUSSIA FROM EMANCIPATION TO THE FIRST FIVE-YEAR PLAN* (PRINCETON: PRINCETON UNIVERSITY PRESS, 1994): 28, 30; LI JINGWEN, "LUN WOGUO CHANYE JIEGOUDE BIANDONG QUSHI" (TREND OF STRUCTURAL CHANGE IN CHINA'S ECONOMY), *XINHUA WENZHAI* (*XINHUA COMPILATION*) 12 (1995): 46–8; ZHANG ZHUOYUAN, "ZHONGGUO JINGJI TIZHI GAIGEDE ZONGTI HUIGU YU ZHANWANG" (REVIEW AND SPECULATION OF THE REFORM OF CHINA'S ECONOMIC SYSTEM), *XINHUA WENZHAI* (*XINHUA COMPILATION*) 7 (1998): 48–50; XINHUA NEWS AGENCY, *PEOPLE'S REPUBLIC OF CHINA YEARBOOK, 1996/97* (HONG KONG: NCN LTD., 1997): 397; NATIONAL BUREAU OF STATISTICS, *ZHONGGUO TONGJI NIANJIAN, 1983* (*CHINA'S STATISTICAL YEARBOOK, 1983*) (BEIJING: ECONOMY PRESS, 1983): 24. C. D. HARRIS, "THE URBAN AND INDUSTRIAL TRANSFORMATION OF JAPAN." *GEOGRAPHICAL REVIEW* 72/1 (1982): 50–89; J. COLMER, "URBANISATION, GROWTH, AND DEVELOPMENT: EVIDENCE FROM INDIA," ONLINE *VIDE*: HTTPS://URBANISATION.ECON.OX.AC.UK/MATERIALS/PAPERS/24/URBANISATIONINDIA.PDF, ACCESSED 1ST DECEMBER 2020

55 H.-Y. Li, *Mao and the Economic Stalinization of China, 1948–1953* (New York: Rowman & Littlefield, 2006).

TABLE 2 Period capital investment, % of total, 1953–75

Period	A	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

Note: A = Heavy industry, B = Light industry
SOURCE: BASED ON LAN XIA, "1957–1976 NIAN WOGUO JINGJI JILEI YU FENPEI ZHUANGKUANG" (CAPITAL ACCUMULATION AND DISTRIBUTION IN THE CHINESE ECONOMY, 1957–1976), *CHENGDU DAXUE XUEBAO* (*BULLETIN OF CHENGDU UNIVERSITY*) 1 (2000): 21–3

a structural change (in GDP shares), driven by heavy industry, which neatly fits in a story of modernisation under a new regime. Once again, we may take this argument at face value for the time being.

However, other criteria for determining economic growth and development challenge the idea that China under Mao's rule established rapid industrialisation and modernisation. One may begin with capital accumulation and capital re-investment. "Achievements" displayed in Tables 1 and 2 were powered by an almighty state capable of re-investing a quarter of China's annual GDP with investment-to-GDP yielding ratio set at 1:1 (after 1957), meaning that one unit of new investment brought back one unit of new GDP.[56]

If this was indeed the case, after each round of re-investment China's GDP would increase a quarter, *ceteris paribus*. Hypothetically, therefore, the state-owned capital stock would have grown *pro rata* 26,470 percent from 1952 to 1977 from its humble start with 24.1 billion *yuan* to a total of 6,379.3 billion *yuan* (1952 constant price).[57] In 1978, however, the registered state-owned fixed capital assets were 448.2 billion *yuan* (constant price),[58] merely 7 percent of the expected total. The official explanation was capital waste: "A high rate of

56 Ministry of Finance, *Zhongguo Caizheng Nianjian, 1997* (*China's Financial Yearbook, 1997*) (Beijing: China's Finance Magazine Press, 1997): 479; National Bureau of Statistics, *Zhongguo Tongji Nianjian, 2002* (*China's Statistical Yearbook, 2002*) (Beijing: China's Statistics Press, 2002): 51.

57 National Bureau of Statistics, *Statistical Yearbook, 2002*: 51.

58 Ministry of Finance, *Financial Yearbook, 1997*: 479.

TABLE 3 Stagnation of industrial workforce, persons × 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 ARE BASED NATIONAL BUREAU OF STATISTICS, *ZHONGGUO LAODONG TONGJI NIANJIAN, 1998* (*CHINA'S LABOUR STATISTICAL YEARBOOK, 1998*) (BEIJING: CHINA'S STATISTICS PRESS, 1998): 81. DATA FOR CHINA'S POPULATION ARE BASED ON NATIONAL BUREAU OF STATISTICS, *ZHONGGUO TONGJI NIANJIAN, 1986* (*CHINA'S STATISTICAL YEARBOOK, 1986*) (BEIJING: CHINA'S STATISTICS PRESS, 1986): 91

accumulation and large-scale capital construction alone cannot bring about sustained fast growth and good economic result."[59] Wasteful capital investment does explain to a great extent Mao's industrial workforce whose growth was static. But the same capital waste will throw China's fast industrialisation story out of the window, as an economy cannot have both fast industrialisation and a stagnant industrial workforce at the same time.

Secondly, China's employment structure based on simple arithmetic headcount also challenges China's fast industrialisation story. Table 3 shows industrial workforce number falling behind the country's population increase. This demographic pattern (an annual deficit of −0.27%) basically means that China's economy was in a process of "deindustrialisation," as disproportionately more people were employed in the non-industrial sector, mainly farming.

Thirdly, growth stagnation in the industrial workforce finds its match with the rural dominance in China's employment structure with which a rapid industrialisation was but a lip service (Table 4).

Moreover, if the data in Tables 3 and 4 are reliable, with town-dwellers constituting 16–18 percent of the total population, a country's industrial GDP is most likely to be around 20 percent of its total GDP by an international standard

59 Yu Guangyuan (ed.), *China's Socialist Modernization* (Beijing: Foreign Language Press, 1984): 458.

TABLE 4 Employment shares, % of total population

Case	All sectors	Agriculture	Non-agriculture
China, 1978	100	71	29
Japan, 1872	100	72	28
Russia, 1914	100	75	25
India, 1901	100	65	35

SOURCES: LI JINGWEN, "LUN WOGUO CHANYE JIEGOUDE BIANDONG QUSHI" (TREND OF STRUCTURAL CHANGE IN CHINA'S ECONOMY), *XINHUA WENZHAI* (*XINHUA COMPILATION*) 12 (1995): 46–8; ZHANG ZHUOYUAN, "ZHONGGUO JINGJI TIZHI GAIGEDE ZONGTI HUIGU YU ZHANWANG" (REVIEW AND SPECULATION OF THE REFORM OF CHINA'S ECONOMIC SYSTEM), *XINHUA WENZHAI* (*XINHUA COMPILATION*) 7 (1998): 48–50; N. CHARLESWORTH, *BRITISH RULE AND THE INDIAN ECONOMY, 1800–1914* (LONDON: MACMILLAN, 1982): 20; A. FEUERWERKER, "THE STATE AND THE ECONOMY IN LATE IMPERIAL CHINA." *THEORY AND SOCIETY* 13/3 (1984): 299, 302, 312–13; K. CHAO, *MAN AND LAND IN CHINESE HISTORY: AN ECONOMIC ANALYSIS* (STANFORD: STANFORD UNIVERSITY PRESS, 1986): CH. 3; R. MINAMI, *THE ECONOMIC DEVELOPMENT OF JAPAN* (LONDON: MACMILLAN, 1986): 24; S. G. WHEATCROFT, R. W. DAVIES, AND J. M. COOPER, "SOVIET INDUSTRIALIZATION RECONSIDERED: SOME PRELIMINARY CONCLUSIONS ABOUT ECONOMIC DEVELOPMENT BETWEEN 1926 AND 1941." *ECONOMIC HISTORY REVIEW* 39/2 (1986): 273; P. MAITRA, *INDIAN ECONOMIC DEVELOPMENT. POPULATION GROWTH AND TECHNICAL CHANGE* (NEW DELHI: ASHISH, 1991): 101, 132; P. FRANCKS, *JAPANESE ECONOMIC DEVELOPMENT: THEORY AND PRACTICE* (LONDON: ROUTLEDGE, 1992): 29; R. W. DAVIES, M. HARRISON, AND S. G. WHEATCROFT, *THE ECONOMIC TRANSFORMATION OF THE SOVIET UNION, 1913–1945* (CAMBRIDGE: CAMBRIDGE UNIVERSITY PRESS, 1994): 112; P. R. GREGORY, *BEFORE COMMAND: AN ECONOMIC HISTORY OF RUSSIA FROM EMANCIPATION TO THE FIRST FIVE-YEAR PLAN* (PRINCETON: PRINCETON UNIVERSITY PRESS GREGORY, 1994): 21, 42

(see again Table 1). There is no reason to believe that Mao's China should be an exception. Thus, the official industrial GDP figures for Mao's China are likely to be exaggerated.

1.4 *Hidden Engine of Growth under Mao's Rule*

This study hypothesizes an agricultural-industrial dichotomy for a closed economy. A hint comes from a zero-sum game between capital investment and consumption austerity, seen from a decline of consumption in GDP (Table 5).

Such consumption austerity is highly visible in Mao's *pro patria* rural food-rationing. The official guideline in the mid-1950s for annual *per capita* ration for a rural adult was set at 180 kilograms for North China (360 *jin*, if in

TABLE 5 New Capital Investment vs Consumption Austerity

Year	New capital 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

Note: Over 80 percent of consumers were made up of the rural population
SOURCE: BASED ON V. D. LIPPIT, *THE ECONOMIC DEVELOPMENT OF CHINA* (NEW YORK: M.E. SHARPE, 1987): 155

wheat, millet, maize, and sorghum) and 200 kilograms for South China (400 *jin*, if in rice). The following is a breakdown for South China as the upper bound:[60]

Age	Raw grain in kg/head/year
2–5	60
6–10	90
11–15	190
15+	210–40

These quantities were in raw grain. Weight loss of 20 (wheat) to 30 (rice) percent to milling and husking is normal.[61] In real terms, therefore, an adult peasant would have received received 140 kilograms (rice) to 144 kilograms (wheat) *per annum*. This ration provided the recipient with merely 1,300 calories per day,

60 E. Croll, *The Family Rice Bowl: Food and the Domestic Economy in China* (Geneva: UNRISD, 1983): 80.

61 Gao Wangling, *Zhongguo Nongmin Fanxingwei Diaocha* (*Investigation into a Quiet Rebellion of the Chinese Peasantry against Maoism*) (Beijing: Central Party History Press, 2006): 5.

TABLE 6 Glance at China's Scissors-Pricing, 1950–56

Year	Industrial goods	Food stuff	Price ratio
1950	100	100	1.00
1952	110	90	1.22
1954	123	78	1.58
1956	125	77	1.62
Annual average%	4.6	−5.4	–

SOURCE: NATIONAL PRICE COMMISSION, *WUJIA TONGJI ZILIAO JIANBIAN* (*PRICE STATISTICS*) (BEIJING: PEOPLE'S PRESS, 1964): 21

about a half of energy needed to maintain an adult male. This amount qualifies a famine diet by any standard.

Of course, Mao's imposition of consumption austerity was in service of a long-standing goal—namely, the building-up of industry. The vital interface was the "scissors-prising differentials" which inflated industrial outputs and at the same time discounted farming products, a *repertoire* policy copied from the Soviet Union.[62] From the early 1950s onwards most agricultural products, as many as 230 items (or just about everything the peasantry produced), were controlled by state monopsony for scissors-prising.[63] The state also monopolised industry outputs to make a complete circuit. In short, the state acted as the single dealer between sectors.[64] There is no information transparency in this unfair and exploitative practice presumably due to its socio-political sensitiveness. Even so, one can piece together fragmented facts. Table 6 shows how a zero-sum game was played between industry and agriculture.

It was documented that Mao's state compulsorily purchased privately-owned domestic animals such as pigs from rural households at half the market price.[65] The same practice applied to grain, as stated in a State Council decree in 1965 that "Currently, prices for grain and cooking oil at rural fairs are

62 A. N. Malafeev, *Istoriia Tsenoobrazovaniia v SSSR* (*The History of Price Formation in the USSR*) (Moscow: Mysl, 1964): 286; P. R. Gregory and R. C. Stuart, *Soviet and Post-Soviet Economic Structure and Performance* (New York: HarperCollins, 1994): 62.

63 Ling Zhijun, *Lishi Buzi Paihuai* (*History, No More Hesitation*) (Beijing: People's Press, 1997): 137.

64 In the West, the only place where a similar game can perpetuate is a prison where a prison shop has a monopolistic power over the captured population behind bars.

65 Yuan Xiaolun, "Jibuzeshide Yuedu Jiyi" (Readings during the Cultural Revolution), *Yanhuang Chunqiu* (*History of Chinese Nation and People*), 11 (2008): 68–9.

120 percent and 90 percent higher than the state procurement prices, respectively."[66] This policy continued until the end of the 1970s: It was officially announced by China's People Congress in December 1978 that

> In order to reduce the price differentials between industrial and agricultural products, this congress has requested the State Council to issue a decree to increase the state procurement prices for targeted grain quotas by 20 percent in the 1979 summer season and to increase another 50 percent in price thereafter. … The wholesale and retail prices of agricultural machinery, chemical fertilizers, agricultural chemicals, and agricultural plastics should be reduced by 10 to 15 percent in 1979 and 1980.[67]

Based on such limited information, the compounded extra price for the peasantry to pay can be calculated as 115 percent.[68] Incidentally, in Stalin's Soviet Union, peasants also had to pay 75–200 percent above the market prices for industrial goods and services.[69] China's scissors-pricing arbitrage ended only after Mao died.[70]

Consequently, both consumption austerity and scissors-pricing effectively removed incentives for the peasantry to produce. China's once productive agricultural sector was in a steady decline, leading to nation-wide food deficits. North China went under first and South China followed (Table 7).[71]

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66 Anon., *Zhonggong Zhongyang Guowuyuan Guanyu Tiaozheng Dangqian Shichang Wujiade Jueding* (Decree of the Chinese Communist Party Central Committee and the State Council on Re-adjustment of Current Market Prices, 1965), online *vide*: http://news.xinhuanet.com/ziliao/2005-02/02/content_2539275.htm, accessed 20th September 2020.

67 Anon., "Zhongguo Gongchandang Dishiyijie Zhongyangweiyuanhui Disanci Quanti Huiyi Gongbao" (Communiqué on the Third Plenary Meeting of the Eleventh Central Committee of Chinese Communist Party), *Renmin Ribao* (*People's Daily*), 24th December, 1978, p. 1.

68 A simple formula is $P_{ext} = (1 - 1/0.5p_{gr}) + 0.15\, p_{gi}$, where P_{ext} is extra price; p_{gr}, government rural price mark-down; p_{gi}, government industrial price mark-up.

69 Malafeev, *History of Price Formation*: 286; Gregory and Stuart, *Structure and Performance*: 62.

70 K. Deng and J. Du, "To Get the Prices Right for Food: The State versus the Market in Reforming China, 1979–2006." *European Review of Economic History* 21/3 (2017): 302–25.

71 M. Elvin, *The Pattern of the Chinese Past* (Stanford: Stanford University Press, 1973); D. H. Perkins, *Agricultural Development in China, 1368–1968* (Edinburgh: Edinburgh University Press, 1969); S. R. Dittrich and R. H. Myers, "Resource Allocation in Traditional Agriculture." *Journal of Political Economy* 79/4 (1971): 887–96; B. Li, *Agricultural Development in Jiangnan, 1620–1850* (London: Macmillan, 1998); K. Pomeranz, *The Great Divergence: Europe, China and The Making of the Modern World Economy* (Princeton: Princeton University Press, 2000): Pt 1.

TABLE 7 Food surpluses and deficits, 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

Note: Positive values = food surpluses; negative values = food imports to compensate domestic food deficits

SOURCE: RURAL ECONOMY INSTITUTE, MINISTRY OF AGRICULTURE (ED.), *DANGDAI ZHONGGUO NONGYE BIANGE YU FAZHAN YANJIU* (*A STUDY OF AGRICULTURAL REFORMS AND DEVELOPMENT IN CONTEMPORARY CHINA*) (BEIJING: CHINA'S AGRICULTURE PRESS, 1998): 251

TABLE 8 Decline in Agricultural Output Value, in Billion *Yuan*, 1957–77

Year	Current price	Index	1950 price*	Index
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	

Note: * Conversion is based on China's average inflation rate of 2.01 percent per year from 1950 to 1978; see Li Jingwen, "Zhongguo Jingji Tizhi Zhuanxing Guochengzhongde Hongguan Tiaokong" (Macro Control in the Process of Switching China's Economic System), *Xinhua Wenzhai* (*Xinhua Compilation*) 4 (1997): 49–50. ¶ Net value is obtained by discounting China's population growth at 2.6 percent per year under Mao's rule, see He Bochuan, "2000 Nian Zhongguo Mubiao Xitongde 20 Ge Cuiruodian" (Twenty Weak Points in China's Targets for the Year 2000), *Xinhua Wenzhai* (*Xinhua Compilation*) 5 (1994): 7

SOURCE: NATIONAL BUREAU OF STATISTICS, *ZHONGGUO NIANJIAN* (*CHINA'S STATISTICAL YEARBOOK, 1985*) (BEIJING: ECONOMY PRESS, 1986): 239

Inevitably, China's agricultural GDP declined (Table 8), something that ironically suited the government agenda rather well, in that it helped boosting China's nominal industrial GDP share.

After our step-by-step investigation, it becomes clear that savings made from inflated industrial outputs and discounted farming products functioned

as the headwaters of China's closed economy under Mao's rule. The hidden engine of growth was the humble and moribund agricultural sector.

By this point in our investigation, one begins to harbour serious doubts about the supposed existence of a perfect harmony between "self-reliance" (*zili gengsheng*, literarily meaning "making life go-forever by own efforts") and "balanced growth" under Mao's rule.[72] In the Maoist economy, "self-reliance"[73] and a "balanced growth"[74] were mutually exclusive.

1.5 *Theoretic Approach*

This study applies a holistic two-pronged approach with (1) capital accumulation and re-investment, material production and consumption, and (2) mathematical conceptualisation and empirical modelling. The starting point is the Quesnay-Mao zigzag links with which much of industrial growth comes from agriculture (Figure 5). The present task is essentially to measure the Quesnay-Mao zigzag links. The remaining article is made of three parts: mathematical conceptualisation, empirical modelling, and final conclusions.

2 Mathematical Conceptualisation of the Quesnay-Mao Economy

Our model is based on two pioneering works, one by Sah and Stiglitz and another by Lin and Yu.[75] Given the nature of the Quesnay-Mao economy,

72 S. Paine, "Balanced Development: Maoist Conception and Chinese Practice." *World Development* 4/4 (1976): 277–304; N. Lardy, *Economic Growth and Distribution in China* (Cambridge: Cambridge University Press, 1978); Y. Y. Kueh, "Mao and Agriculture in China's Industrialization: Three Antitheses in a 50-Year Perspective." *China Quarterly* 187 (2006): 700–23.

73 See F. Wemheuer, *A Social History of Maoist China: Conflict and Change, 1949–1976* (Cambridge: Cambridge University Press, 2019).

74 It should be noted, however, that the achievability of a planned "balance growth" with millions of demand-supply equations all settled in a Walrasian general equilibrium has been seriously doubted; see e.g. M. Ellman, *Planning Problems in the USSR* (Cambridge: Cambridge University Press, 1973); J. Wilhelm, "Does the Soviet Union Have a Planned Economy?" *Soviet Studies* 31/2 (1979): 268–74; M. Bornstein (ed.), *The Soviet Economy* (New York: Routledge Press, 1981), chs 1–3; D. K. Bose, "Market and Plan in Soviet Union." *Economic and Political Weekly* 24/2 (1989): 95–99; M. N. Rothbard, "The End of Socialism and the Calculation Debate Revisited." *Review of Austrian Economics* 5/2 (1991): 51–76.

75 R. K. Sah and J. E. Stiglitz, "The Economics of Price Scissors." *American Economic Review* 74/1, (1984): 125–138; Justin Lin and Yu Miaojie, "The Economics of Price Scissors: An Empirical Investigation for China, *Social Science Research Network*, 2008, online *vide*: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1032404, accessed 27th December 2023.

the present study focuses on the "scissors-pricing arbitrage" between agricultural and non-agricultural sector as the main engine for the Maoist growth.[76] The objective of the Maoist economy was to transfer all surpluses produced by the agricultural sector to the industrial sector instead of maximizing the aggregate social welfare.[77]

If we suppose that in the 1950s to the 1970s China's agricultural sector had a population N_r, and the industrial or urban sector had a population N_u; $N_r > N_u$ captures the agrarian nature of the economy.

Consumers across all sectors have the identical quasi-linear utility functions, as follows:[78]

$$U_i = y_i + (x_i) \tag{1}$$

Where $i = r, u$

Prices of manufacturing goods are set as 1. Our rationale is that by treating the consumers *i's* consumption of manufacturing goods as the numeraire, all surpluses of the Maoist economy will be sucked up by the industrial sector.

Meanwhile, to produce manufactures the industrial sector needs capital (K) and labour (L_u). To produce food the agricultural sector uses land (R) and labour (L_r). Technology is assumed to have constant returns to scale in both sectors.[79] Labourers are immobile between the two sectors due to a household registration system (called *hukou*) which blocks rural residents to move to the urban sector during the Maoist period.

Then, scissors-pricing—a ratio of the agricultural price level to the industrial price level—can be set as p dictated exclusively by a political centre. The budget-constraint for a representative peasant with Utility Function (1) becomes:

$$px_r + y = pX(\frac{K}{N_r}, L_r) \tag{2}$$

76 In the later empirical parts of the paper, agricultural exports are added on. But the magnitude of such experts does not change the general conclusions of this study.

77 See Sah and Stiglitz, "Economics of Price Scissors," and Lin and Yu, "Economics of Price Scissors."

78 The assumption of an identical consumption function for the entire population across all sectors is based on the fact that institutionalized food rationing was strictly imposed upon the entire population during the Maoist period, thus leading to an identical demand structure for the entire population throughout the period in question.

79 See Lin and Yu, "Economics of Price Scissors."

Where X is the peasant's output. The capital to land ratio is $\frac{K}{N_r}$.

Combining Equations (1) and (2), we can define the indirect utility function for this representative peasant as:

$$V_a\left(p, N_r\right) = pX\left(\frac{K}{N_r}, L_r\right) - px_r + u\ x_r) \tag{3}$$

With the Envelope Theorem, the rural surplus belonging to a representative peasant could be found from a relative price level:

$$S_r = X - x_r \tag{4}$$

Furthermore, a soft-budget constraint equation for a representative worker can be set as follows:[80]

$$px_u + y_u = wL_u \tag{5}$$

In addition, the state consumption rationing of agricultural goods for the urban population was imposed. Hence, a representative urban worker also faces the following constraint:

$$x_u \leq \underline{x}_u \tag{6}$$

Where $\underline{x}_u$ is the state rationing of agricultural goods per urban worker;[81] $\underline{x}_u$ also measures the maximum surplus food supply per peasant.

Now, a representative aggregate surplus function for Maoist China can be constructed with two parts. The first part is the net aggregate utility of urban workers; the second part, the net aggregate utility of peasants. They are linked by scissors-pricing to satisfy the state objective of maximizing surpluses

80 In line with Lin and Yu, "Economics of Price Scissors."

81 This implies $\begin{cases} \frac{\partial V_u}{\partial p} = -\underline{x}_u \\ \frac{\partial V_u}{\partial w} = L_u \end{cases}$.

required for industrial growth in a closed-economy.[82] The government surplus function aims to maximize as follows:[83]

$$\underbrace{Max}_{p} G_s = N_u\left[Y\left(\frac{K}{N_u}, L_u\right) - wL_u\right] + N_r[pX\left(\frac{K}{N_r}, L_r\right) - px_r + u(x_r)] \quad (7)$$

To derive Equation (7) with p and make it equal to 0, we obtain the following:

$$\begin{aligned}
&\frac{\partial G_s}{\partial p} = \frac{\partial G_s}{\partial p} + \frac{\partial G_s}{\partial w} \cdot \frac{\partial w}{\partial p} \\
&= N_u\left[\frac{\partial V_u}{\partial p}\right] - N_u L_u\left[\frac{\partial w}{\partial p}\right] + N_r S_r \\
&= N_u\left[\frac{\partial V_u}{\partial w}\right]\left[\frac{\partial w}{\partial p}\right] - N_u L_u\left[\frac{\partial w}{\partial p}\right] + N_r S_r = 0
\end{aligned} \quad (8)$$

From Equations (8), the optimal equilibrium condition could be expressed as follows:

$$N_u(-\bar{x}_u) - N_u L_u\left[\frac{\partial w}{\partial p}\right] + N_r S_r = 0 \quad (9)$$

In addition, with $\underline{x}_u = \underline{x}_r$, under the equilibrium condition together with the state imposes food rationing, Equation (9) becomes

$$N_u(-\underline{x}_u) - N_u L_u\left[\frac{\partial w}{\partial p}\right] + N_r(X - \underline{x}_r) \quad (10)$$

Or,

$$N_u(-\underline{x}_u) - N_u L_u\left[\frac{\partial w}{\partial p}\right] + N_r(X - \underline{x}_u)$$

82 Since the Quesnay-Maoist economy is a closed one, there is little room for trade in the model. This is where our model differs from those developed by Sah and Stiglitz as well as Lin and Yu.

83 Different from the Sah-Stiglitz model (Sah and Stiglitz, "Economics of Price Scissors") here, Maoist state was not to maximize social welfare. Rather, it aimed to catch up the West and the Soviet Union in industrialisation and modernization in a closed economy.

Based on Equation (10), the state imposes consumption level for urban workers also determines the number of workers for the industrial sector:

$$N_u(-1) - N_u\left[\frac{\partial L_u}{\partial \underline{x}_u}\right]\left[\frac{\partial w}{\partial p}\right] - N_r = 0 \tag{11}$$

And,

$$\left[\frac{\partial L_u}{\partial \underline{x}_u}\right] = -\frac{N_r + N_u}{N_u\left[\frac{\partial w}{\partial p}\right]} < 0 \tag{12}$$

With $\left[\frac{\partial w}{\partial p}\right] > 0$, higher scissors-pricing will lead to a higher wage level in the industrial sector, which is to be verified by the empirical section. Thus, one could conclude

$$\left[\frac{\partial L_u}{\partial \bar{x}_u}\right] < 0$$

So, the rural sector is sacrificed for the growth in the industrial sector. Therefore, we could propose the following main proposition:

> Proposition 1. *In a Quesnay-Mao closed economy, industry is agriculture-dependent whereby the growth in the urban industrial sector is at the expenses of that of the rural sector.*

3 Empirical Modelling

In this section, empirical modelling is conducted with multiple linear regressions to test the zigzag flows in the Quesnay-Mao zero-sum game in China.

3.1 *Data*

Our data come from available official data published mainly by China's Statistics Press and China's Social Sciences Press. Our chosen period is from 1950 to 1980 which covers the whole era of Maoism until China's "reforms and opening-up" (*gaige kaifang*). Table 9 lists our sources in detail.

TABLE 9 Data sources

Type	Source
Industrial investment	(1) *Statistics for China's Fixed Asset Investment, 1950–1985*: 43; (2) *Statistical Yearbook of the China's Investment in Fixed Assets, 1950–1995*: 102.
Agricultural output	(3) *China's Statistical Yearbook, 1984*: 141–8; (4) *China's Statistical Yearbook, 1987*: 43.
Rural food rationing	(4)' *China's Statistical Yearbook, 1987*: 89; (5) *China's Population and Employment Statistical Yearbook, 2020*: 8.
Agricultural exports	(6) *Fifty Years of New China, 1949–1999*: 567; (7) *China Statistical Yearbook*, 1981: 354.
Scissors-pricing	(8) *Comprehensive Statistical Data for Fifty Years of New China, 1949–1998*: 21.
GDP	(9) *China Statistical Yearbook, 2001*: 49.

Note: Of all variables, "industrial investment," "agricultural output," "agricultural export," and "GDP" come directly from the yearbooks

SOURCES: (1) NATIONAL BUREAU OF STATISTICS, *ZHONGGUO GUDING ZICHAN TONGJI ZILIAO, 1950–1985* (*STATISTICS FOR CHINA'S FIXED ASSET INVESTMENT, 1950–1985*) (BEIJING: CHINA'S STATISTICS PRESS, 1987); (2) LIU XIANGCHENG (ED.), *ZHONGGUO GUDING ZICHAN TOUZI NIANJIAN* (*STATISTICAL YEARBOOK OF THE CHINA'S INVESTMENT IN FIXED ASSETS, 1950–1995*) (BEIJING: CHINA'S STATISTICS PRESS, 1997); (3) NATIONAL BUREAU OF STATISTICS, *ZHONGGUO TONGJI NIANJIAN, 1984* (*CHINA'S STATISTICAL YEARBOOK, 1984*) (BEIJING: CHINA'S STATISTICS PRESS, 1984); (4) AND (4)' NATIONAL BUREAU OF STATISTICS, *ZHONGGUO TONGJI NIANJIAN, 1987* (*CHINA'S STATISTICAL YEARBOOK, 1987*) (BEIJING: CHINA'S STATISTICS PRESS, 1987); (5) NATIONAL BUREAU OF STATISTICS, *ZHONGGUO RENKO HE JIUYE TONGJI NIANJIAN, 2020* (*CHINA'S POPULATION AND EMPLOYMENT STATISTICAL YEARBOOK, 2020*) (BEIJING: CHINA'S STATISTICS PRESS, 2020); (6) ZHU WEISHENG, CHEN YUEYUE, ZHU JIANHUA, AND CHEN WUCHAO (EDS) *XIN ZHONGGUO WUSHINIAN, 1949–1999* (*FIFTY YEARS OF NEW CHINA, 1949–1999*) (BEIJING: CHINA'S STATISTICS PRESS, 1999); (7) NATIONAL BUREAU OF STATISTICS, *ZHONGGUO TONGJI NIANJIAN, 1981* (*CHINA'S STATISTICAL YEARBOOK, 1981*) (BEIJING: CHINA'S STATISTICS PRESS, 1981); (8) NATIONAL BUREAU OF STATISTICS, *XIN ZHONGGUO WUSHINIAN TONGJI ZILIAO HUIBIAN, 1949–1998* (*COMPREHENSIVE STATISTICAL DATA FOR FIFTY YEARS OF NEW CHINA, 1949–1998*) (BEIJING: CHINA'S STATISTICS PRESS, 1999); (9) NATIONAL BUREAU OF STATISTICS, *ZHONGGUO TONGJI NIANJIAN, 2001* (*CHINA'S STATISTICAL YEARBOOK, 2001*) (BEIJING: CHINA'S STATISTICS PRESS, 2001)

Four variables need defining: (1) Total investment in industry is taken as a proxy for the dependent variable of industrial growth. (2) Rural consumption, an independent variable, is measured by *rural food rationing* based on quantities permitted by the Maoist government according to genders and ages

to enforce artificial rural austerity.[84] Since available data are only for censused years, for robustness we use the end-period value for missing data in-between censused years.[85] (3) Disasters, another independent variable, are designed as a dummy to reflect farming conditions.[86] Value 1 is for severe annual precipitation anomaly (including floods and droughts); otherwise, the value is 0.[87] (4) The price ratio between the wholesale purchasing price index of farm products and the rural retail price index of industrial products is used as a proxy for scissors-pricing, again an independent variable.[88] Table 10 contains a summary of statistics.

Our preliminary observations are demonstrated in Figure 6 in which agriculture takes the lead between the two sectors.

Figure 7 contains scatter plots with fitted lines, suggesting a positive linear relationship between industrial investment and food output, agricultural exports and GDP, and a negative linear relationship between industrial investment and natural disasters. Such observations warrant further regression analyses.

84 To be specific, food rationing of each group = the proportion of an age group in population × food rationing per head of the same age group. Due to limited data, we divide the total population into a children's group (aged 0–15 years) and an adult group (aged 16 and over).

85 If the adult share in China's total population were 60.26% (1950), 59.30% (1953) and 58.34% (1956), for the data-missing years, we fill 1951 and 1952 with 59.30%, and 1954 and 1955 with 58.34%.

86 See relevant discussions in Z. Wang, P. Zhai, and H. Zhang, "Variation of Drought over Northern China during 1950–2000." *Journal of Geographical Sciences* 13/4 (2003): 480–7; and M. Yu, Q. Li, M. J. Hayes, M. D. Svoboda, and R. R. Heim, "Are Droughts Becoming More Frequent or Severe in China Based on the Standardized Precipitation Evapotranspiration Index: 1951–2010?" *International Journal of Climatology* 34/3 (2014): 545–58. The precipitation anomaly data are collected from P. Zhai, X. Zhang, H. Wan, and X. Pan, "Trends in Total Precipitation and Frequency of Daily Precipitation Extremes over China." *Journal of Climate* 18/7 (2005): 1096–1108.

87 Specifically, the disaster variable equals 1 if the *normalized annual precipitation anomaly* (percentage) is over 7.9 percentage points (Quartile 4), which includes 5 flood years (1953, 1954, 1959, 1964, 1973) and 2 drought years (1965, 1978).

88 We first fix the 1950 price as the base level for both the wholesale purchasing price index of farm products and the rural retail price index of industrial products. We then divide the (fixed-base) wholesale purchasing price index of farm products by the (fixed-base) rural retail price index of industrial products as scissors-pricing:

$$\textit{Scissors pricing} = \frac{\text{The (fixed base) wholesale purchasing price index of farm products}}{\text{The (fixed base) rural retail price index of industrial products}}.$$

Also, scissors-pricing equals one in 1950 and then fluctuates across years depending on the change of both two prices. This is consistent with Justin Y. Lin, and Miaojie Yu, "The Political Economy of Price Scissors in China: Theoretical Model and Empirical Evidence." *Economic Research Journal* 1 (2009): 42–56.

TABLE 10 Summary Statistics

Type	N	Mean	Standard deviation
Total industrial investment (billion *yuan*)	31	12.79	8.61
[*Heavy industrial investment* (*billion yuan*)	*31*	*11.38*	*7.60*]*
[*Light industrial investment* (*billion yuan*)	*31*	*1.38*	*1.14*]*
Cotton output (billion kg)	31	1.78	0.59
Oilseed output (billion kg)	31	3.96	1.21
Rural food rationing (billion kg)	31	109.02	18.87
Agricultural export (billion *yuan*)	31	5.46	2.94
GDP (billion *yuan*)	31	189.03	105.60
Scissors-pricing†	31	1.62	0.37
Purchasing price index of farming products†	31	182.16	41.31
Retail price index of industrial products†	31	112.62	5.40

Note: * To be used later. †All price indexes used in our empirical analyses are in a constant price of 1950

SOURCES: SEE TABLE 9

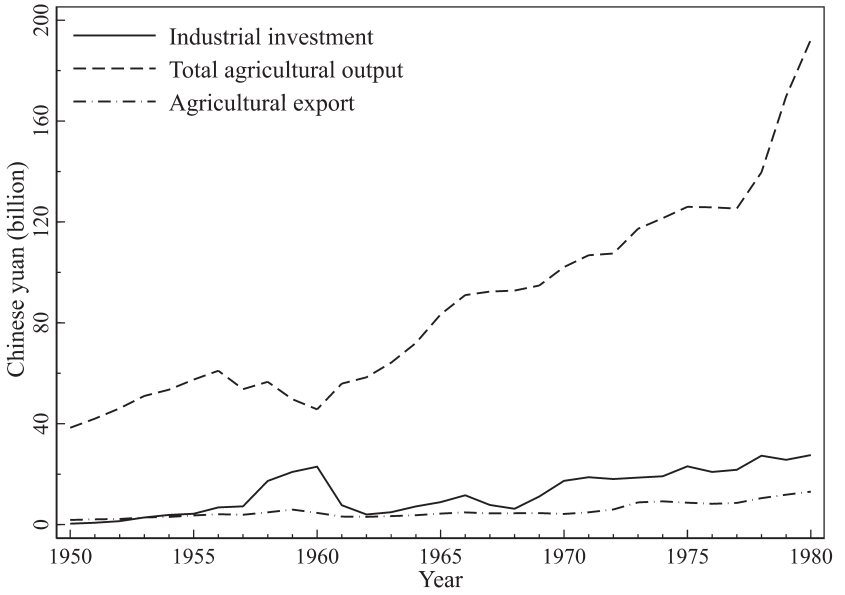

FIGURE 6 General Pattern: Agriculture vs Industry

SOURCES: SEE TABLE 9

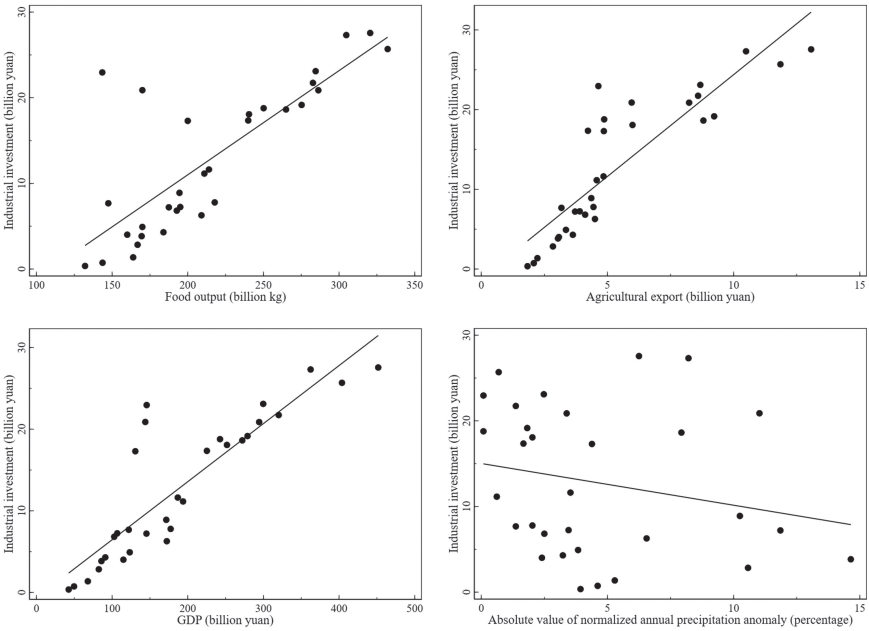

FIGURE 7 Linear Relationships between Various Factors and Industrial Investment
SOURCES: SEE TABLE 9

3.2 *Model Specification*

Inspired by three works by Kitchens, Graddy, and de Zwart *et al.*, respectively,[89] we specify a multiple log-linear regression model with OLS as follows:

$$\ln(\textit{Industrial investment}_t) = \beta_0 + \beta_1 \ln(\textit{Food output}_t) + \beta_2 \ln(\textit{Rural food rationing}_t) + \beta_3 \ln(\textit{Agricultural export}_t) + \beta_4 \ln(GDP_t) + \beta_5\, \textit{Scissors-pricing}_t + \beta_6 \textit{Disasters}_t + \textit{Great Leap Famine}_t + \varepsilon_t \quad (13)$$

Here, *industrial investment* (the dependent variable) is in the logarithm value for the *year t*. The independent variables are also in the logarithm values for *food output*, *rural food rationing*, *agricultural export*, and GDP. We also include

89 C. Kitchens, "A Dam Problem: TVA's Fight Against Malaria, 1926–1951." *Journal of Economic History* 73/3 (2013): 694–724; K. Graddy, "Taste Endures! The Rankings of Roger de Piles (†1709) and Three Centuries of Art Prices." *Journal of Economic History* 73/3 (2013): 766–91; P. de Zwart, D. Gallardo-Albarrán, and A. Rijpma, "The Demographic Effects of Colonialism: Forced Labor and Mortality in Java, 1834–1879." *Journal of Economic History* 82/1 (2022): 211–49.

scissors-pricing, *disasters* (a dummy for natural shocks), and *Great Leap Famine* (a dummy for political shocks).[90] The item ε_t is for the random error.

3.3 *Baseline Results*

Table 11 contains baseline results of Formula 13. Column by column, more independent variables are added.

TABLE 11 Baseline results

	Dependent variable: ln(*Total industrial investment*)					
Independent variable	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
ln(*Food output*)	4.014***	5.486***	3.738	1.799	1.224	1.038
	(0.498)	(1.811)	(2.366)	(1.172)	(0.803)	(0.743)
ln(*Rural food rationing*)		−2.241	−2.243	−6.002***	−4.817***	−5.121***
		(2.301)	(2.219)	(1.415)	(0.983)	(0.885)
ln(*Agricultural export*)			0.848	0.275	0.171	0.298
			(0.748)	(0.503)	(0.282)	(0.283)
ln(*GDP*)				2.327***	3.310***	3.442***
				(0.298)	(0.314)	(0.271)
Scissors-pricing					−1.732***	−1.879***
					(0.179)	(0.176)
Disasters						−0.197**
						(0.090)
Great Leap Famine	Yes	Yes	Yes	Yes	Yes	Yes
Observations	31	31	31	31	31	31
R^2						0.977
Adjusted R^2	0.798	0.801	0.807	0.919	0.965	0.970
F test						194.94
Prob > *F*						0.0000
Durbin-Watson test						1.504

Note: (1) Robust standard errors are in paratheses. (2) *** p < 0.01, ** p < 0.05, * p < 0.1
SOURCES: SEE TABLE 9

90 In Figure 6, the Great Leap Forward (1958–1962) can be seen to have caused an abnormal increase in industrial investment at the expense of agricultural output and hence the Great Leap Famine. We include the famine as additional control variable, which equals 1 if the year is between 1959 and 1961, otherwise 0.

Column (1) shows that food output has significant influence on industrial capital accumulation (and hence industrial growth): one percent increase in food output results in a 4.014 percent increase in total industrial investment. In other words, a 2.15 billion-kilogram increase in food output is equivalent to 0.13 billion *yuan* industrial investments.[91]

Column (2) confirms that rural food rationing is negatively correlated to industrial growth, which reflects the practice of food being persistently extracted from the rural consumption baskets and shipped out to finance urban wages. One percent increase in food at rural dinner tables reduces Mao's industrial investment by 2.2 percent with a deduction leverage. But the influence of rural food rationing is insignificant, a situation that changes later.

Column (3) adds agricultural exports on as an independent variable, as Mao's regime at times exported food in exchange for foreign industrial equipment. Agricultural exports – agricultural surpluses by definition – are positively correlated to industrial investment although one percent increase in agricultural export brings about only 0.8 percent increase in industrial investment; and the impact of this variable on industrial investment is insignificant. Even so, with a value between 0.171 and 0.848, food export deserves a place in Mao's economic system.[92]

Column (4) demonstrates that GDP growth is both significant and positively correlated to industrial investment. As an independent variable, GDP represents the overall level of development (e.g., industrial production capability discussed in the following Table 16) and accounts for many unobserved confounding factors that could influence the estimates. Also, as a predictor, GDP's influence is not as strong as agricultural output, not to mention the large standard deviation for GDP (see Table 11).

Column (5) shows that scissors-pricing is significant but negatively correlated to the dependent variable. 0.01 unit decrease in scissors-pricing index (thus industrial goods becoming relatively more expensive) generates 1.7 percent growth in industrial investment. That is, a one percent decrease in scissors-pricing relative to the sample mean is associated with a 2.754 percent

91 Noted here, food output is no longer significant. This may be reasonable because grain output cannot always easily and directly be turned into industrial capital. The government either exports food for foreign exchange and imported equipment, or extracts funds from peasants (e.g. taxes and scissors-pricing) to finance investment in industry. Therefore, adding agricultural export and scissors-pricing decreases the influence of food outputs.

92 These results may be reasonable because during the sample period, the average of agricultural export was only 5.46 billion *yuan*, or 2.8% of China's total GDP (189.03 billion *yuan*). This suggests a thin margin of agricultural surplus left after the main extraction. Even so, agricultural export still contributes positively to industrial investment.

increase in industrial investment. Conditioning on GDP, scissors-pricing emerges as the most significant contributor to industrial investment.

Column (6) indicates that disasters are significant and negatively correlated to industrial investment: A severe precipitation anomaly could reduce industrial investment by 19.7 percent.

Finally, our coefficient determinator *Adjusted* R^2 reaches 0.970 (Column 6), indicating that 97% of the variance of the outcome of industrial investment can be explained by our regression model. Moreover, our R^2 value (0.977) is very close to *Adjusted* R^2 (0.970), indicating that the explanatory power of our model is not substantially influenced by the added independent variables.[93] Meanwhile, our F test (129.94) rejects the null hypothesis that all the regression coefficients are equal to zero. And the Durbin-Watson test (1.504) shows no autocorrelation in residuals.[94]

3.4 *Robustness Checks*

To test robustness, we include a placebo test, and checks with investment in light industry and other alternative measures, political shocks, confounding factors, and province-level estimations.

Adding a placebo test on the post-reform period. In *circa* 1980, the engine of China's industrial growth was switched from agriculture to the market in post-Mao "reforms and opening-up."[95] To reflect this ideological and policy shift, we run a placebo test for the period of 1981 to 2000 with Formula 15. Now, the influence of predictors becomes insignificant which in turn implies that our theoretical model holds for Maoism (Table 12).

93 Noted, our high *r* (0.988), R^2 and *Adjusted* R^2 are as good as empirical analyses achieved in natural sciences.

94 We conduct two more statistical tests: Multicollinearity test and stationary test. The variance inflation factor multicollinearity test (VIF test) is 15.16 in our preferred estimation. Given the small sample size, it indicates limited multicollinearity in our regression, arising from the correlation between food output and other dependent variables (e.g., GDP). By removing the logarithm of food output, VIF test is 9.90, implying no multicollinearity problem at all. Additionally, Appendix Table A.1 presents the results of Dickey-Fuller stationary test (DF test). As all the non-binary variables in our preferred specification are stationary time series, such results indicate joint stationarity between outcome variable and dependent variables. These tests further validate our specification.

95 E.g. D. W. Chang, *China Under Deng Xiaoping: Political and Economic Reform* (New York: Palgrave Macmillan, 1988); B. Naughton, "Deng Xiaoping: The Economist." *China Quarterly* 135 (1993): 491–514; M. Y. Kau and S. H. Marsh, *China in the Era of Deng Xiaoping: A Decade of Reform* (New York: Routledge, 1993); C. Tisdell, "Economic Reform and Openness in China: China's Development Policies in the Last 30 Years." *Economic Analysis and Policy* 39/2 (2009): 271–94; M. Dillon, *Deng Xiaoping: The Man Who Made Modern China* (London: I. B. Tauris, 2015).

TABLE 12 Placebo test Results

	Dependent variable: ln (*Total Industrial investment*)	
Independent variable	**(1)** **Baseline**	**(2)** **1981–2000**
ln(*Food output*)	1.038	−0.009
	(0.743)	(0.227)
ln(*Rural food rationing*)	−5.121***	0.798
	(0.885)	(0.836)
ln(*Agricultural export*)	0.298	0.060
	(0.283)	(0.114)
ln(*GDP*)	3.442***	0.961***
	(0.271)	(0.094)
Scissors-pricing	−1.879***	0.082
	(0.176)	(0.047)
Disasters	−0.197**	0.044
	(0.090)	(0.026)
Great Leap Famine	Yes	No
Observations	31	20
Adjusted R^2	0.970	0.998

Note: (1) Robust standard errors are in paratheses. (2) *** p < 0.01, ** p < 0.05, * p < 0.1

Comparison with estimates of investment in light industry. If we assume that heavy industry was the main beneficiary of Maoist investment strategy,[96] we rerun the regression with the logarithm values of investments in heavy and light industries, respectively. Shown in Table 13, as expected, a balance overwhelmingly tilts towards heavy industry, as military-*cum*-heavy industry received special attention of the Maoist state.[97] The influence of predictors on light industry is weaker and often insignificant.

96 On average, light industry only accounts for around 10 percent of the total industrial investment (1.38/12.79, see Table 10).

97 E.g. T-T. Hsueh and T-O. Woo, "The Political Economy of the Heavy Industry Sector in the People's Republic of China." *China Journal* 15/1 (1986): 57–82; E. A. Feigenbaum, "Soldiers, Weapons and Chinese Development Strategy: The Mao Era Military in China's Economic and Institutional Debate." *China Quarterly* 158 (1999): 285–313; C. F. Meyskens, *Mao's Third Front, the Militarization of Cold War China* (Cambridge: Cambridge University Press, 2020).

TABLE 13 Heavy industry vs light industry results

	Dependent variable: ln(*Industrial investments of two types*)†		
Independent variable	**(1) Baseline**	**(2) Heavy industry**	**(3) Light industry**
ln(*Food output*)	1.038	0.768	1.400
	(0.743)	(0.779)	(2.018)
ln(*Rural food rationing*)	−5.121***	−5.142***	−1.169
	(0.885)	(0.864)	(4.219)
ln(*Agricultural export*)	0.298	0.244	0.127
	(0.283)	(0.283)	(0.774)
ln(*GDP*)	3.442***	3.684***	1.688***
	(0.271)	(0.271)	(0.554)
Scissors-pricing	−1.879***	−1.982***	−0.727
	(0.176)	(0.187)	(0.811)
Disasters	−0.197**	−0.211**	0.179
	(0.090)	(0.086)	(0.358)
Great Leap Famine	Yes	Yes	Yes
Observations	31	31	31
Adjusted R^2	0.970	0.972	0.672

Note: (1) Robust standard errors are in paratheses. (2) *** p < 0.01, ** p < 0.05, * p < 0.1. † See Table 10

SOURCES: SEE TABLE 9

Adding alternative measures for the variables of interest. Admittedly, statistics for Mao's China are very limited. Scholars may doubt the suitability of independent variables used in this study. To safeguard our approach, we replace some independent variables with other measures and rerun Formula 13. The results are presented in Table 14.

Column (2) uses alternative value for "rural age groups" to eliminate possible bias between censused years. Column (3) substitutes rural food rationing with "rural population" proxying rural food consumption. Column (4) disentangles "scissors-pricing" and uses "monopsony price index of farming products" and "rural retail price index of industrial products." Notwithstanding their weaker influence, monopsony price index and rural retail price index

TABLE 14 Alternative measures' results

	Dependent variable: ln(*Total Industrial investment*)					
	Baseline	**Alternative measures**				
Independent variable	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
ln(*Food output*)	1.038	0.910	0.666	0.941	1.467*	1.174
	(0.743)	(0.645)	(0.794)	(0.847)	(0.734)	(0.788)
ln(*Rural food rationing*)	−5.121***			−5.009***	−4.829***	−5.183***
	(0.885)			(1.009)	(1.032)	(0.951)
ln(*Rural age groups*)		−4.907***				
		(0.690)				
ln(*Rural population*)			-5.601***			
			(0.965)			
ln(*Agricultural export*)	0.298	0.045	0.212	0.288	0.154	0.372
	(0.283)	(0.247)	(0.287)	(0.291)	(0.257)	(0.319)
ln(*GDP*)	3.442***	3.754***	3.826***	3.423***	3.198***	3.196***
	(0.271)	(0.259)	(0.313)	(0.373)	(0.336)	(0.306)
Scissors-pricing	−1.879***	−1.933***	−1.977***		−1.718***	−1.678***
	(0.176)	(0.167)	(0.194)		(0.178)	(0.210)
Monopsony price index of farming products				−0.017***		
				(0.001)		
Rural retail price index of industrial products				0.025***		
				(0.008)		
Disasters	−0.197**	−0.187**	−0.207**	−0.195**	−0.134*	
	(0.090)	(0.075)	(0.090)	(0.090)	(0.075)	
ln(*Normalized annual precipitation anomaly*)						-0.070**
						(0.026)
Great Leap Famine	Yes	Yes	Yes	Yes	Yes	Yes
Observations	31	31	31	31	31	31
Adjusted R^2	0.970	0.977	0.970	0.970	0.967	0.969

Note: (1) Robust standard errors are in paratheses. (2) *** p < 0.01, ** p < 0.05, * p < 0.1
SOURCES: SEE TABLE 9

remain significant.[98] Column (5) redefines the disaster dummy variable with area-averaged annual precipitation.[99] Finally, Column (6) uses the logarithm of normalized annual precipitation anomaly as a disaster proxy.[100] The alternative results are by and large compatible with the baseline, which further supports our analytical design.

Adding more political shocks. Meanwhile, as the Great Leap Famine was not the only negative shock to China's economy, two other major shocks—the Korean War and the Cultural Revolution[101]—are introduced as dummies and the regression is again rerun. The results in Table 15 are consistent with the baseline, indicating that political shocks did not change the way the Quesnay-Mao economy behaved.

Adding potential confounding factors. Another methodological challenge with this study pertains to potential confounding factors that might introduce bias into our baseline estimates. These factors include production capacity, technology, and industrial demand. Intuitively, a stronger production capacity would seem to imply the industry's own ability to expand more efficiently. The development and adoption of new technology can enhance productivity within the industrial sector, while new industrial demand, such as urbanization, may contribute to the prosperity of the supply side of the industrial sector.

To address this concern, we have incorporated an additional set of proxies into the baseline regression separately, and the results are presented in Table 16 in which we use (1) industrial output value, machine output, iron output, and cement output to proxy industrial production capacity, (2) education expenditure and research expenditure to proxy technology, and (3) urban population to proxy industrial demand. These new variables do not yield a significant

98 Even so, it becomes clear that the influence of "monopsony price index of farming products" moves in the opposite direction of "rural retail price index of industrial products." The former is negatively correlated to industrial investment; and the latter is positively correlated to it.

99 Previously, the disaster dummy equals 1 if the *normalized annual precipitation anomaly* (percentage land hit by disasters) is over 7.9 percentage points (Quartile 4), which includes 5 flood years (1953, 1954, 1959, 1964, 1973) and 2 drought years (1965, 1978). For robustness, we now define the disaster dummy as 1 if the *area-averaged annual precipitation anomaly* (mm) is over 43 millimeters (Quartile 4). This approach includes 11 flood years (1951, 1952, 1953, 1954, 1959, 1961, 1964, 1973, 1983, 1990, 1998) and 2 drought years (1978, 1986).

100 We now replace the dummy variable with the logarithm of normalized annual precipitation anomaly. It turns out that one percent increase of normalized annual precipitation anomaly would reduce the total industrial investment by 0.07 percent.

101 The Korean War is a dummy that equals 1 for 1950–53. And the Cultural Revolution is a dummy that equals 1 for 1966–76.

TABLE 15 Extra shocks' test results

	Dependent variable: ln(*Total Industrial investment*)		
Independent variable	**(1) Baseline**	**(2) Korean War**	**(3) Cultural Revolution**
ln(*Food output*)	1.038	1.284**	1.286**
	(0.743)	(0.570)	(0.583)
ln(*Rural food rationing*)	−5.121***	−4.338***	−4.290***
	(0.885)	(1.124)	(1.206)
ln(*Agricultural export*)	0.298	0.237	0.219
	(0.283)	(0.257)	(0.268)
ln(GDP)	3.442***	2.987***	3.002***
	(0.271)	(0.385)	(0.409)
Scissors-pricing	−1.879***	−1.732***	−1.749***
	(0.176)	(0.210)	(0.275)
Disasters	−0.197**	−0.153	−0.156
	(0.090)	(0.090)	(0.093)
Great Leap Famine	Yes	Yes	Yes
Korean War	No	Yes	Yes
Cultural Revolution	No	No	Yes
Observations	31	31	31
Adjusted R^2	0.970	0.973	0.972

Note: (1) Robust standard errors are in paratheses. (2) *** p < 0.01, ** p < 0.05, * p < 0.1
SOURCES: SEE TABLE 9

impact on the estimates of variables in the baseline regression. Notably, however, the estimates for scissors-pricing remain highly significant across all specifications.

Furthermore, in Column (2), the logarithm of industrial output value renders GDP insignificant. In Column (3), the inclusion of specific industrial outputs makes only the logarithm of machine output significance. These findings suggest that GDP plays a role in controlling for industrial production. In Column (4), the positive correlation between both education expenditure and research expenditure with industrial investment is observed. However, neither urban population size nor urban population share demonstrates a significant role in influencing industrial investment. Importantly, our results exhibit robustness even after accounting for these potential confounding factors.

TABLE 16 Confounders' test results

	Dependent variable: ln(*Total Industrial investment*)					
	Baseline	**Production capacity**		**Technology**	**Industrial demand**	
Independent variable	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
ln(*Food output*)	1.038	2.197***	2.047***	1.326*	0.935	0.664
	(0.743)	(0.772)	(0.673)	(0.698)	(0.792)	(0.815)
ln(*Rural food rationing*)	−5.121***	−5.793***	−4.878***	−3.950***	−5.119***	−5.683***
	(0.885)	(0.820)	(0.872)	(0.880)	(0.909)	(1.325)
ln(*Agricultural export*)	0.298	0.107	0.093	0.151	0.289	0.277
	(0.283)	(0.205)	(0.151)	(0.233)	(0.319)	(0.308)
ln(*GDP*)	3.442***	1.099	1.230*	1.574**	3.571***	3.866***
	(0.271)	(0.787)	(0.699)	(0.599)	(0.823)	(0.764)
Scissors-pricing	−1.879***	−1.573***	−0.872***	−1.457***	−1.868***	−1.796***
	(0.176)	(0.194)	(0.269)	(0.261)	(0.186)	(0.230)
Disasters	−0.197**	−0.151*	−0.065	−0.151	−0.199**	−0.202**
	(0.090)	(0.086)	(0.079)	(0.092)	(0.089)	(0.086)
ln(*Industrial output value*)		1.431***	0.411			
		(0.459)	(0.710)			
ln(*Machine output*)			0.264**			
			(0.113)			
ln(*Iron output*)			0.423			
			(0.252)			
ln(*Cement output*)			−0.209			
			(0.194)			
ln(*Education expenditure*)				1.027***		
				(0.285)		
ln(*Research expenditure*)				0.087		
				(0.091)		
ln(*Urban population*)					−0.177	
					(1.128)	
Urban population share						−5.321
						(9.555)
Great Leap Famine	Yes	Yes	Yes	Yes	Yes	Yes
Observations	31	31	31	31	31	31
Adjusted R^2	0.970	0.975	0.981	0.976	0.968	0.969

Note: (1) Robust standard errors are in paratheses. (2) *** p < 0.01, ** p < 0.05, * p < 0.1

SOURCES: SEE TABLE 9 FOR VARIABLES IN BASELINE ESTIMATES. *INDUSTRIAL OUTPUT VALUE* IS FROM NATIONAL BUREAU OF STATISTICS, *COMPREHENSIVE STATISTICAL DATA FOR FIFTY YEARS OF NEW CHINA, 1949–1998*: 21. *MACHINE OUTPUT*, *IRON OUTPUT* AND *CEMENT OUTPUT* ARE FROM *COMPREHENSIVE STATISTICAL DATA FOR FIFTY YEARS OF NEW CHINA, 1949–1998*: 39–42. *EDUCATION EXPENDITURE* IS FROM *COMPREHENSIVE STATISTICAL DATA FOR FIFTY YEARS OF NEW CHINA, 1949–1998*: 13. *RESEARCH EXPENDITURE* IS FROM *COMPREHENSIVE STATISTICAL DATA FOR FIFTY YEARS OF NEW CHINA, 1949–1998*: 15. *URBAN POPULATION* IS FROM *COMPREHENSIVE STATISTICAL DATA FOR FIFTY YEARS OF NEW CHINA, 1949–1998*: 1

Conducting additional province-level estimations. Some readers may have concerns about our nation-level analysis based on a small sample size (31 observations). Indeed, several considerations led us to refrain from using province-level data. These considerations are the following: (1) Proxy availability. For the Maoist era, China's *Statistical Yearbooks*, the main official sources, contain some regional/provincial data. However, many key proxies are unavailable at the province level. (2) Data missing. While the quality of the extant data may be satisfactory,[102] as discussed earlier,[103] there is a high degree of uncertainty due to missing observations. (3) Inconsistency with the planning feature of the Maoist economy. Under Mao's rule, scissors-pricing may be both intra-provincial and inter-provincial. In other words, the central authorities might employ scissors-pricing to transfer surpluses from an agricultural province, like Henan, to an industrial province such as Liaoning. Regression at the province level captures scissors-pricing within the province, but not necessarily between provinces.

Nevertheless, to further consolidate our analysis, following the study by Cheremukhin *et al.*,[104] we construct a province-level dataset with 301 observations as the maximum available, and re-evaluate our main analysis. Although four out of seven variables used in our baseline regression are not available, we identify a set of alternative proxies for regressions (see Appendix Table A.2).[105] Also, we include year fixed effects and province fixed effects. As shown in Appendix Table A.3, estimates for scissors-pricing remain significant, which provides additional support for our primary analysis.

4 Conclusions with Policy Implications

This study re-examines mechanisms and performance of the Maoist economy of 1950–80 in a new light. Our approach begins with preliminary observations of a mismatch between political instability (purges) and an inflated industrial

102 C. A. Holz, " 'Fast, Clear and Accurate': How Reliable Are Chinese Output and Economic Growth Statistics?" *China Quarterly* 173 (2003): 122–63.

103 R. P. Sinha, "Chinese Agriculture: A Quantitative Look." *Journal of Development Studies* 11/3 (1975): 202–23; T. G. Rawski, "What Is Happening to China's GDP Statistics?" *China Economic Review* 12/4 (2001): 347–54.

104 A. Cheremukhin, M. Golosov, S. Guriev, and A. Tsyvinski, "The Political Development Cycle: The Right and the Left in People's Republic of China from 1953." *American Economic Review* 114/4 (2024): 1107–1139.

105 To be specific, we use (1) total investment in fixed assets as a proxy for total industrial investment, (2) total rural population as a proxy for rural food rationing, (3) total export as a proxy for agricultural export, and (4) absorb disasters with year fixed effects.

GDP share on the one hand, and an unfavourable urban-rural employment divide, persistent austerity in food consumption, and perpetual arbitrage via rural-urban scissors-pricing on the other. After all, Mao's China was predominantly rural with only a marginal amount of modern growth.

These observations lead to a hypothesis that the Maoist economy was operated in accordance with a Quesnay bi-sectoral model (hence the term "Quesnay-Mao Model") whereby the industrial sector rode parasitically on its agricultural counterpart. This was a zero-sum game which discouraged incentives, sophistication, flexibility, opportunities, and momentum in the economy. This is a true revelation which challenges the conventional wisdom about the allegedly high performance of the Maoist economy.

To test this industry-riding-on-agriculture hypothesis, this study applies a holistic mathematical conceptualisation and empirical modelling. It reveals an urban-rural zero-sum game with high values among coefficient determinators.

With this Quesnay-Mao Model in place from 1950 to 1980, it was a tall order for Mao and his planners to improve living standards of the masses and make China modern at the same time. The closed nature of the Quesnay-Mao economy also explains why and how post-Mao China has been able substantially to outperform Mao's track record in terms of scale, scope and speed.[106]

Based on this historical lesson, the policy implications from this study are in line in the practice of "reforms and opening-up" (*gaige kaifang*) by abandoning state allocation of resources (thus reforms) and reviving the market both within China and beyond (thus opening-up). This has been a lesson that China has learnt in a hard way.

In this regard, the post-Mao reforms and opening-up was indeed a game changer that put China on a very different growth trajectory by unleashing China's un-tapped "absolute advantage" (Adam Smith) and "comparative advantage" (David Ricardo),[107] both being historically tested and validated

106 E.g. D. W. Chang, *China Under Deng Xiaoping: Political and Economic Reform* (New York: Palgrave Macmillan, 1988); R. *Evans, Deng Xiaoping and the Making of Modern China* (London: Hamish Hamilton, 1993); E. F. Vogel, *Deng Xiaoping and the Transformation of China* (Cambridge [MA]: Harvard University Press, 2013); M. Dillon, *Deng Xiaoping: The Man who Made Modern China* (London: I. B. Tauris, 2015).

107 E.g. A. Maneschi, *Comparative Advantage in International Trade: A Historical Perspective* (Cheltenham: Edward Elgar, 1998); R. Ruffin, "David Ricardo's Discovery of Comparative Advantage." *History of Political Economy* 34/4 (2002): 727–48; R. A. Brecher, Z. Chen and, E. U. Choudhri, "Absolute and Comparative Advantage, Reconsidered: The Pattern of International Trade with Optimal Saving." *Review of International Economics* 10/4 (2002): 645–56; S. Parrinello, "National Competitiveness and Absolute Advantage in a Global Economy." *Working Paper Dipartimento di Economia Pubblica* 95 (2006): 1–23; E. Bellino

globally in the past two centuries. In other words, post-Mao China has merely followed an internationally proven norm for growth and development to take place. This being so, serious scepticism is warranted as to the alleged uniqueness of what has now been widely circulated as the "China Model."

Appendix

TABLE A.1 Stationary test

Variable	DF test statistics
ln(*Total Industrial investment*)	−3.757
ln(*Food output*)	−3.307
ln(*Rural food rationing*)	−3.589
ln(*Agricultural export*)	−3.574
ln(*GDP*)	−4.792
Scissors-pricing	−3.731

Note: This table reports the augmented Dickey-Fuller (DF) t test for the unit root in time series. The null hypothesis here is that "the time series is not stationary." We perform DF test for each variable separately. 10% critical value is −3.092. 5% critical value is −3.457. 1% critical value is −3.770

TABLE A.2 Data availability at the provincial level

Baseline variable	Whether available	Alternative proxies	Source
Total industrial investment	No	*Total investment in fixed assets*	(1) *China Compendium of Statistics, 1949–2008*: 94–1112.
Food output	Yes	–	(1) *China Compendium of Statistics, 1949–2008*: 100–1118.
Rural food rationing	No	*Total rural population*	(1) *China Compendium of Statistics, 1949–2008*: 87–1105.

and S. M. Fratini, "Absolute Advantage and Capital Mobility in International Trade Theory." *European Journal of the History of Economic Thought* 29/2 (2022): 271–93.

TABLE A.2 Data availability at the provincial level (*cont.*)

Baseline variable	Whether available	Alternative proxies	Source
Agricultural export	No	*Total export*	(2) *Comprehensive Statistical Data for Fifty Years of New China, 1949–1998*: 159–885.
GDP	Yes	–	(1) *China Compendium of Statistics, 1949–2008*: 90–1108.
Scissors-pricing	Yes	–	(2) *Comprehensive Statistical Data for Fifty Years of New China, 1949–1998*: 148–874.
Disasters	No	*Year fixed effects*	–

SOURCES: (1) NATIONAL BUREAU OF STATISTICS, *XIN ZHONGGUO LIUSHINIAN TONGJI ZILIAO HUIBIAN, 1949–2008* (*NEW CHINA COMPENDIUM OF STATISTICS, 1949–1998*) (BEIJING: CHINA'S STATISTICS PRESS, 2010); (2) NATIONAL BUREAU OF STATISTICS, *XIN ZHONGGUO WUSHINIAN TONGJI ZILIAO HUIBIAN, 1949–1998* (*COMPREHENSIVE STATISTICAL DATA FOR FIFTY YEARS OF NEW CHINA, 1949–1998*) (BEIJING: CHINA'S STATISTICS PRESS, 1999)

TABLE A.3 Provincial Level Regressions

	Dependent variable: ln(*Total Industrial investment*)		
	Baseline	**Province-level regressions**	
Independent variable	**(1)**	**(2)**	**(3)**
ln(*Food output*)	1.038	0.313**	0.313*
	(0.743)	(0.140)	(0.151)
ln(*Rural food rationing*)	−5.121***	−0.427	−0.427
	(0.885)	(0.343)	(0.522)
ln(*Agricultural export*)	0.298	0.021	0.021
	(0.283)	(0.022)	(0.027)
ln(*GDP*)	3.442***	0.242***	0.242**
	(0.271)	(0.072)	(0.092)
Scissors-pricing	−1.879***	−0.458**	−0.458**
	(0.176)	(0.227)	(0.215)

TABLE A.3 Provincial Level Regressions (*cont.*)

	Dependent variable: ln(*Total Industrial investment*)		
	Baseline	**Province-level regressions**	
Independent variable	**(1)**	**(2)**	**(3)**
Year FE	No	Yes	Yes
Province FE	No	Yes	Yes
Observations	31	301	301
Adjusted R^2	0.970	0.921	0.921

Note: (1) In Column 1 and Column 2, robust standard errors are in paratheses. In Column 3, robust standard errors are in paratheses and are clustered at the province level. (2) *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

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