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DISCUSSION PAPER SERIES

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# China's Great Boom as a Historical Process

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DECEMBER 2020

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## ABSTRACT

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# China's Great Boom as a Historical Process

Beginning in the late 1970s, China's economy delivered the largest growth spurt in recorded history. Striking discontinuity between recent outcomes and the economic experience of the prior 200 years invites portrayal of recent events as a "China miracle" that requires neither economic nor historical analysis. This overlooks deep institutional constraints arising from authoritarian rule and its supporting elite networks and fails to recognize the link between central government weakness and the origins of the recent boom. In both the pre-1949 treaty ports and in the aftermath of the Cultural Revolution, the retreat of central control enabled episodes of economic openness and dynamism built upon 'bottom up' initiative and decentralized innovation. Historic legacies that shape political structures and individual behavior will continue to influence China's economic trajectory.

**JEL Classification:** L2, N1, N4, O4, O5, P3

**Keywords:** China, economic boom, growth constraints, authoritarian rule, elite networks, governmental weakness, innovation, productivity

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## **China's Great Boom as a Historical Process**

Loren Brandt and Thomas G. Rawski<sup>1</sup>

### **OVERVIEW**

Beginning in the late 1970s, China's economy delivered the largest growth spurt in recorded history. Striking discontinuity between recent outcomes and the economic experience of the prior 200 years invites portrayal of recent events as a "China miracle" that requires neither economic nor historical analysis. This overlooks the constraints that have limited China's economic progress and therefore misconstrues the boom's origin. History and economics figure prominently in our analysis of both.

Recent history exposes enduring tensions between political control and economic advance. Today, as in the past, authoritarian governance dominated by self-perpetuating elites occupies the core of China's political economy. The power and status of leaders at all levels rest on personal networks of patronage and loyalty. Rewarding supporters with money, positions and commercial opportunities forms a critical bulwark of elite adherence, and thus regime survival. The continuing need to distribute resources inclines leaders toward institutions and policy structures that place large flows of rents at their disposal. These arrangements generate costs, distortions and rigidities that constrict growth, widen inequality, and threaten the economy's capacity to adapt to change. Chinese governance systems thus conceal internal tensions between political strength and economic advance.

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<sup>1</sup> The authors, who are entirely responsible for what follows, gratefully acknowledge advice from Debin Ma, Evelyn Rawski, Andrew Batson, Philipp Boeing, Chris Bramall, Jeffrey Guarneri, Lyric Hale, Charles Hayford, Nicholas Lardy, Stephen Morgan, Andrew Nathan, Kevin O'Rourke, Dorothy Solinger, Jeffrey Williamson, Tim Wright and Haihui Zhang.

A long succession of Chinese states has pursued national prosperity as a tool for maintaining popular support and an instrument for fulfilling external ambitions. Even so, the preservation of hierarchy, networks and control, imperatives reflecting the grip of “ancient structures of social order and political values that are too deep for rapid change,”<sup>2</sup> normally outweighs possible economic gains from disruptive institutional change in the calculus of incumbent elites.

The formidable attraction of the status quo directs attention to shocks and regime fragility as possible incubators for destabilizing changes that could not otherwise survive elite opposition.

China’s recent boom emerged from an episode of extreme central weakness following the Cultural Revolution, a massive shock that “effectively destroyed” China’s “apparatus of civilian rule,” left “the legitimacy of the CCP. . . deeply shaken” and “severely damaged the national bureaucracy, leaving it weak and divided.” While social order remained intact, with no major interruption of food supplies, transport or utility services, “most ministries closed down,” rendering Beijing unable to “monitor compliance with many kinds of orders.” This brought “the inevitable structural consequence – a drift towards decentralization.”<sup>3</sup>

Temporary withdrawal of central oversight permitted local leaders and groups of households to defy official mandates by reviving and extending short-lived rural reforms begun following the 1959-60 famine.<sup>4</sup> These initiatives restored personal incentives to three-quarters of China’s population and work force, by reinstating household farming, relaxing constraints on

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<sup>2</sup> J. K. Fairbank, “The Unification of China,” in R. MacFarquhar and J.K. Fairbank eds., *The Cambridge History of China* vol. 14, pt. 1 *The Emergence of Revolutionary China, 1949-1965* (Cambridge: Cambridge University Press, 1987), 26.

<sup>3</sup> A. G. Walder, “Bending the Arc of Chinese History: The Cultural Revolution’s Paradoxical Legacy,” *China Quarterly* 227 (2016): 617-18; L. T. White III. *Unstatelty Power: Local Causes of China’s Economic Reforms* (Armonk: M.E. Sharpe, 1998), i: 19; C.G. Xu, “The Fundamental Institutions of China’s Reforms and Development,” *Journal of Economic Literature* 49.4 (2011), 1090.

<sup>4</sup> D.L. Yang. *Calamity and Reform in China: State, Rural Society, and Institutional Change since the Great Leap Forward* (Stanford: Stanford University Press, 1996).

non-agricultural activity in the countryside and partially reopening rural markets. Rural reform sparked quick compression of a massive gap between actual and potential output,<sup>5</sup> leading to an unprecedented nationwide rise in rural incomes. Following two decades of famine and deprivation, this stunning reversal encouraged a succession of partial reform initiatives in which enhanced openness, market liberalization and specialization, together with the prior accumulation of human, technological and organizational capabilities, transformed opportunities arising from internal inefficiency and global backwardness into an economy-wide boom.

Long before the start of China's recent boom, a parallel episode linking regime weakness and economic innovation figured prominently in China's nineteenth century history, when twin shocks of foreign encroachment and domestic rebellion stripped the Qing throne of both revenue and authority. Erosion of central power created space for new institutions - some externally imposed, others emerging organically - that contributed to significant growth and structural change through the late nineteenth and early twentieth centuries.

The interregnum following the Qing collapse ended with nominal unification under the Nanjing-based Guomindang in 1927. State weakness, exacerbated by domestic insurgency and by factional strife within the Nanjing leadership, limited the regime's ability to tax agriculture, the economy's largest sector, hampering efforts to build a modern state. External factors - the general retreat from globalization following World War I, the Great Depression, and the escalation of Japanese economic and military pressure - compounded these difficulties.

After presiding over the formation of a strong central state that for the first time in Chinese history penetrated to the village level, Mao Zedong's determination to accelerate growth and maintain revolutionary momentum led him to promote the Great Leap Forward in

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<sup>5</sup> Potential output refers to the maximum production attainable with current stocks of land, labor, capital and knowledge.

the countryside and later, to launch the Cultural Revolution. Both initiatives crippled the functioning and authority of the central state.

In the late 1970s, central weakness opened the door to an historic episode of growth, initially powered by the very 'small peasant' economy that agricultural collectivization had sought to eradicate twenty-five years earlier. Rapid but uneven growth through the 1980s, with the countryside and non-state enterprises racing ahead of urban and state-owned segments of the economy, resulted in mounting economic and political tensions that culminated in high-level inner-Party struggles, nationwide protests and the June 1989 Tiananmen Square Massacre.

The political crisis facing the CCP, amplified by the Soviet Union's collapse, enabled a fresh round of reforms in the mid-1990s that combined elements of internal and external economic liberalization with centralizing initiatives. By ameliorating the tensions underlying the 1989 explosion, these initiatives allowed nearly two further decades of rapid growth. At the same time, these reforms strengthened the authoritarian hand of the state.

We begin by laying out key elements showing how shocks and central government weakness have decisively influenced China's economic trajectory during the past 200 years. We examine four periods: the decades between the establishment of the post-Opium War treaty system and the fall of the Qing dynasty, the Republican decades prior to the 1937 outbreak of war between China and Japan, the early People's Republic (PRC) decades under Soviet-inspired economic planning, and the reform era following the death of Mao Zedong.

### **Authoritarian Governance and Elite Persistence**

In Imperial, Republican and Communist China, power resides in authoritarian hierarchies built on patronage networks and loyalty. Neither law nor custom limits state power; indeed, the state employs both to maintain order, harmony and control. The regime vigorously promotes a ruling ideology – formerly Confucianism, later Chinese variants of Marxism and, under Xi



Jinping, elements of both - that portrays the incumbent polity as a fount of moral authority and a bulwark of unity, order and stability. Ideological commitment is an important criterion for government appointment. With shared ideology offering a partial substitute for bureaucratic supervision, rulers allow officials to exercise wide discretion in governing as long as outcomes satisfy the expectations of superiors.

Competition to attain and preserve elite standing within these hierarchies coexists with authoritarian rule, with the state exerting strong influence over the success or failure of individuals, households and business ventures. Elite families maneuver to maintain their status during major political transitions even as newcomers strive to promote their own advance.<sup>6</sup> Researchers observe high rates of elite persistence during Qing<sup>7</sup> and into the twentieth century. Studies of the PRC era reveal a complex picture including both expanded access to elite universities for students from lower socio-economic backgrounds and “a remarkable persistence of status” over generations. Even in the face of radical social transformation and extreme redistribution of wealth, “grandchildren of pre-revolution elites” obtained higher 2010 average incomes “than their counterparts from non-elite households.”<sup>8</sup>

## The Symbiosis of Personal and Official Networks

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<sup>6</sup> J.W. Esherick, *Ancestral Leaves: A Family Journey through Chinese History* (Berkeley: University of California Press, 2011); Y. Bai and R.X. Jia, “Elite Recruitment and Political Stability: The Impact of the Abolition of China’s Civil Service Exam,” *Econometrica* 84.2 (2016), 677-733; S. Seagrave, *The Soong Dynasty* (New York: Harper & Rowe, 1985).

<sup>7</sup> Y. Hao and G. Clark, “Social Mobility in China, 1645-2012: A Surname Study” (unpublished 2012), cite information showing that “87% of *juren* [successful graduates of province-level imperial civil service examinations] came from families containing *juren* or *jinshi* [graduates of the highest imperial examination] within the previous five generations.”

<sup>8</sup> J.Z. Lee et al, “Changes in the Social Origins of China’s Educated Elite, 1865-2014 (undated PowerPoint presentation); G. Clark, *the Son also Rises: Surnames and the History of Social Mobility* (Princeton: Princeton University Press, 2014), 184; A.F. Alesina et al, “Persistence through Revolutions” (NBER Working Paper 27053, 2020), 27, 34.

The reality of arbitrary and unchecked power in the hands of the state and its minions exposes individuals and businesses to frightening uncertainty. In search of protection, individuals and organizations enmesh themselves in patron-client networks in which long-term exchanges of money, favors and loyalty build a base of support for elite leaders and offer a protective shield for subordinate participants. Leaders leverage these same networks to promote their own advancement.

Uncertainty also intensifies efforts by individuals and networks to ascend the state's finely variegated hierarchies of rank and distinction. The PRC has added awards for firms and localities to the traditional complex of individual laurels. Firms now seek recognition as provincial, national or international innovators. Townships and counties earn plaudits for successfully implementing specific policies or for surpassing benchmark levels of production, exports or family planning. Today, as under the Qing, these distinctions, as well as promotion through the state's nomenklatura system, bring substantial accretions of wealth, prestige and security.

Building on commonalities arising from kinship, native place, dialect, occupation, education or other particularistic affiliation, networks establish zones of mutual trust and support that enhance security and alleviate the risk of arbitrary external intervention. These protections, however, restrict openness, entry, competition and, therefore, innovation. Networks steer funds and opportunities to well-connected insiders, stifling the rise of newcomers and blocking the transfer of underutilized resources to more promising alternatives. Participants utilize connections (关系 *guanxi*) to sidestep inconvenient legal or regulatory requirements.

Networks propagate a pervasive culture of gift exchange. Personal network interests figure prominently in official and private decisions regarding such matters as appointments, promotions and contracts.<sup>9</sup> Despite episodic enforcement efforts, comfortable tolerance for

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<sup>9</sup> J. Osburg, *Anxious Wealth: Money and Morality among China's New Rich* (Stanford: Stanford University Press, 2013) offers a granular account of networking among private entrepreneurs.

bribery permeates government operations. As prime beneficiaries of such transactions, Communist elites, like their Qing and Republican predecessors, avoid taxation of their personal property by ignoring readily available anti-corruption mechanisms – public disclosure of property ownership and of officials’ personal and family assets in today’s China or updating Qing land registers. A popular ditty attributed to both Guomindang and Communist leaders cynically portrays corruption as the lifeblood of Party operations: “Fight corruption and destroy the Party, neglect corruption and destroy the country” (反腐亡党，不反则亡国).

### **Institutional Arrangements often Impede Economic Advance**

Chinese regimes seek to enhance their longevity by creating and strengthening interlocking sets of economic, social and political ties that align interests, especially among national and regional elites. Despite the prevalence of features associated with competitive markets, such as numerous participants, extensive personal mobility and rapid diffusion of information,<sup>10</sup> these arrangements leave the economy pockmarked with barriers and distortions that stifle fruitful innovations and economic growth. Reform attacks the interests and privilege of the very elites whose cooperation and support facilitate the incumbent regime’s functioning and survival. This dynamic, which virtually ensures potent opposition to disruptive reform, has operated throughout China’s modern history, and remains visible today.

Qing merchants patronized promising scholar-officials, contributing informal revenues that raised officials’ personal incomes and supported state-managed projects. Officials reciprocated by ensuring privileged market access and protecting mercantile clients against rivals. Gail Hershatter traces officially supported monopoly rights of Tianjin’s transport guilds from the Kangxi reign (1661-1722) to the Republican era, when guilds prevented factories from

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<sup>10</sup> R.H. Myers and Y.C. Wang, “Economic Developments, 1644-1800,” chap. 10 in *The Cambridge History of China v.9 pt.1* (Cambridge: Cambridge University Press, 2008), ed. W.J. Peterson; R.H. Myers, *The Chinese Economy, Past and Present* (Belmont CA: Wadsworth, 1980), chap. 4.

employing trucks to circumvent long-standing arrangements that protected traditional forms of transport.<sup>11</sup>

Shannon Brown finds that a “symbiotic coalition of Chinese merchants, organized in guilds, and government officials – was quite effective in preventing innovation” efforts on the part of Jardine Matheson, a prominent and well-connected British firm, which sought to introduce mechanized methods for processing silk and soybeans during the late nineteenth century. Brown’s conclusion: “market forces alone could not overcome vested-interest opposition. . . even in the transfer of a demonstrably superior technology.”<sup>12</sup>

During the 1930s, Shanghai Green Gang leader Du Yuesheng used his alliance with government leaders to deploy “the power of the Guomindang authorities,” giving himself a “decisive advantage” over rival entrepreneurs that limited competition and growth in banking, regional commerce, and multiple sectors of Shanghai’s economy.<sup>13</sup>

Continuing a pre-1978 policy, early reforms maintained official preference for state enterprises that prevented rural township and village enterprises from selling goods outside their home counties, and often restricted the sectors they could enter. Through the 1980s and 1990s, the center frequently barred private firms from sectors open to foreign investment, often in joint ventures with state-sector partners.<sup>14</sup> At the local level, privatization of rural township and village enterprises (TVEs) often involved underpriced transfers to managers or supervisory officials with local government connections.

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<sup>11</sup> *The Workers of Tianjin, 1900-1949* (Stanford: Stanford University Press, 1986), 117, 134.

<sup>12</sup> S.R. Brown, “The Ewo Filature: A Study in the Transfer of Technology to China in the 19<sup>th</sup> Century,” *Technology and Culture* 30.3 (1979), 550-68; “Cakes and Oil: Technology Transfer and Chinese Soybean Processing, 1860-1895,” *Comparative Studies in Society and History* 23.3 (1981): 449-63.

<sup>13</sup> B. G. Martin, *the Shanghai Green Gang: Politics and Organized Crime, 1919-1937* (Berkeley: University of California Press, 1996), 212.

<sup>14</sup> Y.S. Huang, *Selling China: Foreign Direct Investment during the Reform Era* (Cambridge: Cambridge University Press, 2003), chap. 4 chronicles discrimination against private firms.

## **Evolving State Capacity for Promoting Development**

Strong state capacity offers multi-dimensional support for economic growth. States amass resources for investment and promote public goods – including national security, law and order, education and physical infrastructure.

Notwithstanding China's formidable history of administrative competence, the Qing imperium, preoccupied with domestic stability and with military extension of its inland frontiers, was slow to develop the knowledge, organizational capacity and financial resources that might have permitted an effective response to challenges arising from the industrialization of Europe, North America and Japan.<sup>15</sup>

The short-lived Guomindang regime never attained full national control and, like its Qing predecessors, depended on local elites to maintain order and implement central directives. Nonetheless, it achieved substantial progress in building organizational structures and programmatic approaches essential to systematic promotion of economic growth.<sup>16</sup> These advances provided important building blocks for post-1949 developmental efforts.

## **Centrality of Agriculture in the Development Process**

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<sup>15</sup> I. C.Y. Hsü, "The Great Policy Debate in China, 1874: Maritime Defense vs. Frontier Defense," *Harvard Journal of Asiatic Studies* 25 (1964-1965), 212-228, emphasizes the consequences of the Qing court's decision to concentrate military forces on protecting its inland frontiers. D.H. Perkins, "Government as an Obstacle to Industrialization: The Case of Nineteenth-Century China," *Journal of Economic History* 27.4 (1967), 478-92 emphasizes the state's limited resources and capacity.

<sup>16</sup> J. Strauss, *Strong Institutions in Weak Politics: State-building in Republican China, 1927-1940* (Oxford: Clarendon Press, 1998); W.C. Kirby, "Engineering China: Birth of the Developmental State, 1928-1937, in W.H. Yeh ed., *Becoming Chinese: Passages to Modernity and Beyond* (Berkeley: University of California Press, 2000), 137-160.

Low agricultural productivity and a high labor force share in farming are common to almost all poor countries. Low productivity is often a consequence of product and market distortions and insecure property rights in land. Rising agricultural productivity facilitates reallocation of labor and other resources from farming to higher productivity industry and services. It also enhances agriculture's contribution to development as the major source of food, raw materials for industry, tax revenue and even foreign exchange.<sup>17</sup>

In a land-scarce environment like China's, investments in high-yielding seed varieties, irrigation and water control, and complementary inputs such as chemical fertilizers are critical to raising agricultural productivity. Success requires a combination of state effort, especially in the form of public investments in R&D for adapting new seed varieties to local conditions and extension services to promote their use, and market incentives for adoption.<sup>18</sup>

Chinese research on high yielding varieties began during the 1920s but achieved substantial scale only under the PRC. Beginning in the late 1950s, planning errors and weak rural incentives severely truncated the benefits of these efforts. With upwards of 75 percent of the work force trapped in the countryside, similar to the Qing percentage, stagnation of agricultural productivity effectively blocked escape from low per capita income throughout Mao Zedong's lifetime.

### **Modest Changes Can Have Large Effects**

With resistance likely to escalate as proposed reforms impinge on core elite interests, reformers may deliberately focus on institutions and localities of limited concern to incumbent

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<sup>17</sup> B. F. Johnston and P. Kilby, *Agriculture and Structural Transformation: Economic Strategies in Late-Developing Countries* (Oxford: Oxford University Press, 1975).

<sup>18</sup> Y. Hayami and V. Ruttan, *Agricultural Development: An International Perspective*. (Baltimore: Johns Hopkins University Press, 1985).

elites. Advocates and opponents of change have repeatedly underestimated the dynamic consequences of seemingly modest innovations: nineteenth century treaty ports, twentieth century Special Economic Zones, and the shift from collective to household farming around 1980 offer prominent examples. No less an authority than Deng Xiaoping reported that buoyant growth following the lifting of restraints on rural industry “was not something I had thought about. Nor had the other comrades. This surprised us.”<sup>19</sup>

### Competing Visions of China’s Trajectory.

The nineteenth century spawned rival visions of reform and development that continue to inform contemporary policy debates. One perspective seeks national strength from mastering Western technologies without, however, absorbing the accompanying socio-cultural penumbra. Wei Yuan 魏源, an early nineteenth century reformer, supported “the adoption of Western naval hardware and technology” while embracing “ideals, inspiration, and historical traditions [that were] wholly shaped by Yuan and Ming precedents.”<sup>20</sup> Several decades later, Zhang Zhidong 张之洞, a prominent official, popularized this perspective in the epigram: 中学为体, 西学为用 meaning that China would **utilize** [用] western technology and devices while retaining its cultural **essence** [体] – a formulation that echoes earlier discussion surrounding the importation of Buddhism.<sup>21</sup>

A competing paradigm finds its fullest expression in a remarkable 1859 treatise by Hong Ren’gan 洪仁玕, a Taiping leader who studied and worked with Christian missionaries before joining the rebels. Stephen Platt describes Hong’s ‘New Work for the Aid of Government’ as

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<sup>19</sup> Quoted in White, *Unstately Power*, i: v.

<sup>20</sup> J. K. Leonard, *Wei Yuan and China’s Rediscovery of the Maritime World* (Cambridge: Harvard University Council on East Asian Studies, 1984), 198-9.

<sup>21</sup> W.T. DeBary, W.T. Chan and C. Tan eds., *Sources of Chinese Tradition* (New York: Columbia University Press, 1964), ii: 82; *The Encyclopedia of Buddhism* <https://encyclopediaofbuddhism.org/wiki/Essence-Function>.

offering “for the very first time in a Chinese context, a vision of the country as a modern industrial power [including] . . . a litany of proposals that. . . would become catch-phrases for later Chinese reformers into the twentieth century and beyond.”<sup>22</sup> Platt notes the “remarkable similarity in spirit” that unites Hong’s “cherished reforms - the railroads, the law courts, the trading entrepôts, the newspapers, mines, banks, and industries” with the realities of Japan’s Meiji-era “program of industrialization and social transformation.”<sup>23</sup> Hong’s admiration for private business, democratic government, impartial news reporting, rule of law, and open trade “entitle him to a place in the front rank of Chinese who tried in the nineteenth century to commend Western ideas to the attention of their countrymen.”<sup>24</sup>

The transition from imperium to republic found both groups riveted on the reality of Japan – Asian rather than European, geographically close, culturally familiar – “as the model of what their own country must become if it were to have any chance of surviving into the future”<sup>25</sup> and the destination for thousands of Chinese students. Amid continuing “tension between acceptance and rejection of Western modernity,”<sup>26</sup> opinion among Nationalist supporters and their Communist rivals coalesced around state-centric, domestically focused strategies associated with late Qing self-strengthening efforts.

The post-1978 reform era witnessed revived advocacy for a system with less state control, greater market orientation and increased international openness in contrast to the Mao-era tendency to repress dissent, suffocate private business, suppress market allocation

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<sup>22</sup> S. R. Platt, *Autumn in the Heavenly Kingdom: China, the West, and the Epic Story of the Taiping Civil War* (New York: Knopf, 2012), 59-61. F. Michael, *The Taiping Rebellion: History and Documents* (Seattle: University of Washington Press, 1966-71), 3: 751ff provides a translation of Hong’s proposal.

<sup>23</sup> Platt, *Heavenly Kingdom*, 362, 338.

<sup>24</sup> K.W. So, E. P. Boardman and C. P’ing, “Hung Jen-Kan, Taiping Prime Minister, 1859-1864,” *Harvard Journal of Asiatic Studies* 20.1/2 (1957), 294.

<sup>25</sup> Platt, *Heavenly Kingdom*, 362.

<sup>26</sup> F. Boecking, *No Great Wall: Trade, Tariffs, and Nationalism in Republican China* (Cambridge: Harvard University East Asia Center, 2017), 236.



and minimize global involvement. Strong opposition to liberalizing initiatives, however, prompted reformist Premier Zhao Ziyang to portray policies that gave “full play” to market forces; embraced “the renewed centrality” of foreign economic and technical exchange; and favored the coast, as steps toward “the initial stage of socialism” and the achievement of ‘self-reliance’.”<sup>27</sup>

Tensions between broad approaches, one more open and market-oriented, the other emphasizing state developmental leadership, persist. Even as China embraced globalization following its 2001 entry into the World Trade Organization, government bodies at the central, provincial and even municipal levels continued to issue detailed plans calling for bureaucratic choice of projects, selection of firms and distribution of financial resources.<sup>28</sup> Conflict resurfaced in the sudden about-face from the 2013 CCP Central Committee call for an economy “centering on the decisive role of the market in allocating resources. . .[and] greatly reducing the government’s role in the direct allocation of resources” to the 2015 unveiling of Xi Jinping’s signature “Made in China 2025” program, an inward-looking, Soviet-style agenda with the opposite orientation.<sup>29</sup>

## NINETEENTH CENTURY DEVELOPMENTS

Internal and external shocks diminished the power and authority of the nineteenth century Qing state. Domestic uprisings, most notably the mid-century Taiping rebellion, drained

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<sup>27</sup>J. Gewirtz, *Unlikely Partners* (Cambridge: Harvard University Press, 2017), 116, 191, 196.

<sup>28</sup> For example, H.H. Lai, “China’s Western Development Program: Its Rationale, Implementation, and Prospects,” *Modern China* 28.4 (2002), 432-66; C. Cao, R.P. Suttmeier and D.F. Simon, “China’s 15-year Science and Technology Plan,” *Physics Today* December 2006, 38-43.

<sup>29</sup> “Decision of the Central Committee of the Communist Party of China on Some Major Issues Concerning Comprehensively Deepening the Reform.” Posted January 16, 2014’ Accessed October 10, 2017 from [http://www.china.org.cn/china/third\\_plenary\\_session/2014-01/16/content\\_31212602.htm](http://www.china.org.cn/china/third_plenary_session/2014-01/16/content_31212602.htm); 《中国制造 2025》重点领域技术路线图 [Keypoint technology roadmap for Made in China 2025; Beijing: 国家制造强国建设战略咨询委员会, 2015].

the imperial treasury and forced the center to rely on provincial gentry to organize and finance regional armies. At the same time, growing foreign pressure, initially from the European powers and subsequently from Japan, undermined Qing sovereignty, resulting in the treaty port system described in James Kung's chapter.

Domestic rebellion in which incumbent Han elites supported imperial Manchu rulers in defense of the status quo destroyed cities, turned fertile agrarian regions into wastelands and created waves of refugees. Foreign incursions, by contrast, injected new technologies and breached trade restrictions, thus encouraging economic growth. Telegraphic communication and steam transport lowered transaction costs and helped link domestic and overseas markets. Treaties eliminating barriers and limiting taxation of overseas trade created new opportunities for Chinese farmers and consumers. Transit passes intended to exempt foreign goods from internal taxes intensified domestic competition by permitting Chinese merchants to avoid transit taxes and other restrictions on internal trade.<sup>30</sup> High domestic interest rates encouraged foreign banks and mercantile houses to inject new funds into China's capital-constrained economy, lowering the cost of financing business within the treaty ports and along major commercial routes linked to overseas trade.<sup>31</sup>

The creation of semi-autonomous treaty ports unleashed a flood of innovation, especially in Shanghai, which anticipated Shenzhen's contemporary role as a magnet for ambitious and entrepreneurial migrants, an entry port for new ideas and a hotbed of institutional innovation.<sup>32</sup> The relative obscurity of both locales – Shanghai as a county seat, Shenzhen as a sleepy village – limited the capacity of conservative elites – degree-holding gentry in nineteenth-century Shanghai, state-owned enterprise advocates in late twentieth

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<sup>30</sup> E. Motono, *Conflict and Cooperation in Sino-British Business, 1860-1911* (New York: St. Martin's, 2000).

<sup>31</sup> Y.P. Hao, *The Commercial Revolution in Nineteenth-Century China: The Rise of Sino-Western Mercantile Capitalism* (Berkeley: University of California Press, 1986), 106-10, 345.

<sup>32</sup> R.X. Jia, "The Legacies of Forced Freedom: China's Treaty Ports," *The Review of Economics and Statistics* 96.4 (2014): 596-608.

century Shenzhen – to obstruct innovation. In both instances, local economic dynamism prompted competitive reactions elsewhere: self-initiated open ports<sup>33</sup> under the Qing, multiplication of special economic zones under the PRC and relaxation of restrictions on entry and competition in both systems.

Despite their differing economic consequences, internal and external challenges to Qing rule were mutually reinforcing. Domestic turbulence limited the capacity of the Qing state to confront foreign incursions. Foreign-controlled schools, newspapers and publishers quickly transformed Shanghai and other foreign-controlled locales into transmission belts for new ideas, technologies and institutional arrangements.<sup>34</sup> The Taiping leadership, for example, included men who had lived, worked and studied in Hong Kong, ceded to Great Britain in 1842.

This double-barreled assault on the Qing imperium opened new channels of mobility entirely separate from the long-standing paths of academic examination and mercantile degree purchase.<sup>35</sup> The desperate struggle to subdue the Taipings established military success as an alternate route to high office for men with little academic distinction.<sup>36</sup> ‘Modern’ schools in Hong Kong and various treaty ports produced cosmopolitan graduates whose technical knowledge, language skills and business acumen marked them as indispensable allies of the provincial magnates whose defeat of the Taipings thrust them into national prominence.

These developments initiated a gradual rise in the economic payoff to ‘modern’ relative to Confucian education.<sup>37</sup> As new circumstances spread beyond the treaty ports and new

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<sup>33</sup> J.K.S. Kung, chap. 11 in this volume.

<sup>34</sup> Ibid.

<sup>35</sup> E. Kaske, Fund-Raising Wars: Office Selling and Interprovincial Finance in Nineteenth-Century China,” *Harvard Journal of Asiatic Studies* 71.1 (2011), 69-141 documents growing sale of both degrees and offices.

<sup>36</sup> Esherick, *Ancestral Leaves*, 2011, 67-8; D. R. Reynolds with C. T. Reynolds, *East Meets East: Chinese Discover the Modern World in Japan, 1854-1898* (Ann Arbor: Association for Asian Studies, 2014), 8, 229.

<sup>37</sup> N. Yuchtman, “Teaching to the Tests: An Economic Analysis of Traditional and Modern Education in Late Imperial and Republican China,” *Explorations in Economic History* 63 (2017): 70-90.

activities like railways, elite families began to withdraw their sons from traditional schooling. The resulting erosion in a key bulwark of the imperial system accelerated when China's crushing defeat in the 1894-95 Sino-Japanese War, followed in 1900 by the rout of anti-foreign Boxer militias at the hands of a Western military expedition, forced traditional elites to recognize the inevitability of sweeping change.

Notwithstanding the dynasty's ignominious collapse following decades of directionless economic fluctuation, the century's closing decades substantially enhanced China's longer-term potential for economic advance. Telegraphic communication, along with steam and rail transport rested on solid beachheads.<sup>38</sup> Expanded access to modern education, along with the multiplication of information flows, produced a considerable group of prosperous, cosmopolitan, Western-educated elites.<sup>39</sup> Domestic opposition to Chinese-owned factories crumbled after the Treaty of Shimonoseki allowed Japanese nationals and, thanks to most-favored nation treaty provisions, other foreigners to enter manufacturing. As with international trade and domestic commerce, privileges won through foreign military pressure encouraged domestic economic growth.

Beginning around 1900, a "wave of scientific translations [most] from Japanese sources" broadcast new knowledge.<sup>40</sup> Conservative resistance to imported technologies, factory industry and modern education diminished. By 1911, China's economy and society were far more open to competition and change than in 1800 or 1850. The Guangxu Emperor's 1893 edicts ordering officials to halt the prior practice of seizing assets from returning overseas migrants illustrates

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<sup>38</sup> R. Thompson, "The Wire: Progress, Paradox, and Disaster in the Strategic Networking of China, 1881-1901," *Frontiers of History in China* 10.3 (2015): 395-427.

<sup>39</sup> Y.P. Hao, *The Comprador in Nineteenth Century China: Bridge between East and West* (Cambridge: Harvard University Press, 1970), 102, for example, places the number of current and former compradors at 20,000 by 1900.

<sup>40</sup> D. Wright, "Yan Fu and the Tasks of the Translator," in M. Lackner, I. Amelung and J. Kurz eds., *New Terms for New Ideas: Western Knowledge and Lexical Change in Late Imperial China* (Leiden: Brill, 2001), 235.

this growing openness.<sup>41</sup> The farm sector, although far from dynamic, comfortably supported growing urban and non-agricultural populations in the Lower Yangzi and Lingnan regions.

Despite these gains, substantial obstacles continued to restrict China's growth prospects. Modernizing advances remained local rather than regional or national. The state, a key link in all latecomers to modernization, remained weak and unfocused. In the late 1880s, "the Japanese government's published annual budget was a matter of amazement to many Chinese."<sup>42</sup> Writing in 1897, William Mayers described the operation of China's central government as "registering and checking the actions of various provincial administrations [rather] than. . . assuming a direct initiative in the conduct of affairs."<sup>43</sup> Even for the management of currency, "the Board of Revenue couldn't be the source of a coherent monetary policy. It had no power to inspect the quality of provincial coins. . . . [and] could comment on provincial memorials [to the throne] only if they were referred to the Board."<sup>44</sup>

## REPUBLICAN PERIOD

A tumultuous interregnum that began and ended with regime change, China's Republican era (1912-1949) witnessed extremes of political instability, cultural ferment and openness to international exchange, along with modest economic growth, considerable expansion of state capability and the emergence of trends that foreshadowed future developments.

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<sup>41</sup> M. R. Godley, *The Mandarin-Capitalists from Nanyang: Overseas Chinese Enterprise in the Modernisation of China 1893-1911* (Cambridge: Cambridge University Press, 1981), 240-1.

<sup>42</sup> Reynolds and Reynolds, *East Meets East*, 341.

<sup>43</sup> Quoted in F.H.H. King, *A Concise Economic History of Modern China (1840-1961)*. (New York: Praeger, 1969), 21-2.

<sup>44</sup> *Ibid*, 34.

Following the Qing collapse, a succession of republicans, monarchists and military leaders failed to restore political unity. The Nanjing-based Nationalist administration under Chiang Kai-shek (Jiang Jieshi) won international recognition following the successful Northern Expedition (1927). Its sphere of actual control, however, was less than complete even before Japanese armies forced the shift of its capital to Wuhan and later to Chungking (Chongqing).

Chinese elites, shaken by humiliating military setbacks and the Qing collapse, plunged into an intense and disputatious search for cultural renewal. Elite gentrymen who had formerly met modern innovations with visceral hostility now invested in railways and joined newly established Chambers of Commerce. Radical ideas fostered in treaty port schools and championed by students returning from overseas studies leapt to the fore. As Pei Gao's chapter shows, new subjects, textbooks and ideas spread far beyond coastal enclaves. Newspapers and radio broadcasts<sup>45</sup> amplified the circulation of novelty. In distant Shanxi, a school principal reprimanded a traditionally educated teacher who encouraged students to celebrate the lunar New Year.<sup>46</sup> Hu Shi (1891-1962), a Cornell University graduate and future Chinese ambassador to the United States, cruelly mocked the ignorance of ordinary folk.<sup>47</sup>

Elite preference for authoritarian politics survived this intellectual turmoil. Early English-Chinese dictionaries rendered "democracy" as "disorderly administration by the many" and "abuse of power by the mean."<sup>48</sup> A 1903 visit to North America convinced the influential reformer Liang Qichao that "resort to rule by. . . majority. . . would be the same as committing national suicide. . . . the Chinese people must for now accept authoritarian rule."<sup>49</sup> Nearly a

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<sup>45</sup> W.H. Yeh, *Shanghai Splendor: Economic Sentiments and the Making of Modern China, 1843-1949*, (Berkeley: University of California Press, 2007), 34.

<sup>46</sup> H. Harrison, *The Man Awakened from Dreams: One Man's Life in a North China Village 1857-1942*, (Stanford: Stanford University Press, 2005), 97.

<sup>47</sup> 差不多先生 (Mr. Close-Enough).

<sup>48</sup> G.T. Jin and Q.F. Liu, "From 'Republicanism' to 'Democracy': China's Selective Adoption and Reconstruction of Modern Western Political Concepts (1840-1924)," *History of Political Thought* 26.3 (2005), 479-80.

<sup>49</sup> A. J. Nathan, *Chinese Democracy* (Berkeley: University of California Press, 1986), 60.

century later, Andrew Nathan observes that most Chinese intellectuals, including opponents of the Communist Party's political monopoly, continue to "fear the disorder they believe would flow from any weakening of party control. . . [and] accept the party's claim that political order. . . requires leaders with strong authority."<sup>50</sup>

The inflow of new ideas reflected a general climate of openness. China's share of global trade rose from 1.3 percent in 1913 to 2.1-2.3 percent during 1927-1929 and 3.7 percent in 1936; comparable PRC figures languished below one percent throughout 1968-1980, regaining the 1936 level only after 2000.<sup>51</sup> Throughout the early 20<sup>th</sup> century, China was also a major beneficiary of foreign direct investment, much of it from advanced countries. By the 1930s, China held more than ten percent of the global stock of inbound foreign direct investment and over 15 percent of the stock located in developing nations, with the largest portion directed toward (mostly rail) transportation.<sup>52</sup>

Openness strengthened the economy, particularly in coastal regions where modern education, returned overseas students and migrants, and frequent interaction with foreign business stoked the transfer of technologies and the spread of commercial knowledge among would-be Chinese entrepreneurs. The history of numerous industries, among them mining, railways, banking, department stores and matches reflects this beneficial *mélange*.<sup>53</sup>

While limited growth of fiscal revenue, much of it immediately needed for the military, signaled the continuing restriction on governmental development efforts,<sup>54</sup> comparing the

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<sup>50</sup> Ibid, 231.

<sup>51</sup> See Appendix.

<sup>52</sup> See Appendix.

<sup>53</sup> Among many others, see S. Cochran, *Big Business in China: Sino-Foreign Rivalry in the Cigarette Industry, 1890-1930* (Cambridge: Harvard University Press, 1980) and E. Köll, *Railroads and the Transformation of China* (Cambridge: Harvard University Press, 2019).

<sup>54</sup> T.G. Rawski, *Economic Growth in Prewar China* (Berkeley: University of California Press, 1989) 12-32.

Nanjing decade (1927-1937) with circumstances in 1880 or 1910 highlights major expansion of the state's capacity to formulate and implement effective development programs.

Unlike its imperial and republican predecessors the Nanjing-based Guomindang administration pursued a well-defined economic agenda centered on revenue expansion, extending control over banking, finance and the monetary system, developing military-linked production, deepening regional and national economic integration, and building an officially directed education system.

Public administration no longer resembled the Qing Board of Revenue, which acted as a "transmission center of documents and repository for ledgers. . . [that] rarely initiated policy"<sup>55</sup> Central government agencies, ranging from the National Resources Commission and the Ministry of Finance to the Cotton Control Commission, their staffs now bolstered by highly trained professionals, many with advanced overseas degrees, designed and began to implement a wide array of economic policy endeavors.<sup>56</sup>

Although the absence of political unification, rifts within the central administration, budgetary weakness and growing military pressure limited progress, even critics chronicle advances such as the "successful work of the National Economic Council. . . in improving the production of silk, cotton, and tea."<sup>57</sup> Beyond Nanjing, provincial governments and educational institutions initiated a variety of projects intended to distribute superior wheat seeds, control silkworm egg disease, improve tea garden management, upgrade equipment for handloom weavers, and so on.<sup>58</sup>

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<sup>55</sup> M.B. Kwan, *The Salt Merchants of Tianjin* (Honolulu: University of Hawaii Press, 2001), 32

<sup>56</sup> Kirby, "Engineering China"; M. Zanasi, *Saving the Nation: Economic Modernity in Republican China*, (Chicago: University of Chicago Press, 2006).

<sup>57</sup> L.E. Eastman, *The Abortive Revolution: China under Nationalist Rule, 1927-1937* (Cambridge: Harvard University Press, 1974), 219.

<sup>58</sup> T.H. Shen, "First Attempts to Transform Chinese Agriculture, 1927-1937," in P.K.T. Sih ed., *The Strenuous Decade: China's Nation-Building Efforts, 1927-1937* (New York: St. John's University Press, 1979), 220; L.M. Li, *China's Silk Trade: Traditional Industry in the Modern World, 1842-1937* (Cambridge: Harvard University Council on East Asian



Political disunity did not preclude policy coordination, in which “different levels of government, regardless of. . . political fragmentation, closely interacted” over decades to advance shared objectives. Remarkably, by “1926, prison reform across the country was impressive enough” to merit “a positive assessment by a traveling committee of the [13-country] Commission on Extraterritoriality in China,” which advised that “extraterritoriality might be abolished by foreign powers.”<sup>59</sup>

Notwithstanding the absence of national unity and growing military pressure, domestic and international openness, expansion of new skills and capabilities, declining resistance to new technologies and ideas, and growing official support contributed to modest but significant economic expansion and structural change during the decades preceding the outbreak of full-scale war in 1937. Two regions experienced the full array of changes associated with modern economic growth. Chinese entrepreneurship powered growth in the Shanghai-centered lower Yangzi area, with a population of 60 million, matching Japan’s. In the northeastern region of Manchuria, populated by over 30 million, foreign investment, much of it from semi-official Japanese companies, led a broad-based expansion. In both areas, growth of aggregate and per capita output during the prewar decades approached or exceeded Japan’s.<sup>60</sup>

A small but dynamic modern sector led the way in both regions, with the pace of industrial growth exceeding comparable figures for Japan, India and Russia/USSR during the prewar decades.<sup>61</sup> Although foreign firms benefited from a head start, favorable treaty

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Studies, 1981), 188-96; R. Gardella, *Harvesting Mountains: Fujian and the China Tea Trade, 1757-1937* (Berkeley: University of California Press, 1994), 146-69.

<sup>59</sup> F. Dikötter, *The Age of Openness: China before Mao* (Hong Kong: Hong Kong University Press, 2008), 15.

<sup>60</sup> D.B. Ma, “Economic Growth in the Lower Yangzi Region of China, 1911-1937: A Quantitative and Historical Analysis, *Journal of Economic History* 68.2 (2008), 355-92; K. Chao, *The Economic Development of Manchuria: The Rise of a Frontier Economy* (Ann Arbor: Michigan Papers in Chinese Studies, 1983), 14-5; R. Minami and F. Makino, *Asian Historical Statistics 3: China* (Tokyo: Tōyō Keizai Shinpōsha, 2014), 515-6

<sup>61</sup> L. Brandt, D.B. Ma and T.G. Rawski, “Industrialization in China,” in K.H. O’Rourke and J.G. Williamson eds., *The Spread of Modern Industry to the Global Periphery Since 1871* (Oxford: Oxford University Press, 2017), 199.

provisions and superior access to capital, Chinese-owned firms offered powerful competition: by 1933, they contributed 73 percent of nationwide manufacturing output and 78 percent in China proper.<sup>62</sup>

The expansion of manufacturing, with textiles and food processing in the forefront, enlarged demand for cotton and wheat. Factory interests complemented official efforts to improve rural storage facilities, promote standardized crops and expand rural credit.<sup>63</sup> Transport improvements, along with a monetary revolution that substituted paper notes issued by private banks that were freely convertible to silver for unwieldy silver coins and bullion, reduced transaction costs, magnifying the spread effects of urban-based growth.<sup>64</sup> Rising per capita incomes may have extended beyond the coastal cities and their rural hinterlands to encompass the entire economy.<sup>65</sup>

While the quantitative dimensions of nationwide growth remain uncertain, two decades of Guomindang rule introduced distinctive changes that prefigured important elements of PRC economic structure, institutions and policy. State management displaced private control in banking and in important segments of manufacturing. Industrial expansion began to shift toward military-linked producer industries even before 1937. Wartime pressures intensified these trends and widened the geographic dispersion of industrial activity.<sup>66</sup>

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<sup>62</sup> Ibid, 208 and Rawski, *Economic Growth*, 74.

<sup>63</sup> Zanasi, *Saving the Nation*, focuses on cotton improvement.

<sup>64</sup> Rawski, *Economic Growth*, chapters 3 and 4; D.B. Ma, "Financial Revolution in Republican China During 1900-37: A Survey and A New Interpretation," *Australian Economic History Review* 59.3 (2019), 242-62.

<sup>65</sup> Rawski, *Economic Growth*, 342 concludes that nationwide per capita output rose by 22-24 percent between 1914/18 and 1931/36. This conclusion, however, rests on estimates of agricultural output trends, which require considerable error margins.

<sup>66</sup> Brandt, Ma and Rawski, "Industrialization," 209-12. Peter Schran cites contemporary accounts indicating that armaments production in the Communists' Shaanxi base area represented "crude work" that turned out limited quantities of "inferior arms" (*Guerrilla Economy: The Development of the Shensi-Kansu-Ninghsia Border Region, 1937-1945* (Albany: State University of New York Press, 1976), 153).

While government operations reflected the efforts of “the Guomintang elite. . . to reform China’s administrative bureaucracy by adopting and adapting American theories of public administration,”<sup>67</sup> policy objectives and industrial organization converged toward the preferences of the post-1949 PRC administration. The organization and even the terminology (*danwei*) developed around state-owned industrial firms in wartime China remain in daily use 80 years later.<sup>68</sup> William Kirby describes the Guomintang’s prewar efforts as the “birth of the developmental state,” and notes that, following the emergence of the PRC, the Nanjing regime’s “main industrial planning committee did not disband. . . . [but] simply reported to a new government.”<sup>69</sup> Guomintang determination to subordinate banking to the financial requirements of the ruling government and party and to limit the scope of independent action on the part of leading enterprises, business owners and corporate managers,<sup>70</sup> foreshadows government-business relations in China today.

The Guomintang years also witnessed a dramatic change in economic ideology. Although many prominent officials and researchers— among them T.V. Soong, H.H. Kung, Franklin Lien Ho and H.D. Fong - boasted economics degrees from prominent U.S. universities, expert opinion turned against market outcomes. A 1941 account noted that “the urgent need for creating a planned economic system has almost become a consensus both within and outside the government.” A review of 574 essays published between 1938 and 1944 “in the

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<sup>67</sup> M.L. Bian, “Building State Structure: Guomintang Institutional Rationalization during the Sino-Japanese War, 1937-1945,” *Modern China* 31.1 (2005), 38.

<sup>68</sup> Bian, “State Structure,” 66.

<sup>69</sup> Kirby, “Engineering China,” 137; W.C. Kirby, “Continuity and Change in Modern China: Economic Planning on the Mainland and on Taiwan, 1943-1958,” *The Australian Journal of Chinese Affairs* 24 (1990), 135. After severing China’s northeast region and establishing *Manshūkoku* (Manchukuo) as a separate state, the Japanese authorities developed a Soviet-style five-year plan for 1937-42; see 南滿洲鐵道株式會社調查課編，滿州五カ年計畫概要 (Dairen, 1937).

<sup>70</sup> P.M. Coble Jr., *The Shanghai Capitalists and the Nationalist Government, 1927-1937* (Cambridge: Council on East Asian Studies, Harvard University, 1980)

*New Economy*, a leading economic journal” found “‘unanimous agreement’ on the desirability of creating a planned economic system in China.”<sup>71</sup>

### **Planned Economy Era**

The establishment of the People’s Republic in 1949 ended a century marked by multiple episodes of warfare, regime change and monetary chaos that severely limited economic growth. The new government installed a Soviet-inspired plan system that governed China’s economy for three turbulent decades.

### **Rapid Removal of Long-Standing Constraints on Growth**

Firm nationwide political control, reinforced by universal presence of Communist Party branches, provided the new government with an unprecedented capacity to implement policy even at the village level with minimal reliance on unofficial intermediaries. Sweeping and often violent campaigns stifled potential resistance from landed and mercantile interests.

Fiscal expansion demonstrated the new regime’s control. The ratio of government revenue to GDP, which had languished below 10 percent for centuries, exceeded 20 percent throughout the planned economy period.<sup>72</sup> Growth initiatives benefited from political unity, the cessation of internal warfare, and the return of monetary stability following destructive wartime hyperinflation.

Beginning in 1953, a succession of five-year plans pushed investment to new heights. Focusing on upstream sectors linked to industrial expansion and military development, new

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<sup>71</sup> Bian, “State Structure,” 60.

<sup>72</sup> *China Compendium of Statistics 1949-2008* (Beijing: China Statistics Press, 2010), 9, 18.

developments extended trends established during the Guomindang regime's final decade.<sup>73</sup> Support from the Soviet bloc, which provided the largest-ever transfer of technology along with technical advice and short-term loans, facilitated the emergence of new industries. Soviet support clustered around 150 major projects, which absorbed nearly one-fifth of overall investment spending under the First Five-Year Plan (1953-7).<sup>74</sup>

These plans combined the expansion and upgrading of production capabilities with major investments in human resources. Local governments worked to universalize primary school enrolment. Literacy and vocational programs improved adult skills. Publishing houses distributed cheap technical manuals. Despite limited food supplies during and after the 1959-61 Great Leap famine, improvements in sanitation, nationwide immunization programs, and campaigns to improve maternal and infant health reduced mortality rates and increased life expectancy.<sup>75</sup>

### **Economic Outcomes: Growth, Incomes and Productivity**

Notwithstanding setbacks from the 1959-61 famine and, on a lesser scale, from the Cultural Revolution, GDP expanded briskly, with industry occupying a growing share of total output. China's growth exceeded results in other large, low-income nations, with real per capita output growing at an estimated annual rate of 1.8-2.3 percent, which cumulates to a rise of 60-82 percent between 1952 and 1978.<sup>76</sup>

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<sup>73</sup> Brandt, Ma and Rawski, "Industrialization," 199-200, 209-12.

<sup>74</sup> Z.K. Dong 董志凯 and J. Wu 吴江, 新中国工业的奠基石 156 项建设研究 (1950-2000) (Guangzhou: Guangdong jingji chubanshe, 2004), 333 and 1950-1985 中国固定资产投资统计资料 (Beijing: China Statistics Press, 1987), 50.

<sup>75</sup> R. Hayhoe ed., *Contemporary Chinese Education* (Armonk: M.E. Sharpe, 1984); D.M. Lampton, *Health, Conflict and the Chinese Political System* (Ann Arbor: Michigan Papers in Chinese Studies, 1974); K.S. Babiarz et al, "An Exploration of China's Mortality Decline under Mao: A Provincial Analysis, 1950-80," *Population Studies* 69.1 (2015), 39-56; A.L. Piazza, *Food Consumption and Nutritional Status in the PRC* (Boulder: Westview, 1986).

<sup>76</sup> D. Morawetz, *Twenty-five Years of Economic Development, 1950 to 1975* (Baltimore: Johns Hopkins University Press, 1977), 5; per capita income estimates, both in international dollars, from Penn World Tables v. 9.1 accessed 23 June 2020, and from A. Maddison, *Chinese Economic Performance in the Long Run* (Paris: OECD, 1998), 40.

This growth, however, occurred primarily at the extensive margin, with expansion powered by rising investment. Three decades of planning failed to deliver productivity growth – the central ingredient in sustained economic modernization. At the aggregate level, Perkins and Rawski find positive annual growth total factor productivity (TFP)<sup>77</sup> during 1952-57, after which the trend turns negative, with an average annual decline of 0.5 percent during 1957-78.<sup>78</sup> Sectoral studies show consistently poor results. For industry, authors whose work produces the most favorable outcomes find the small increases during 1957-78 “disappointing both in comparative terms and in relation to the massive injections of technology and human capital characteristic of Chinese industrial development.”<sup>79</sup> Two careful studies of plan-era agriculture arrive at similar outcomes: decline or small gain during 1952-57, long-term decline thereafter.<sup>80</sup>

In the absence of productivity growth, the rising share of investment in overall expenditure restricted consumption opportunities, especially for the 80-85 percent living in the countryside. Nicholas Lardy finds that “Except for a few years. . . average per capita food consumption [between 1949 and the late 1970s]. . . does not appear to have reached the prewar level.”<sup>81</sup> Urbanites, most employed in the state sector, received benefits denied to villagers: employment security, pensions, and subsidized food, health care, housing, education

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<sup>77</sup> TFP is the quotient of separate indexes of output (usually GDP or value-added) and a combined input measure. Rising (falling) TFP reflects increases (reductions) in average output per unit of combined capital, labor and materials.

<sup>78</sup> D.H. Perkins and T.G. Rawski, “Forecasting China’s Economic Growth over the Next Two Decades,” in L. Brandt and T.G. Rawski eds., *China’s Great Economic Transformation* (Cambridge: Cambridge University Press, 2008), 839.

<sup>79</sup> K. Chen et al, “Productivity Change in Chinese Industry, 1953-1985,” *Journal of Comparative Economics* 12 (1988), 587; see also R.M. Field, “Slow Growth of Labour Productivity in Chinese Industry, 1952-81,” *China Quarterly* 96 (1983): 641-64.

<sup>80</sup> S.G. Fan and X.B. Zhang, “Production and Productivity Growth in Chinese Agriculture: New National and Regional Measures,” *Economic Development and Cultural Change* 50.4 (2002), 833; A.M. Tang, “Food and Agriculture in China: Trends and Projections, 1952-77 and 2000,” in A.M. Tang and B. Stone, *Food Production in the People’s Republic of China* (Washington: International Food Policy Research Institute, 1980), 28, using his adjusted TFP measure.

<sup>81</sup> “Food Consumption in the People’s Republic of China,” in R. Barker and R. Sinha eds., *The Chinese Agricultural Economy* (Boulder: Westview Press, 1982), 159.

and transport. The historically modest gap between urban and rural living standards – Charles Roll places per capita rural consumption at “about 81-88” percent of the urban average during the 1930s and “approximately the same” in 1955 – subsequently widened dramatically.<sup>82</sup> Yang and Zhou cite a National Bureau of Statistics working paper showing that urban per capita incomes in 1980 were more than triple the rural average.<sup>83</sup> Mobility restrictions and food rationing protected higher urban living standards by limiting migration into the cities.

### **Explaining Productivity Stagnation**

The PRC’s plan system ramped up investment outlays, but the new regime created distortions and inefficiencies that completely offset anticipated productivity benefits arising from national unity, monetary stability, strong government, growth-oriented policies, new technology, and improved human capabilities. Why did three decades of economic planning economy fail to deliver the anticipated material benefits?

The new system severely curtailed the engines of prewar growth: private entrepreneurship, commercial competition, and market integration that allowed growing circulation of commodities, information, capital, technology, and individuals within and across China’s national boundaries. The planned economy’s crude instruments – state-owned enterprises, inflexible prices, and government-mandated production quotas, supply links, investment projects and job assignments – sufficed for fulfillment of official targets, but only at the cost of creating large pools of underutilized resources.

The planned economy’s corrosive effect on individual incentives was particularly damaging to the rural economy. The collectivization of agriculture frayed the connection

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<sup>82</sup> C.R. Roll, Jr., *The Distribution of Rural Incomes in China: A Comparison of the 1930s and 1950s* (New York: Garland, 1980), 124.

<sup>83</sup> D.T. Yang and H. Zhou, “Rural-Urban Disparity and Sectoral Labour Allocation in China,” *Journal of Development Studies* 35.3 (1999), 112.

between personal effort and reward for three-quarters of China's work force. This encouraged widespread shirking, as individuals and households diverted resources toward private plots, which, beginning in 1958, occupied less than 10 percent of cultivated acreage. A Guangdong team leader explained that "People aren't lazy all the time, just when they do collective labor. When they work on their private plots, they work hard," adding that a task that formerly required 6 man-days of household labor might consume 16 man-days of collective effort.<sup>84</sup>

Incentive problems also limited industrial advance. Socialist planning, discussed at length in the chapter by Dwight Perkins, imposed a framework of rigid prices, mandated production quotas and state control over the distribution of materials as well as intermediate and final products. This system generates a panoply of dysfunctional responses observed in all centrally planned economies. Neither firms nor individual workers benefit from exceeding minimum requirements. Improvements in cost, product quality or customer service become uncompensated gifts to buyers or to the state, which absorbs all profits. Factory managers focus on output targets.

### **Unprecedented Gap between Actual and Potential Output**

Divergence between rising capabilities and stagnant productivity signaled an unprecedented gap between actual production and the level of output that existing resources, technologies and skills could deliver. The unexpected explosion of growth following the onset of reform beginning in the late 1970s illuminates the enormous scale of this latent potential. We focus on three areas: trade, agriculture and industry.

**Latent potential in international and domestic exchange.** Except for the transfer of Soviet technology during the 1950s, China's plan-era economic strategy promoted self-reliance at the expense of participation in domestic and international commerce. While a U.S.-led

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<sup>84</sup> S. W. Mosher, *Broken Earth: The Rural Chinese* (New York: The Free Press, 1983), 39-40.



boycott limited China's global trade options, all restrictions on domestic commerce and much of China's international isolation reflected the commitment of China's leaders to self-reliance and local self-sufficiency. Hostility to foreign involvement terminated China's pre-war standing as a substantial recipient of overseas investment. Curtailment of fruitful opportunities for domestic and international exchange imposed major economic costs.

During China's absence from active engagement with global trade and investment, which extended for nearly 50 years from 1937, rising post-World War II direct investment from advanced nations, steep reduction in transaction costs and major increases in trade flows, including exports of labor-intensive manufactures from low-income countries, offered opportunities that China ignored. China's long withdrawal from international exchange deprived the economy of benefits from imported technology and from efficient utilization of available resources. Shifting to domestic suppliers of capital equipment following the 1960 break with the Soviet Union had a "catastrophic effect on the quality of equipment."<sup>85</sup> Clinging to self-reliance also ignored a potential export bonanza in labor-intensive manufactures arising from the availability of vast numbers of literate, underemployed rural youths at wages far lower than in overseas rivals.<sup>86</sup>

Restricting domestic trade unraveled long-standing patterns of regional specialization. Costs were particularly high in the farm sector, as limited availability of outside grain supplies necessitated the conversion of fields best suited to growing sugar, peanuts, rape, soybeans and other commercial crops to grain cultivation. These shifts reduced incomes for former producers

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<sup>85</sup> P. Zeitz, "Trade in Equipment and Technological Development: Evidence from the Sino-Soviet Split" (unpublished, 2010).

<sup>86</sup> Even though average Chinese industrial wages in 1991 reached 3.8 times the 1978 level, a multinational comparison found 1991 hourly labor costs in China's increasingly export-oriented textile and garment sectors to be less than one-tenth of comparable costs in Japan, Hong Kong and Taiwan. See 中国统计年鉴 1992 (China Statistics Yearbook – hereafter Yearbook), Table 4-33 and L. Moore, "The Competitive Position of Asian Producers of Textiles and Clothing in the US Market," *World Economy* 18.5 (1995), 589.

of cash crops and for their former customers, who mounted inefficient efforts to replace cash crop purchases with local production.<sup>87</sup>

**Latent potential in agriculture.** Historically, Chinese agriculture operated close to the production frontier determined by available land, labor, water, fertilizer and technology. With no “artificial barriers” to the diffusion of “new seeds, new crops, and better cropping patterns. . . . there was no great back-log of advanced but essentially ‘traditional’ technique . . . that could be exploited readily.”<sup>88</sup> From the start of the PRC, investment and new technology rather than land reform or collectivization held the key to future agricultural growth. Collectivization initially sought to increase farm output and resource transfers out of agriculture without diverting investment from industry to agriculture. But its adverse side effects – erosion of incentives and “technological commandism” – delayed effective implementation of major advances in new high-yielding seed varieties and promoted uneconomic expansion of triple-cropping and agricultural mechanization prior to the revival of household farming in the late 1970s.<sup>89</sup>

The immediate post-reform surge in rural output and TFP beginning in the late 1970s demonstrates the “gigantic waste of labor and resources” resulting from plan-era rural policy.<sup>90</sup> Extraction of resources from the agricultural economy to support industrial production and investment occupied the core of China’s plan-era growth mechanism. Sluggish farm performance tied the bulk of China’s workforce to the land, slowing the transfer of labor to higher-productivity occupations. Slow growth of food output limited the farm sector’s capacity to feed China’s cities, necessitating the diversion of scarce foreign exchange to support grain

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<sup>87</sup> N.R. Lardy, *Agriculture in China’s Modern Economic Development* (Cambridge: Cambridge University Press, 1983), 48-82.

<sup>88</sup> D. H. Perkins, *Agricultural Development in China, 1368-1968* (Chicago: Aldine, 1969), 53.

<sup>89</sup> T.B. Wiens, “Technological Change,” in Barker and Sinha, *Agricultural Economy*, 110-120 and “The Limits to Agricultural Intensification: The Suzhou Experience,” in U.S. Congress, Joint Economic Committee, *China under the Four Modernizations* (Washington: U.S. Government Printing Office, 1982), 462-74.

<sup>90</sup> W.J. Shan, *Out of the Gobi: My Story of China and America* (Hoboken NJ: Wiley, 2019), 240.

imports. Undernutrition further slowed the growth of farm output. As China entered the 1970s, deteriorating agricultural conditions threatened continued expansion of the national economy by upending the delicate balance among food production, grain procurement and rural nutrition. The procurement system, essential to feeding China's cities, showed increasing disarray. Sichuan, China's most populous province and among those most affected by the 1959-61 famine, lurched from grain surplus to deficit amid the threat of renewed famine.<sup>91</sup> Net procurement, the grain available for transfer from rural to urban areas, declined in most years, as did grain stockpiles, forcing a discomfiting choice between higher grain imports and further reduction of reserves.<sup>92</sup>

Beyond its economic implications, the deteriorating extraction mechanism reflected a severe erosion of central authority. Lax controls enabled rural officials to divert grain to local advantage: Politburo member Li Xiannian 李先念 complained that collectives reported rising grain requirements for seed and feed despite the absence of increases in cultivated acreage or meat production.

**Latent potential in industry.** In addition to the weak incentives mentioned earlier, the chief source of latent industrial production potential stems from the plan system's rigidity. Even without considering planners' limited access to timely and reliable information, the primitive calculators available to Mao-era planners limited the feasible number of product categories.<sup>93</sup> Fine-tuning production quotas to include, for example, assortment requirements for metal fasteners or shoes, was impractical. The difficulty of modifying complex production arrays meant that successive annual plans rarely incorporated major adjustments. Frequent supply

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<sup>91</sup> F.S. Zhao 赵发生 et al eds., 当代中国的粮食工作 (Grain work in China today; Beijing: Zhongguo shehui kexue chubanshe, 1988), 145. Provincial Party Secretary Li Jinquan's 李井泉 September 1975 submission to the State Council demanded prompt attention to Sichuan's request for procurement relief to avoid "repeating the mistake of 1959."

<sup>92</sup> Zhao, *Grain*, 166-7.

<sup>93</sup> China's material allocation system, which included fewer than 600 items, was "much less extensive than the Soviet" system, which spanned "as many as 65,000" items. C.P.W. Wong, "Ownership and Control," i: 577, 603.

lapses encouraged firms to accumulate inventories. In the late 1970s, “China. . . carried a much larger volume of inventories and incomplete construction than. . . the Soviet Union,” where stockpiles were far greater than in market economies.<sup>94</sup>

Both during the plan era and today, widely varying capabilities of firms within specific industries amplify inefficiencies arising from weak exit mechanisms for poorly performing firms amplified inefficiencies, a problem that persists today.

Industrial policies generated additional sources of latent capacity. During 1953-78, “heavy” industry absorbed 43 percent of overall state-sector basic construction expenditure and 90 percent of outlays for industry.<sup>95</sup> This approach lavished resources on capital-intensive operations that often churned out low-quality products. Although coastal producers generally delivered superior performance in terms of quality, cost and productivity, planners directed the bulk of investment spending toward interior regions. This reached a peak under the “Third Front” program, which channeled over 40 percent of national investment during 1963-1975 to building a massive and largely uneconomic heavy industry complex in China’s central and western regions to guard against possible external invasion.<sup>96</sup> Emphasis on local self-sufficiency encouraged the proliferation of inefficient local production.<sup>97</sup>

Even as food supply issues threatened to stall China’s economic growth, the substantial gap between actual and potential output both within and beyond the farm sector created the possibility that suitable reforms could rapidly generate large increases in output. This is exactly what happened.

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<sup>94</sup> B. Naughton, *Growing Out of the Plan: Chinese Economic Reform 1978-1993* (Cambridge: Cambridge University Press, 1995), 49.

<sup>95</sup> 1950-1985 中国固定资产投资统计资料 (Beijing: China Statistics Press, 1987), 43, 44, 97.

<sup>96</sup> B. Naughton, “The Third Front: Defence Industrialization in the Chinese Interior,” *China Quarterly* 115 (1988), 351-86.

<sup>97</sup> A. Donnithorne, “China’s Cellular Economy: Some Economic Trends since the Cultural Revolution,” *China Quarterly* 52 (1972), 605-19.

## REFORM ERA

China's economy entered the reform era in difficult straits. Three decades of socialist planning had expanded the scale and scope of industry and upgraded its technical capabilities; the new system also delivered notable advances in education, public health and life expectancy. Despite these gains, massive inefficiency kept the economy far below its potential. Lagging food production left hundreds of millions underfed and threatened to destabilize key flows underpinning the economy's advance.

In sharp contrast, four decades of reform have brought a remarkable transformation. Some metrics now identify China's economy as the world's largest. Rapid structural change has steeply reduced the importance of agriculture, with the primary sector's share of aggregate output falling from 27.7 percent in 1978 to less than ten percent beginning in 2009. Official estimates show that primary sector employment has fallen even faster, from 83.5 percent in 1978 to half or less beginning in 1997 and 26.1 percent in 2018. Industry and services have moved to the forefront, with services gradually taking the lead, surpassing industry's share of employment in 1994 and output in 2012. Massive population shifts have raised the urban share of China's population to 60 percent.<sup>98</sup> China has emerged as a great trading nation, a global science and innovation powerhouse,<sup>99</sup> and as both a leading recipient and a major source of overseas investment.

Our analysis emphasizes the twin processes of economic transition – the shift from plan to market in the allocation of resources, and structural transformation, most notably, the movement of people and resources out of agriculture and into industry and services. Along with productivity improvements within individual sectors, the push of resources along

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<sup>98</sup> Yearbook 2019, Tables 2-7, 3-2 and 4-2. Official sources overestimate employment in the primary sector, which includes forestry and fisheries as well as agriculture.

<sup>99</sup> R.B. Freeman and W. Huang, "China's 'Great Leap Forward' in Science and Engineering," in A. Geuna ed., *Global Mobility of Research Scientists: The Economics of Who Goes Where and Why* (London: Academic Press, 2015).

productivity-enhancing paths toward non-agricultural activity, non-state enterprises, and coastal locations, have generated more than three-fourths of the increase in per capita incomes during the reform era, with the rest coming from capital deepening and rising education levels.<sup>100</sup>

We divide the reform era into three phases: reform from below, extending into the early-1990s; the following decade and a half of more organized, centrally directed reform initiatives; and the current period, beginning with the global crash, dominated by top-down innovation plans.

### **Stage 1 – Reform from Below: Decentralized Initiative and Central Reaction**

Reform commenced in the villages. While scholars dispute the relative importance of spontaneous grass-roots action and local government decisions in the rapid shift from collective to household cultivation, the impotence of central leadership is indisputable. Major documents issued by central CCP bodies in 1979 and 1980 bristle with calls for restoring rural workers' production enthusiasm (生产积极性), while prohibiting household cultivation, lauding collectives as the “unshakable foundation” of agrarian progress and denying that household activity could support “the establishment of modern agriculture.”<sup>101</sup>

Subsequent developments highlight the center's irrelevance. Noting that contracting to households had aroused “great enthusiasm among the masses,” the summary of a 1981 agricultural reform conference notes that “since reality has already outrun the [1980]

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<sup>100</sup> X.D. Zhu, “Understanding China's Growth: Past, Present, and Future,” *Journal of Economic Perspectives* 26.4 (2012), 108.

<sup>101</sup> 中国农业年鉴 1980 (Beijing: Nongye chubanshe, 1981), 57-8; 中国农业年鉴 1981 (Beijing: Nongye chubanshe, 1982), 409-10.

directive. . . delegates suggested that the Center promptly formulate new documents reflecting the new circumstances.”<sup>102</sup>

Restoration of household farming, along with partial decontrol of rural marketing and individual entrepreneurship propelled swift increases in both agricultural productivity and output,<sup>103</sup> even as millions abandoned farming for newly emerging opportunities in industry and services. Sichuan and Anhui, provinces that had suffered the most during the Great Leap Famine, led these rural reforms.<sup>104</sup> The suddenness of the ensuing shift from near-stagnation to rapid growth, which generated nationwide improvements in rural incomes and food availability, reveals the centrality of institutional changes that simultaneously restored incentives, encouraged greater work effort and allowed agriculture to exploit the untapped potential of new seeds, chemical fertilizer and expanded irrigation accumulated under the collective regime.<sup>105</sup>

Alongside these rural developments, growing awareness that prolonged isolation had stranded Chinese industry and technology far behind its East Asian neighbors as well as North America and Western Europe inspired plans for a big push to upgrade domestic technology and equipment.<sup>106</sup> The collapse of this effort, which quickly outran China’s puny export earnings, gave way to hesitant urban reforms aimed at “enlivening” operations within the plan system by

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<sup>102</sup> “全国农业经济问题讨论会纪要” *农业经济问题* #10 (1981), 2. Also A. Watson, “Agriculture Looks for ‘Shoes that Fit’: The Production Responsibility System and its Implications,” *World Development* 11.8 (1983), 713.

<sup>103</sup> J.Y. Lin, “Rural Reforms and Agricultural Growth in China,” *American Economic Review* 82.1 (1982), 46 attributes 48.69 percent of the output growth during 1978-84 to decollectivization. Fan and Zhang, “Productivity,” find that, with 1952=100, TFP in agriculture (based on constant 1980 prices) jumped from 67 in 1978 to 82 in 1982 and 129 in 1992 (Table 5).

<sup>104</sup> Yang, *Calamity*.

<sup>105</sup> J.K. Huang and S. Rozelle, “Technological Change: Rediscovering the Engine of Productivity Growth in China’s Rural Economy,” *Journal of Development Economics*, 49.2 (1996), 337-69.

<sup>106</sup> D.H. Perkins, “Reforming China’s Economic System,” *Journal of Economic Literature* 26.2 (1988), 618.

modestly extending state enterprise managers' decision-making authority and expanding opportunities to buy and sell industrial materials and products.

The dual track system, which preserved administered prices for plan-related distributions while allowing market sales of above-plan output, broadened market opportunities and sharpened incentives within the state sector.<sup>107</sup> It also encouraged the growth of more efficient producers, particularly benefiting TVEs clustered in coastal provinces. Dual pricing created market-based price signals in nearly every sector, a critical step in expanding market-oriented reform, and modestly sharpened incentives within the state sector. At the same time, the arrangement preserved rents accruing to plan participants. This reduced opposition to market reform, but created lucrative opportunities to resell underpriced goods acquired through plan allocations at higher market prices.

Expansion of overseas trade and investment, led by the creation of Special Economic Zones, added an international dimension to China's boom. China's opening coincided with efforts by Taiwan and Hong Kong entrepreneurs, responding to rising wages in their home markets, to find low cost venues for labor-intensive export production. The combination of local land and labor along China's coast with the market knowledge, manufacturing experience and financial resources of these operators shifted growing numbers of rural workers into manufacturing jobs and brought rapid growth of factory exports.

Although the initial reforms affected the entire economy, the largest impact occurred outside the cities and beyond the state sector. Unlike rural reform, which often involved little more than lifting restrictions that had suppressed long-standing patterns of production and marketing, urban reform required the construction of new and unfamiliar institutions, to which state enterprises, managers and workers, many with no experience of market discipline,<sup>108</sup>

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<sup>107</sup> W. Li, "The Impact of Economic Reform on the Performance of Chinese State Enterprises, 1980-1989," *Journal of Political Economy*, 105. (1997), 1080-1106.

<sup>108</sup> State-owned industrial firms numbered 15,190 in 1955 and 83,400 in 1980; see N.R. Chen, *Chinese Economic Statistics* (Chicago: Aldine, 1967), 182 and Yearbook 1981, 204.



would have to adapt. Such changes inevitably encountered opposition from entrenched interests.

Not surprisingly, individuals and firms on the fringes of the plan system took the lead. Rural incomes jumped upward, narrowing the gap with city folk.<sup>109</sup> Rural firms soon penetrated urban markets, slashing profits of state-owned rivals.<sup>110</sup> Collective- and privately-owned firms gained a foothold in the new export sector. Relaxation of mobility restrictions sparked the initial phase of what later developed into a tidal wave of migration into China's cities; the late 1970 and early 1980s saw the return of many urbanites 'sent down' to rural villages, while villagers sought opportunities to fill gaps created by the plan system's repression of retail and service businesses.<sup>111</sup>

With increases in output, productivity, profits and revenues clustered in rural areas and in non-state enterprises under the supervision of local governments, the center found itself scrambling to fund its priorities. Both the ratio of government revenue to GDP and the center's share of overall revenue, much of it derived from SOE profits, declined.<sup>112</sup> The center's unwillingness to reduce urban real incomes by imposing higher grain prices saddled the state budget with growing outlays to bridge the gap between rising grain costs and lower fixed retail prices. A further obstacle arose when state-owned commercial banks, responding to reform-

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<sup>109</sup> D.Y. Yang and F. Cai, "The Political Economy of China's Rural-Urban Divide," (Working paper No. 62, Stanford Center for International Development, 2000), 32, find that in real terms, the urban: rural ratio for consumption (not income) dropped from 2.9 in 1978 to 1.9 in 1985, then rebounded to 2.5 in 1992.

<sup>110</sup> B. Naughton, "Implications of the State Monopoly over Industry and its Relaxation," *Modern China* 18.1 (1992), 14-41.

<sup>111</sup> D.J. Solinger, *Chinese Business under Socialism: The Politics of Domestic Commerce, 1949-1980* (Berkeley: University of California Press, 1984), 325 notes that the number of shops, restaurants and commercial centers "under commercial departments, in urban and industrial and mining areas" dropped from 1 million to 180,000 between 1957 and 1978.

<sup>112</sup> C.P.W. Wong and R. Bird, "China's Fiscal System: A Work in Progress," in Brandt and Rawski, *Transformation*, 433.

enhanced profit motives, steered resources to emerging non-bank financial institutions (NBFIs) that extended credit to fast-growing collectives and private firms.

The state now lacked sufficient budgetary and banking support to implement plans for expanding employment, wages and investment in the lagging state sector. Urban SOE employment increased more than fifty percent during 1978-94. The center turned to the People's Bank of China (PBOC), China's central bank, to extend lending to the commercial banks, which used these additional resources to implement the credit plan's provisions for "state sector working-capital and fixed investment needs."<sup>113</sup> This short-term response proved costly, as PBOC intervention caused increases in money supply and inflation, rekindling memories of wartime hyperinflation – a key ingredient in the CCP's victory over the Guomindang.<sup>114</sup> Official intervention to limit monetary growth by constricting the supply of credit to the dynamic non-state sector restrained inflation, but also lowered the overall growth rate. The result was a series of stop-go cycles in which periods of accelerated growth led by non-state firms alternated with intervals of reduced credit and output growth.<sup>115</sup>

Despite these tensions, which helped to spark the unrest that culminated in top-level purges and violent suppression of mass protests in 1989, this initial stage of reform delivered an astonishing turnaround that accelerated the growth of overall output. In stark contrast to the plan era, the initial stage of reform increased personal incomes and released several hundred million villagers from the scourge of absolute poverty.<sup>116</sup>

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<sup>113</sup> L. Brandt and X.D. Zhu, "China's Banking Sector and Economic Growth," in C.W. Calomiris ed., *China's Financial Transition at a Crossroads* (New York: Columbia University Press, 2007), 97.

<sup>114</sup> K.N. Chang, *The Inflationary Spiral: The Experience in China, 1939-1950* (Cambridge: MIT Press, 1958).

<sup>115</sup> Ibid; L. Brandt and X.D. Zhu "Redistribution in a Decentralized Economy: Growth and Inflation in China under Reform, *Journal of Political Economy* 108.2 (2000), 422-39.

<sup>116</sup> M. Ravallion and S.H. Chen, "China's (Uneven) Progress against Poverty," *Journal of Development Economics*, 82.1 (2006), 1-42.

For the first time, China experienced widespread productivity growth reflecting the joint impact of transition and development. Transition partially restored market exchange, market prices,<sup>117</sup> personal mobility and openness to entry and competition from both domestic and overseas firms and products. This enabled China's first-ever large-scale shift out of agriculture, as non-primary employment more than doubled, adding over 150 million workers between 1978 and 1992.<sup>118</sup>

Deng Xiaoping's endorsement of growth and rejection of long-standing egalitarian emphasis<sup>119</sup> highlighted an unprecedented alignment of incentives, as a widely shared preference for growth now united villagers seeking to escape collective control, workers hungry for bonuses, managers and bankers pursuing profits, and officials whose career prospects and informal incomes now rested increasingly on raising output.<sup>120</sup>

Along with remarkable economic advance, China's initial reforms exposed a fundamental duality between the economy's dynamic segments, which clustered outside the cities and beyond the state sector,<sup>121</sup> and the lagging, resource-hungry state sector. A stark performance gap separated the two: between 1980 and 1992, growth of output, labor productivity and TFP in state-owned industries was only a half to a third of that in collective and private firms.<sup>122</sup> Even so, Beijing continued to see the state sector as central to its pursuit of

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<sup>117</sup> By 1990, market prices governed just over half of retail transactions and exchange of agricultural products; for production materials, the share of market pricing was 36.4 percent; H. Dinh et al, *Tales from the Development Frontier: How China and Other Countries Harness Light Manufacturing to Create Jobs and Prosperity* (Washington: World Bank, 2013), 77.

<sup>118</sup> Yearbook 2019, Table 4-2.

<sup>119</sup> E.F. Vogel, *Deng Xiaoping and the Transformation of China* (Cambridge: Harvard University Press, 2011), dates this from 1978, when "allowing some regions and enterprises to get rich first" was a major theme of Deng's Dec 13 speech to the Central Party Work Conference (242).

<sup>120</sup> H.B. Li and L.A. Zhou, "Political Turnover and Economic Performance: The Incentive Role of Personnel Control in China," *Journal of Public Economics* 89 (2005), 1743-62.

<sup>121</sup> Y.S. Huang, "How Did China Take Off?" *Journal of Economic Perspectives* 26.4 (2012).

<sup>122</sup> G.H. Jefferson and T.G. Rawski, "Enterprise Reform in Chinese Industry," *Journal of Economic Perspectives* 8.2 (1994), 48, 56.

multiple objectives, many extending beyond narrowly economic outcomes, and as a portfolio of resources available to supplement state appropriations and to reinforce loyalty within the ruling coalition.

Heavy reliance on the state sector explains why, despite its evident economic weakness, the annual “flow of resources through the financial system making its way to the state sector” during 1978-94 amounted to 15-20 percent of GDP.<sup>123</sup> As China gradually recovered from the tempestuous events of 1989, further reform seemed essential to resolve a fundamental conflict between the desire for continued rapid growth and the drain from large-scale transfers to underperforming segments of the economy.

## **Stage 2: Major Reform Initiatives Extend Market Forces and Restore Central Control**

The June 1989 Beijing massacre left China’s central leadership badly shaken. Ousting CCP General Secretary and former Premier Zhao Ziyang and his allies while mobilizing the army to terminate public protests fractured the top echelons of power and blurred lines of control over routine economic administration.

The economy stumbled: employment growth during 1988/89 dropped to less than one-third of the average over the preceding decade, while nominal investment outlays declined for the first time since 1980/81.<sup>124</sup> The GDP share of government revenue and expenditure, which had stabilized at the end of the 1980s following a decade of decline, resumed its downward march.

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<sup>123</sup> Brandt and Zhu, “China’s Banking,” 96-9. Over this period, more than 60 percent of capital formation, and two-thirds of all new banking loans went to the state sector.

<sup>124</sup> Employment data from Yearbook 1991, Table 4-8; investment data from *ibid*, Tables 5-20 and 5-35, and from 1950-1985 中国固定资产投资统计资料, 49 and 216.

Despite this unlikely start, Deng Xiaoping's 1992 'Southern tour' ignited an avalanche of growth that outstripped the impressive early reform achievements. This renewed growth rested, in turn, on dynamic administrative entrepreneurship that swept aside multiple constraints and further expanded the influence of market forces, while restoring the power and authority of the CCP and the central state. Major reforms affected public finance, banking, state enterprises and market opening.

**Fiscal restructuring.** Tax reform implemented in 1994 reversed the long decline in the GDP share of fiscal revenue, increased the central government's claim on overall revenue and, perhaps most important for re-establishing central authority, ensured that province-level units "including Shanghai and Beijing" became "dependent on central transfers to finance expenditures."<sup>125</sup>

**Bank reform.** During the 1980s, the main source of investment funding shifted from budgetary grants to bank loans. State enterprises, the main recipients, "turned increasingly to bank credit without much concern about their future ability to repay."<sup>126</sup> This led to an epidemic of payment arrears: estimates show that, by 1998, half or more of bank loans were "non-performing."<sup>127</sup>

During the late 1990s, the central government took major steps to rectify this dangerous situation. Newly created asset management companies purchased vast tranches of bad loans, thereby recapitalizing the floundering state-owned commercial banks. The center increased its control over the financial system: shuttering weak financial firms, closing down most NBFIs, reorganizing the central bank's sub-national branches to reduce the influence of provincial and local leaders, and increasing the influence of high-level officials in the appointment and promotion of bank executives.

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<sup>125</sup> Wong and Bird, "Fiscal," 437.

<sup>126</sup> B. Naughton, *The Chinese Economy: Transitions and Growth* (Cambridge: MIT Press, 2007), 306.

<sup>127</sup> Brandt and Zhu, "China's Banking," 128.

The removal of bad loans, coupled with the establishment of policy banks to shoulder the burden of non-commercial finance, greatly strengthened the lending capacity of China's four giant commercial banks. Although politically directed lending continued, the commercial element in bank operations deepened.<sup>128</sup>

**State enterprises.** The focus of reform shifted from flows (of new workers, new investments and above-plan output) toward more complex realignments affecting embedded resource stocks, including workers and entire firms. Beijing's vision of the state sector's role narrowed, with textiles, food processing and other industries now classed as "competitive," implying that preservation of state-sector dominance, even survival of individual firms, were no longer essential.

Privatization, often via management buyouts, multiplied, as did bankruptcies, and closures. The overall number of state-owned enterprises plunged from 262 to 112 thousand between 1997 and 2007; for industry, the total declined from 103,300 in 1992 to 20,680 in 2007.<sup>129</sup> Severe culling eliminated over one-third of state sector personnel, formerly endowed with (often heritable) lifetime tenure; between 1996 and 2000 alone, the state sector headcount plunged from 113 to 67 million.<sup>130</sup>

Bottom-up initiatives originating with provincial and local authorities, which had gained control over large segments of state-owned industry following decentralization programs in 1957 and 1970,<sup>131</sup> dominated these downsizing efforts. Sub-national governments welcomed opportunities to shed the burden of maintaining weak enterprises, including TVEs and other

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<sup>128</sup> J. Stent, *China's Banking Transformation* (New York: Oxford University Press, 2017). A textile executive commented: "Banks are not the same as before. Now if you have no money and can't repay, they won't lend to you" (May 1996 interview).

<sup>129</sup> K.J. Lin et al, "State-owned Enterprises in China: A Review of 40 Years of Research and Practice," *China Journal of Accounting Research* 13 (2020), 34; Yearbook 1995, Table 12-1; Yearbook 2008, Table 13-8 (including state-controlled industrial units).

<sup>130</sup> Yearbook 2005, Table 5-4.

<sup>131</sup> Wong, "Ownership and Control."

collective enterprises as well as state-owned firms, that could not withstand intensifying market pressures.

The center, by contrast, acted to strengthen enterprises under its direct control. Following the 2003 creation of the State-owned Assets Supervisory Commission (SASAC), policy effort focused on the complex and rapidly expanding operations of roughly 100 giant state-owned enterprise groups in key commodity (petroleum, grain), manufacturing (steel, aluminum, aircraft), infrastructure (railway, electricity, telecom) and financial (banking, insurance) sectors. These efforts helped to maintain the state's share in GDP while increasing the share of the state sector under central government control.

**Market opening.** The scope of market-based transactions continued to expand. Rapid growth of highway and water transport, much of it in the hands of unregulated private operators, contributed to the erosion of local protectionism and interprovincial trade barriers.<sup>132</sup> Analysis based on monthly data for 93 products in 36 major cities found that “prices did converge” during 1990-2003, and that “the patterns of convergence. . . were highly comparable” to observations from “the United States, Canada, and European countries” – all indicating the powerful influence of market forces.<sup>133</sup>

Employment became increasingly market-based. The former system of job assignments faded, as graduating students and employers sought mutually advantageous matches. Market expansion unleashed a torrent of internal migration – a familiar phenomenon in China's

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<sup>132</sup> Yearbook 2010, Tables 16-4, 16-8 and 16-24 shows that between 1990 and 2007, China's truck fleet increased from 3.7 to 10.5 million vehicles; during the same period, the length of highways as well as the annual volume of freight carriage along inland waterways more than tripled.

<sup>133</sup> C.S. Fan and X.D. Wei, “The Law of One Price: Evidence from the Transitional Economy of China,” *Review of Economics and Statistics* 88.4 (2006), 694.

modern history.<sup>134</sup> In 2001, Premier Zhu Rongji bluntly advised “laid-off workers . . . to find jobs on the private labor market.”<sup>135</sup>

SOE reform and sweeping privatization of collective enterprises, together with modest improvements in the legal protections surrounding private ownership and Jiang Zemin’s 2001 decision to admit entrepreneurs to Communist Party membership, improved the position of private business. These changes, along with widespread privatization of collective firms, spurred explosive growth in the private sector’s share of output and especially employment. Between 1992 and 2007, urban private employment rose from 10.6 to 78.9 million; in the countryside, 2007 private enterprise employment surpassed 110 million.<sup>136</sup> These trends benefited from “extremely rapid growth of credit to private and individual businesses” following the 1994 implementation of China’s Company Law.<sup>137</sup>

In the late 1990s, sweeping privatization of urban housing created a property market that hugely increased the wealth of urban households, creating opportunities for new owners to finance private businesses and overseas education for their children.<sup>138</sup>

Along with domestic opening, China moved to rejoin the global economy. Hesitant initial steps, notably the opening of tiny Special Economic Zones, developed into a powerful push to regain and then surpass China’s prewar footprint in global trade and investment. Tariff

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<sup>134</sup> In addition to overseas migrations, major domestic population movements include Qing-era migration into Sichuan, the resettlement of lands devastated by the Taiping wars and large-scale population movement into Manchuria during the late nineteenth and early twentieth centuries. See M. Bastid-Bruguier, “Currents of Social Change,” in J.K. Fairbank and K.C. Liu eds., *The Cambridge History of China*, vol. 11 pt. 2 (Cambridge: Cambridge University Press, 1980), 582-6; T.R. Gottschang and D. Lary, *Swallows and Settlers: the Great Migration from North China to Manchuria* (Ann Arbor: University of Michigan Center for Chinese Studies, 2000).

<sup>135</sup> Q.W. Zhu, “Domestic Market Fuels Growth.” *China Daily* 6 August 2001, 4.

<sup>136</sup> Yearbook 2011, Table 4-2; 中国乡镇企业及农产品加工业年鉴 2008 (electronic edition, no page or table numbers, accessed 29 June 2020). Both urban and rural employment include individual proprietorships.

<sup>137</sup> Lardy, *Markets over Mao*, 102.

<sup>138</sup> H.M. Fang et al, “Demystifying the Chinese Housing Boom,” in M. Eichenbaum and J.A. Parker eds., *NBER Macroeconomics Annual 2015* (Chicago: University of Chicago Press, 2016), 105-66.



reductions and other measures implemented ahead of China's 2001 accession to the World Trade Organization, created "one of the developing world's most open trade and FDI regimes," highlighting China's growing involvement in cross-border flows of commodities, investment, technology, information and individuals.<sup>139</sup>

Rapid expansion of international trade and investment added momentum to domestic growth. China's share of global merchandise trade grew from 0.9 and 2.2 percent between 1980 and 1992 – neither exceeding the prewar figures noted above - to 2.7, 3.6, and 7.7 percent in 1995, 2000 and 2007. China's trade share overtook Japan's in 2004.<sup>140</sup> Rising foreign direct investment (FDI), much of it from Taiwan and Hong Kong, and often directed toward export-oriented manufacturing, along with authorization of growing numbers of domestic firms to conduct international trade,<sup>141</sup> brought considerations of cost and profit to the fore, shifting trade patterns toward the underlying structure of comparative advantage. Chinese firms began to join international supply chains, accelerating the spread of management skills.

Beginning in the 1990s, large FDI inflows enabled China to recover its prewar standing as a major destination for overseas investment. China's share of the global FDI stock housed in developing nations, which exceeded 15 percent during the 1930s, achieved similar levels again by the late 1990s.<sup>142</sup> While China has consistently been among the top three recipients of FDI since the early 1990s, its share of the worldwide FDI stock in 2019 remains below half of the 1930s figure of 11 percent.<sup>143</sup>

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<sup>139</sup> L. Branstetter and N.R. Lardy, "China's Embrace of Globalization" in Brandt and Rawski, *Transformation*, 676.

<sup>140</sup> Post-1949 figures from <https://data.wto.org/> accessed 14 July 2020.

<sup>141</sup> Branstetter and Lardy, "China's Embrace," 635 note the number of companies authorized to conduct international trade: 12 in 1978, 800 in 1985 and 35,000 in 2001.

<sup>142</sup> The Asian Financial Crisis temporarily lowered China's FDI inflows and its share of the global FDI stock.

<sup>143</sup> Calculated from UNCTAD *World Investment Report 2020*, Annex Table 1; these data exclude FDI flows into Hong Kong.

**Outcomes.** Market opening encouraged accelerated structural change that moved resources toward more productive uses. The primary sector's GDP share dropped from one-fifth to one-tenth between 1992 and 2007, while the tertiary (service) sector's share jumped from 36 to 43 percent. The official measure of China's primary sector labor force peaked in 1991; by 2007, it had declined by 83.7 million. Employment growth clustered in the service sector, which added 113 million workers during the same years.<sup>144</sup>

The growing influence of market forces pulled resources into coastal regions, which increased their weight in overall production and investment while dominating export production and absorption of incoming foreign investment.<sup>145</sup> The share of China's eastern region in overall fixed investment jumped from about one-third prior to 1975 to over 60 percent during the mid-1990s.<sup>146</sup> A 2008 survey clearly demarcated the geographic locus of economic dynamism: of 140 million internal migrants who had left their home counties, 70 percent originated in China's central or western regions, and 62 percent had moved to eastern provinces, which housed 43 percent of the national population.<sup>147</sup>

Growing internationalization intensified the impact of domestic market opening on competition, cost reduction and quality improvement. Tariff reductions and other liberalization measures implemented ahead of China's WTO accession represented "a watershed" that forced widespread cost reductions.<sup>148</sup> Growing competition from imports and from an expanding array

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<sup>144</sup> Yearbook 2019, Tables 3-2 and 4-2.

<sup>145</sup> X.J. Jiang, *FDI in China: Contributions to Growth, Restructuring and Competitiveness* (New York: Nova Science Publishers, 2004), 82 notes that, as of late 2001, 86 percent of FDI had located in China's eastern region.

<sup>146</sup> NBS, "固定资产投资水平不断提升 对发展的关键性作用持续发挥 ([http://www.70prc.cn/2019-09/19/c\\_138404706.htm](http://www.70prc.cn/2019-09/19/c_138404706.htm)), posted 19 Sept. 2019, accessed 29 June 2020).

<sup>147</sup> Yearbook 2009, Table 3-4 and 2008 年末全国农民工总量为 22542 万人 accessed 13 July 2020 from [http://www.stats.gov.cn/ztjc/ztfx/fxbg/200903/t20090325\\_16116.html](http://www.stats.gov.cn/ztjc/ztfx/fxbg/200903/t20090325_16116.html). The data on regional origins and destinations are limited to migrants with fixed employment.

<sup>148</sup> Branstetter and Lardy, "China's Embrace," 656.

of domestic producers created pressures that increased productivity and reduced both the level and dispersion of sales markups.<sup>149</sup>

Foreign-invested firms occupied a “vital role. . . [in] transfers of technology, production and organizational skills, managerial know-how, and marketing expertise” that powered “robust progress” in China’s “capacity to manufacture a growing array of internationally competitive products.”<sup>150</sup> Overseas firms, eager to capitalize on low Chinese costs, promoted domestic supply chains to feed their Chinese assembly plants. Along with the arrival of overseas component manufacturers, these supply networks absorbed thousands of local firms: by 2000, “of Motorola’s 700-odd suppliers in China. . . more than 400 are domestic.”<sup>151</sup>

These changes generated striking economic results. Following a brief slowdown in the wake of the 1989 disturbances, rapid growth resumed: measured at international prices, per capita income rose at an annual rate of 6.4 percent during 1992-2007.<sup>152</sup> As in the initial reform phase, productivity growth, dormant prior to 1978, continued as the primary driver of expansion for the entire economy and for industry, the largest sector.<sup>153</sup>

The period between 1992 and the 2008 global financial crisis represents an interlude of relative political calm in which contentious debate about the long-term objective of economic policy continued even as major reforms delivered large and tangible benefits to advocates of both market transformation and state-led development.

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<sup>149</sup> L. Brandt et al, “WTO Accession and Performance of Chinese Manufacturing Firms,” *American Economic Review* 107.9 (2017), 2784–820; Y. Lu and L.H. Yu, “Trade Liberalization and Markup Dispersion: Evidence from China’s WTO Accession,” *American Economic Journal: Applied Economics*, 7.2 (2015): 221-53.

<sup>150</sup> Brandt, Rawski and Sutton 2008, 622-623.

<sup>151</sup> Jiang, FDI, 29.

<sup>152</sup> Calculated from Penn World Tables v. 9.1.

<sup>153</sup> Perkins and Rawski, “Forecasting,” 839; Brandt et al, “WTO Accession.”

Liberalizing reformers rejoiced as openness, entry and competition swept across large swathes of China's economic landscape. Jiang Zemin's dual 2001 initiatives, first opening the CCP to private entrepreneurs, and then proposing a "socialist market economy with Chinese characteristics," fanned expectations of gradual convergence to market outcomes. Beyond economics, the broad liberalizing agenda of disgraced former CCP General Secretary Zhao Ziyang "happened by evolution," with growing "separation of responsibilities and spheres of authority," leaders chosen "for their policy-relevant expertise. . . . economic policy-makers at all levels suffer less and less frequently from intervention by the ideology-and –mobilization specialists," while "neither the top leader nor the central Party organs interfere as much in the work of other agencies" as in the past, and "ideological considerations have only marginal, if any, influence on most policy decisions."<sup>154</sup>

Developments between 1992 and 2007 equally reinforced the position and prospects for state-led development. The collapse of the Soviet Union alarmed Chinese elites. Fears that China might experience similar centrifugal pressures reinforced CCP claims that it alone could ensure national unity and guide China to a position of global prominence. Patriotic education campaigns promoted "national greatness," echoing early twentieth-century political discourse. A string of diplomatic triumphs – the 1997 return of Hong Kong, 2001 entry into the World Trade Organization, and the selection of Beijing to host the 2008 summer Olympics – highlighted the CCP regime's capacity to deliver benefits extending far beyond economic growth.

In tandem with growing market influence, developments between 1992 and 2007 multiplied the power of the central state. Beijing maintained strong control over large segments of the economy, including major upstream industries (petroleum, electricity), railways and large segments of the service sector (finance, telecoms). Fiscal and banking reforms massively enlarged the central state's command over resources, while state sector downsizing, urban

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<sup>154</sup> A.J. Nathan, "China's Changing of the Guard: Authoritarian Resilience," *Journal of Democracy* 14.1 (2003), 11-13.

housing privatization and the termination of urban food subsidies eliminated large fiscal burdens. Economic success created vast pools of discretionary funds: between 1992/93 and 2007, central government revenue, state enterprise assets and profits, nationwide financial deposits and foreign exchange reserves each rose far more rapidly than China's GDP.<sup>155</sup> Giant centrally supervised enterprise groups, some with thousands of subsidiaries, amassed 2007 profits equivalent to four percent of GDP.<sup>156</sup> Their opaque corporate structures, along with booming infrastructure spending, multiplied opportunities to distribute rents, a key link in maintaining elite support, on a grand scale. One account describes state-directed investment as "the prime enabler of corruption."<sup>157</sup>

Deep resource pools enabled the implementation of large, top-down development projects, notably a major initiative to develop China's western region, begun in 2000, and the initial phase of building national networks of expressways and high-speed rail lines. Beyond these specific programs, the incoming leadership group headed by Hu Jintao and Wen Jiabao abandoned former Premier Zhu Rongji's downsizing of central government scale and functions in favor of a more activist approach. Beginning in 2003, the new leaders shifted technology upgrading "expenditure. . . towards domestic research and development . . . and away from technology import," raised "direct government expenditure on techno-industrial projects" and instituted a steep rise in "the number of industrial policies" that supported "specific sectors, firms, or technologies."<sup>158</sup>

The fifteen years prior to the 2008 financial crisis witnessed rapid evolution of China's economy. Growth flourished, largely driven by rising productivity. Domestic and international

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<sup>155</sup> All measured at current prices. See Appendix.

<sup>156</sup> B. Naughton, "SASAC and Rising Corporate Power in China," *China Leadership Monitor* No. 24 (2008), 2.

<sup>157</sup> J. Du, Y. Lu and Z.G. Tao, "Government Expropriation and Chinese-style Firm Diversification," *Journal of Comparative Economics* 43 (2015), esp. 166-8; J. Osburg, "Global Capitalisms in Asia: Beyond State and Market in China," *Journal of Asian Studies* 72.4 (2013), 824.

<sup>158</sup> L. Chen and B. Naughton, "An Institutionalized Policy-making Mechanism: China's Return to Techno-industrial Policy," *Research Policy* 45 (2016), 2141.

opening enlarged the influence of market signals and pressures. Reforms also expanded the state's command over resources, encouraging a turn toward governmental activism. With movement toward marketization "stalled out" following the 2003/04 turn toward governmental activism, the overall weight of market elements in China's economy began to recede in advance of the 2008 global crash.<sup>159</sup>

### Stage 3 – Toward State Capitalism

The 2008 global financial crisis enhanced state influence in China, as in all major economies. Beijing responded to the steep downturn with a blizzard of new credit, most channeled through state-controlled entities and directed toward urban infrastructure. Following a rapid recovery, growth continued, although at considerably reduced rates that some analysts view as exaggerated.<sup>160</sup>

**State control to the fore.** Economic policy redoubled the emphasis on state leadership and adopted a new trajectory in which cutting-edge innovation supplants technological catch-up as the key driver of expansion. President Xi's 'China Dream' sees domestic prosperity and technical advance as twin springboards for a nationalist agenda targeting regional and global leadership across multiple arenas: innovation, trade, investment, diplomacy, science, and military. Two signature policies, 'Made in China 2025' and 'One Belt, One Road' illuminate current economic priorities. Both contrast sharply with the recommendation of greater openness, entry, competition and market allocation in *China 2030*, a major 2012 study by the Development Research Centre under China's State Council and the World Bank.

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<sup>159</sup> B. Naughton, "The Return of Planning in China: Comment on Heilmann-Melton and Hu Angang," *Modern China* 39.6 (2013), 651.

<sup>160</sup> Y.Y. Hu and J.X. Yao, "Illuminating Economic Growth" (ms., 2018); W. Chen, X.L. Chen, C.T. Hsieh and Z.M. Song, "A Forensic Examination of China's National Accounts," *Brookings Papers on Economic Activity*, no. 1 (2019), 77-141.

Made in China 2025, a long-term program developed by the Chinese Academy of Engineering, a bastion of top-down planning, establishes timetables for attaining an array of advanced manufacturing milestones, often including specific figures for output volume and domestic or even global market shares.<sup>161</sup> With its focus on quantitative targets and neglect of competition, prices and costs, this program, while dealing with a new set of industries and technologies, embodies a top-down, non-market strategy that echoes China's plans of the 1950s. Its non-market approach resembles subsequent initiatives, especially the 2006 "National Medium-to-Long Term Plan for the Development of Science and Technology" and the 2010 "Decision of the State Council on Accelerating the Fostering and Development of Strategic Emerging Industries."

The Belt & Road program proposes a vast network of energy and infrastructure facilities spanning the entire Eurasian land mass, with extensions to Africa and Latin America. This initiative, which combines aid, lending, trade, and diplomacy, seeks to deepen China's ties with low- and middle-income nations, in part to offset weakening demand growth for Chinese products in advanced markets.<sup>162</sup> This agenda showcases Chinese capabilities in design, finance, management, construction and hardware manufacture linked to an array of upstream industries, many awash in excess production capacity. While China continues as a leading global destination for foreign investment, Belt & Road projects spearhead its emergence as a major source of outbound international investment.

These huge programs represent the leading edge of official economic intervention, which has achieved a scale without historical precedent. China's government spending exceeds its U.S. counterpart.<sup>163</sup> Beijing's control over financial resources extends far beyond official budgets. China's state-dominated financial system remains responsive to official directives, as

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<sup>161</sup> J. Wübbeke et al, "Made in China 2025: The Making of a High-tech Superpower and Consequences for Industrial Countries," MERICS Papers on China, No. 2, 2016.

<sup>162</sup> The share of China's exports to advanced nations declined from 54.6 to 47.7 percent between 2007 and 2018 (Yearbook 2008, Table 17-8; Yearbook 2019, Table 11-5).

<sup>163</sup> See Appendix.

do managers of China's world-leading foreign exchange reserves and the leaders of non-financial state enterprises, whose combined assets eclipse those of the 500 largest U.S. companies.<sup>164</sup>

This multiplex arsenal supports outlays of astonishing breadth and scale. 90 percent of companies with A-shares listed on the Shanghai exchange received government subsidies in 2016. The China Integrated Circuit Industry Investment Fund, established in 2014, "invested in more than 70 projects and companies" following initial fund-raising. Subsequent contributions lifted funding to US\$51 billion. China's shipbuilding industry, which reported 2005 output of RMB 125.7 billion, received "policy support" valued at RMB 550 billion between 2006 and 2013.<sup>165</sup>

Government intervention extends beyond China's national borders. UNCTAD data show that China's stock of outbound FDI, much of it in the hands of state enterprises, now exceeds the stock of inward FDI. Overseas lending, partly in support of Belt & Road projects, represents a further extension of official activity: year-end 2018 debts of "73 of the world's poorest countries" held by the Chinese state and state-owned financial institutions amounted to US\$104 billion, matching the total (\$106 billion) owed to the World Bank.<sup>166</sup>

Chinese advances in multiple segments of technology-intensive activity – internet software, supercomputers, electronic vehicles, high-speed rail, green energy, high-voltage power transmission, artificial intelligence and genetics, among others – demonstrates the new

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<sup>164</sup> See Appendix.

<sup>165</sup> 中国装备制造业发展报告 2017, ed. D.H. Xu 徐东华 *Report on the Development of Equipment Manufacturing Industry in China (2017)* (Beijing: Shehui kexue wenxian chubanshe, 2017), 87; B. van Hezewijk, "Big Fund = Big Impact? 'Winning the Future' of the Semiconductor Industry," (posted at <https://www.linkedin.com/pulse/big-fund-impact-winning-future-semiconductor-industry-van-hezewijk/>, 24 August 2019; TX Investment Consulting Co., Ltd., "全球船舶制造业持续景气，国内造船企业加速整合 (Feb. 28, 2007), 7; P.J. Barwick, M. Kalouptsi and N.B. Zahur, "China's Industrial Policy: An Empirical Evaluation" (NBER Working Paper 26075, 2019), 2

<sup>166</sup> "The Debt Toll," *Economist*, 4 July 2020, 63.



strategy's capacity to promote innovation. At the same time, multiple constraints limit the effectiveness of the vast resources deployed in pursuit of innovation.

**Constraints – ongoing, new and resurrected.** China's economic system channels vast resource flows into unproductive activities. Top-down selection of priorities steers investment in directions that often clash with domestic capabilities and with China's international comparative advantage. Politics pervades the allocation process, delivering resources and opportunities into the wrong hands, while bypassing worthwhile industries, projects and proprietors.

SOE priority status has survived decades of underperformance. During 1978-2007, the state sector "contributed essentially zero to aggregate growth in total factor productivity."<sup>167</sup> Additional evidence confirms the deleterious impact of state ownership on growth, profitability, and structural change. Entry barriers and subsidies allow plodding, overstaffed state firms<sup>168</sup> to remain profitable; at the same time, soft budget constraints exempt long-time money losers from financial discipline, dragging returns downward.<sup>169</sup> The growing complexity of SOE structures conceals payoffs to allies, wealth extraction and waste. Negative consequences of state ownership extend beyond the SOEs themselves to encompass the sectors and regions they inhabit: "in almost every dimension – the rate of start-up of new firms, size of firms, TFP, and wages - . . . new firms are weaker where the SOEs are more dominant."<sup>170</sup>

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<sup>167</sup> Zhu, "Understanding China's Growth," 119.

<sup>168</sup> Insiders at one of China's largest energy firms regard two-thirds of the company's work force as superfluous (personal communication).

<sup>169</sup> N.R. Lardy, *The State Strikes Back: The End of Economic Reform in China?* (Washington: Peterson Institute for International Economics, 2019), 52, 55, 89 shows declining return on assets for state firms after 2007, with the share of loss-makers regularly exceeding 40 percent.

<sup>170</sup> L. Brandt, G. Kambourov and K. Storesletten, "Barriers to Entry and Regional Economic Growth in China" (University of Toronto, Department of Economics, Working Paper 652, 2020-01-05).

Announcement of official priorities sparks rampaging investment as officials, agencies, companies and organizations pursue the anticipated cornucopia of financial and reputational bounty. In 2016, a “robot craze” prompted local governments to announce 2020 output targets that amounted to a considerable multiple of overall demand projections.<sup>171</sup> Inflated R&D spending,<sup>172</sup> low quality patents,<sup>173</sup> phantom companies,<sup>174</sup> unaudited venture funds,<sup>175</sup> and dubious projects burden Chinese industrial policy with long tails of excess.

The ubiquity of procedures that allow “particularistic bargains” rather than “universal rules” enables officials to distort seemingly market-based transactions to benefit favored participants.<sup>176</sup> Officials can readily manipulate government-managed auctions<sup>177</sup> and supplier certification processes to steer business opportunities toward preferred clients. In return for access to urban real estate at discounted prices, companies associated with relatives of top leaders accelerate the promotion of provincial officials.<sup>178</sup> Similarly privileged ‘princelings’ orchestrate lesser rivulets of efficiency-sapping resource diversion in every locality and sector.

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<sup>171</sup> J. Wübbeke et al, “Made in China,” 25.

<sup>172</sup> 中国科研经费水分大: “节省”经费发“福利” 经济参考报 3 June 2007, <http://www.techweb.com.cn/news/2007-03-06/162748.shtml>; Y.T. Sun and C. Cao, “China’s Research is Work in Progress,” *China Daily* 11 May 2015.

<sup>173</sup> A.G.Z. Hu, P. Zhang and L.J. Zhao, “China as Number One? Evidence from China’s Most Recent Patenting Surge,” *Journal of Development Economics* 124 (2017), 107-19; P. Boeing and E. Mueller, “Measuring Patent Quality: Development and Validation of ISR Indices,” *China Economic Review* 57 (2019).

<sup>174</sup> R.C. Dai, X.Y. Liu and X.B. Zhang, “Detecting Shell Companies in China,” presentation at ASSA annual meeting, 4 January 2020.

<sup>175</sup> N. Xiang, “Rise of Trillion-RMB Government Funds Reshapes China’s Investment Landscape.” 13 January 2017. Accessed September 11, 2017 from <https://www.chinamoneynetwork.com/2017/01/13/rise-of-trillion-rmb-government-funds-reshapes-chinas-investment-landscape>

<sup>176</sup> S.L. Shirk, *The Political Logic of Economic Reform in China* (Berkeley: University of Calif. Press, 1993), 336.

<sup>177</sup> H.B. Cai, J.V. Henderson and Q.H. Zhang, “China’s Land Market Auctions: Evidence of Corruption?” *RAND Journal of Economics* 44.3 (2013), 488-521.

<sup>178</sup> T. Chen and J.K.S. Kung, “Busting the ‘Princelings’: The Campaign against Corruption in China’s Primary Land Market,” *Quarterly Journal of Economics* 134.1 (2019), 185-226. The authors note that recent anti-corruption efforts appear to have reduced these discounts by 40-50 percent.

Xi Jinping's emphasis on top-down strategizing and enthusiasm for the "dominance" (主体地位) and "leading role" (主导地位) of public ownership and state-controlled enterprises enlarges these costs. Casting state-owned enterprises as lead actors in national economic strategy diminishes prospects for favorable outcomes. The growing sway of official mandates over financial resources, investment opportunities and approval mechanisms stifles decentralized experimentation<sup>179</sup> and limits private sector options. New constraints, beginning with the installation of frontier innovation as the centerpiece of China's policy agenda, expand the burden of system costs.

Current policy replacing market-propelled catch-up with officially mandated innovation targets adds both cost and risk. Investing in activities that enjoy a comparative cost advantage is widely seen as a key contributor to China's recent boom. This has meant that Chinese firms, often working within the anonymity of global supply chains, have pursued incremental advances rather than "'moonshot innovations' - not for them 'iPhone envy'."<sup>180</sup> With 'Made in China 2025' in the forefront, current policy stands this approach on its head, focusing precisely on 'moonshot innovations' spanning a vast spectrum from large-scale passenger aircraft and space exploration to genetics and nanotechnology.

Attempting frontier innovation in a middle-income economy with a limited command of the human, industrial and organizational resources that underpin innovation systems in advanced nations multiplies the risks associated with any such effort. Surveys of China's engineering industries highlight weaknesses in precision, durability, quality control, software development and commercialization of research results – all critical to innovative success.<sup>181</sup> Growing hostility to foreign involvement, especially in strategic and advanced sectors, invites

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<sup>179</sup> S. Heilmann, *Red Swan: How Unorthodox Policy Making Facilitated China's Rise* (New York, Columbia University Press, 2018).

<sup>180</sup> G.S. Yip and B. McKern, *China's Next Strategic Advantage: from imitation to innovation*. Cambridge MA: MIT Press, 2016), 82-3.

<sup>181</sup> Annual issues of 中国装备制造业发展报告, ed. D.H. Xu 徐东华 address these issues in considerable detail.

premature import substitution, further compounding the dangers surrounding the main thrust of China's economic agenda.

Structural change has added constraints in two areas: services and urbanization. The tertiary or service sector, now the largest contributor to both output and employment, includes retail, hospitality and other low-skill, labor-intensive industries. The technology-intensive service segment includes entrepreneurial and innovative operators such as Huawei, Alibaba and Tencent, along with state-owned financial and telecom giants whose main asset is the official umbrella that protects them from competition.

Despite the achievements of a few globally competitive firms, weak performance predominates. Exclusion of private operators limits competition and raises costs in air and rail transport, finance, insurance, and telecommunications, among others. The protectionist nature of China's innovation policy is evident in digital services, where China ranks as the global leader in restricting cross-border trade.<sup>182</sup>

Massive internal migration reflects both the attraction of vibrant urban economies and the distortions associated with decades of policy discrimination against rural areas. National policy often appears to conflate cause and effect, anticipating that enlarging city boundaries, reassigning farmland to non-agricultural pursuits, and relocating villagers into high-density housing clusters will somehow elevate productivity. Municipal governments, reflecting concern over the cost of providing health and education benefits as well as urban contempt for migrants' low cultural level, hesitate to absorb these newcomers, and sometimes seek to drive them away.

Revival of pre-reform obstacles to growth completes the roster of constraints that limit China's growth prospects.

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<sup>182</sup> *OECD Services Trade Restrictiveness Index: Policy Trends up to 2020* (Paris: OECD, 2020), 12-13.

China's current leader has resurrected the pre-reform personality cult. As under Mao, many actions must await the leader's personal decision. Deng Xiaoping's pragmatism fades as specialized bureaucracies give way to party loyalists. China's constitution now decrees that "east, west, south, north, the party leads on everything."<sup>183</sup>

These changes add fresh burdens to the economy. Party review of business decisions in state and even private firms will complicate already labyrinthine decision mechanisms. Growing pressure on private firms "to set up party committees with an increasing say over strategy" steers activities in directions that deliver political rather than commercial returns. Not surprisingly, available data show declining profitability for non-state industrial and service firms.<sup>184</sup> Educational quality must suffer as teachers shelter behind rote learning and academics give way to "Xi Jinping thought." As in the past, increased emphasis on orthodoxy and suppression of dissent, the bedfellows of politics in command, will attenuate the critical thinking essential to innovation.

Strident emphasis on "autonomous" (自主) innovation built upon "independent Chinese intellectual property" illustrates how growing nationalist preoccupation has curtailed involvement with foreign firms, technologies and components. Enhanced focus on security and on civil-military integration sharpens this nationalist policy edge. With foreign businesses complaining that "strong-arm tactics. . . . marked difficulty in getting licenses" and deportation of foreign managers make them "feel unwelcome in China," it is hardly surprising that the number of foreign-invested enterprises and their share in both output and exports began to decline well in advance of the abrupt deterioration of U.S.-China relations in 2020.<sup>185</sup> Rising

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<sup>183</sup> N. Grünberg and K. Drinhausen, "The Party Leads on Everything," *Merics China Monitor* 24 September 2019, 10.

<sup>184</sup> "The New State Capitalism: Xi Jinping is Trying to Remake the Chinese Economy," *Economist* 15 August 2020. NBS data show the return on assets for above-norm private industry falling from 12-14 percent during 2010-12 to just over 7 percent in 2018-19; for services, see L. Brandt, "Policy Perspectives from the Bottom Up: What do Firm-level Data Tell Us China Needs to Do?" in R. Glick and M.M. Spiegel eds., *Policy Challenges in a Diverging Global Economy* (San Francisco: Federal Reserve Bank of San Francisco, 2015), 297.

<sup>185</sup> R. Legaspi, "More U.S., Foreign Businesses Feel Unwelcome in China," *China Topix* 9 January 2015, accessed 25 July 2020 from <http://www.chinatopix.com/articles/31659/20150109/more-us-foreign-businesses-feel-unwelcome-in-china.htm>. Yearbook 2019, Tables 13-3 and 13-9 shows sharp reduction in foreign-invested

barriers led the European Commission to identify China as “the EU’s most restrictive trading partner.”<sup>186</sup>

Trade disruptions involving rare earths, cars, beef, barley, medical supplies, sports and tourism, among others, have become a routine instrument of China’s foreign policy, encouraging foreign partners to diversify away from China. Domestic activities suffer as well: even in scientific fields, researchers face restrictions on participation in international projects and conferences. Foreign textbooks now arouse suspicion: in an apparent exception, business schools are “mostly spared from curbs on the use of imported textbooks.”<sup>187</sup>

Strong conflict between the vast resources mobilized to support China’s innovation ambitions and the daunting obstacles hindering China’s economic progress invites a review of recent productivity trends, which combine multiple factors into a single measure of economic advance.

**Productivity.** Ongoing decline in the size of the labor force and in the share of GDP going to investment dictate the dependence of future growth on increases in TFP, which measures the level of output per unit of combined inputs. Socialist planning raised output amidst stagnant productivity. Reform abruptly reversed this failure. Multiple studies track China’s transition to “intensive” growth – with the majority of output expansion attributable to higher productivity rather than increased quantities of labor and capital inputs – for three decades from 1978.

Beginning in 2008, however, we see a return to “extensive” growth powered solely by larger inputs. A succession of studies using national, provincial and enterprise-level data point

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industrial firms along with employment and share of overall industrial output after 2007. L. Brandt and K. Lim, “Accounting for Export Growth in China” (ms. 2020) use China’s trade transactions Customs data to show a decline in the share of exports by foreign firms.

<sup>186</sup> “Report from the Commission to the Parliament and the Council on Trade and Investment Barriers 1-January 2018-31 December 2018” (Brussels, n.d.), 28.

<sup>187</sup> “MBAs with Chinese Characteristics,” *Economist*, 15 February 2020, 57.

to TFP stagnation or even decline since the eve of the global financial crisis.<sup>188</sup> The size of the private sector and the scale of productivity deterioration suggests that declining performance encompasses both private and state enterprise, with areas of stagnant or declining productivity dwarfing pockets of dynamism.

China enters the reform era's fifth decade with its economy far larger and more sophisticated, its people more prosperous and better educated, its command of modern technology far greater and the expertise of its policy-makers far deeper than in 1978. Despite these astonishing advances, the revival of plan-era policy approaches and political strategies now confronts China's economy with the same challenge it faced in the 1970s: how to overcome self-imposed obstacles that prevent improvements in knowledge and capabilities from generating intensive growth that outruns the accumulation of resources.

## CONCLUSION

China's boom, a major event in global economic history, has transformed a poor, backward, isolated economy into a prosperous and dynamic global giant. This stunning departure is no miracle, but rather the consequence of readily understandable changes in core elements of China's economy. The restoration of economic incentives, reflecting Deng Xiaoping's call to "let some people get rich first," invited every individual, enterprise and official to pursue income-enhancing opportunities. Gradual opening of domestic and international markets, along with partial relaxation of long-standing restrictions on entry, competition and mobility, expanded the universe of available choices.

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<sup>188</sup> D. Dollar, "China's New Macroeconomic Normal" (unpublished, 2016); C.E. Bai and Q. Zhang, "Is the People's Republic of China's Current Slowdown a Cyclical Downturn or a Long-term Trend? A Productivity-based Analysis," (Manila: Asian Development Bank Institute Working Paper No. 635, 2017); S.J. Wei, Z. Xie and X.B. Zhang, "From 'Made in China' to 'Innovated in China': Necessity, Prospect, and Challenges," *Journal of Economic Perspectives*, 31.1(2017, 49-70); L. Brandt and K. Lim, "Export Growth."

Modest institutional opening prompted a rush to exploit the untapped potential accumulated under socialist planning. Initial opportunities clustered in the countryside, where thousands of enterprises and millions of villagers, freed from the shackles of collective farming and enforced self-sufficiency, streamed into long-forbidden markets and occupations. Decentralized movement of labor, materials and capital toward financially rewarding activities brought massive change: hundreds of millions left farming, millions of new firms emerged and vast resources poured into China's coastal provinces.

Long before the recent boom, Qing-era Chinese society harbored elements favorable to economic growth. Wide dispersion of entrepreneurship, commercial acumen and sophistication, universal regard for education, informal contract enforcement mechanisms and competent local administration all contributed to the initial reform response and its subsequent extension. These growth-enhancing features had previously supported Qing-era prosperity and commercialization, but in the context of tightly interlinked economic, political and social institutions, lacked the capacity to generate an economy-wide response to the appearance of new markets and new technologies in the nineteenth and early twentieth centuries.

John Fairbank described China's political culture and governing institutions as resting on "ancient structures of social order and political values that are too deep for rapid change."<sup>189</sup> These foundations, which shape both the strengths and the limitations of China's recent economic boom, have survived the transition from empire to People's Republic. Spanning Qing, the Republic and the PRC, these arrangements weave authoritarian hierarchy and personalist networking into a fabric that binds citizens to the state, motivates vigorous support for official policies and priorities, and enhances security for both rulers and citizens.

This system provides essential protection for individuals and private business investment, but its economic costs embed permanent tension between the demands of

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<sup>189</sup> J. K. Fairbank, "The Unification of China," R. MacFarquhar and J.K. Fairbank eds., *The Cambridge History of China* vol. 14, part 1 The Emergence of Revolutionary China, 1949-1965 (Cambridge: Cambridge University Press, 1987), 26.



political stability and economic development. Systematic misallocation via networking, while economically debilitating, helps to cement elite loyalty, which in turn provides critical support to the survival and continuity of Chinese authoritarian regimes. The rent-seeking that honeycombs policy implementation propels high levels of income inequality<sup>190</sup> along with massive waste – as when large shares of funds awarded for constructing public projects vanish into private pockets before work commences.<sup>191</sup>

Long before China's post-1978 growth explosion, Qing territorial expansion, suppression of mid-nineteenth century rebellions and the PRC's recovery from both self-inflicted and external shocks demonstrate the durability and resilience of Chinese authoritarian systems. The most dynamic episodes of change and growth, however, cluster around interludes of official weakness, when ruptures in the carapace of restrictions surrounding elite interests enable China's populace to unleash the full force of its remarkable commercial talents.

Shanghai's pre-1937 development into Asia's premier financial complex as well as a commercial hub and manufacturing center illustrates this potential. Several decades later, post-Cultural Revolution erosion of central authority enabled nationwide rural reforms. The astonishing boom that followed revealed the capacity of unheralded 'peasants' to lift China's vast countryside onto an elevated growth trajectory that liberated hundreds of millions from absolute poverty even as crumbling commune finances reduced funding for social welfare. The subsequent surge in private entrepreneurship extended the reach of 'development from below' into the urban economy, where private firms garnered large shares of output and employment wherever they managed to gain a foothold.

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<sup>190</sup> Analyses of contemporary inequality find that the top 1 percent of households receive roughly 15 percent of overall income. See <https://wid.world/country/china/>, focused on 2005-15 and T. Piketty, L. Yang and G. Zucman, "Income Inequality is Growing Fast in China and Making it Look More like the US" <https://blogs.lse.ac.uk/businessreview/2019/04/01/income-inequality-is-growing-fast-in-china-and-making-it-look-more-like-the-us/>. These estimates resemble those for late Qing: C.L. Chang, *The Income of the Chinese Gentry* (Seattle: University of Washington Press, 1962), 327-8 finds that gentry families comprised 2 percent of China's population and received 24 percent of overall income during the 1880s.

<sup>191</sup> Participants indicate that skimming may absorb 30 percent of costs for airports or stadiums and mention higher figures for road-building (personal communication).

The 1990s spawned a unique concatenation of expanded market opening with massive growth and centralization of state-controlled fiscal and financial resources. SOE reforms decanted tens of thousands of enterprises and tens of millions of workers into the grip of market discipline, while sweeping reductions in barriers to international trade and investment intensified domestic competition, elevated quality standards and forced widespread reductions in profit margins. While the multiplication of state-controlled resources stabilized a regime shaken by Tian'anmen, the economic benefits from market opening extended robust productivity growth until the 2008 global financial crash.

Long-standing tension between market- and state-led economic strategies resurfaced following China's 2001 WTO entry. Unlike the 1990s, there is a dearth of mutually acceptable initiatives. The market economy vision, most clearly articulated in the 2013 document *China 2030*, anticipates a retreat of the state, and especially of state-owned enterprises, from the 'commanding heights' of an open economy led by private business. Implementation of this strategy would sharply reduce the resources under the control of state and Party leaders.

Aside from a brief flurry in 2013, when a Central Committee decision endorsed the notion of building an economy in which "market forces dominate," the rival vision of a state-led economy has captured the imagination of China's ruling elites. Support for state direction over market dominance came from many sources. The economic success of Japan, Taiwan and Korea has built a global constituency promoting government entrepreneurship as the wellspring of technological development. Many Chinese viewed the absence of globally prominent Chinese firms, brands and technologies as signaling the failure of openness to end China's economic subordination to former colonial powers. Concern about China's need to develop its own military technology bolstered nationalist objections to economic opening. Unavoidable reliance on state intervention to alleviate the 2008 financial crisis reinforced this view of market frailty and bolstered support for increased government management of the economy.

The administration of Xi Jinping has moved decisively toward state control. Core elements extend practices familiar from seventy years of Chinese economic planning. Policy directives, notably Made in China 2025, set overall strategy and lay out investment priorities. State-owned enterprises take the lead in implementing top-down initiatives. The current policy constellation incorporates new dimensions and revives former practices.

Reflecting China's recent economic advances, the current array of strategic industries and technologies includes many new entrants. Recent plans for both well-established and novel sectors revolve around bold ambition to reach and extend global technological frontiers.

China's effort to redirect development efforts from widespread, decentralized incremental efforts to add value through improvements in cost, quality and design to a more concentrated effort to achieve targeted breakthroughs in a narrow range of products and technologies faces formidable challenges. Frontier innovation is always a high-risk proposition. Launching a "breakthrough" strategy from a middle-income platform beset by weaknesses in key domestic supply chains and limited downstream demand adds fresh layers of risk.

Assigning vast resources to a talented and highly motivated corps of domestic researchers will surely deliver successes – already visible in State Grid's technical advances in high-voltage electricity transmission<sup>192</sup> and in the commercial achievements of firms like Alibaba, Tencent, and Huawei. When measured against the enormity of the world's largest economy, however, even considerable numbers of isolated breakthroughs may fail to deliver economy-wide productivity increases, leading to a Soviet-style outcome in which the occasional Sputnik illuminates galaxies of mediocrity.

Looking beyond efforts to scale the heights of advanced technology, the absence of major reforms during the two decades following China's 2001 entry into WTO has burdened the

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<sup>192</sup> Y.C. Xu, "The Search for High Power in China: State Grid Corporation of China," in L. Brandt and T.G. Rawski eds., *Policy, Regulation and Innovation in China's Electricity and Telecom Industries* (Cambridge: Cambridge University Press, 2019), 221-61.

economy with an immense backlog of costs. Excess capacity in steel, electricity and many other industries, state-sector firms bulging with surplus employees, and zombie companies held together with patchworks of subsidies, loans and tax concessions exemplify the distortions that permeate every corner of China's vast economic landscape. Past outcomes invite expectations that strengthening Party control and promoting self-reliance will accelerate the pace of cost accretion.

The decade following the global financial crisis has seen a return to the plan-era pattern in which growth arises exclusively from the accumulation of labor and capital. Mounting signs of a steep fall-off in productivity growth warn that the state-led economic strategy may prematurely terminate China's remarkable growth explosion.

Some will see this skepticism as "misleadingly wrong" and "encouraging a complacent and dangerous underestimate of China's potential trajectory."<sup>193</sup> China's growth potential is indeed large. With its remarkable human resources, competent public administration and per capita income roughly one-fourth the U.S. level, China faces an unmistakable opportunity to navigate a lengthy runway of intensive growth.

For the moment, however, China's leaders have turned away from openness and competition, the conventional tools for traversing the path from middling to high levels of productivity and income. China's current policy constellation ignores abundant evidence, much of it from China itself, highlighting the benefit of shifting from plan to market, redistributing resources from state to private firms, and allowing increased access to foreign firms, imported products, and external technologies. Unless China's leaders once again demonstrate that they are "imaginative and flexible" and can "shift policy decisively, comprehensively, and without regard to procedural or legal niceties,"<sup>194</sup> disappointment seems more likely than triumph.

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<sup>193</sup> "New State Capitalism."

<sup>194</sup> T. Orlik, *China: The Bubble that Never Pops* (New York: Oxford University Press, 2020). 198-9.

Whatever the outcome and whatever its future course, China will continue to grapple with dilemmas that have bedeviled two centuries of modernization efforts. How can China embed a creative, freewheeling culture of economic and technical innovation within an authoritarian system whose leaders feel threatened by unorthodox thinking? How to resolve the concern, articulated in the nineteenth century by Wei Yuan and Zhang Zhidong and now resurrected by twenty-first century nationalists, that indiscriminate adoption of western technology endangers the edifice that Confucian and Communist thinkers have long seen as the foundation of authoritarian rule and social stability, and threatens the institutions and rent flows that underpin elite control?

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## **China's Great Boom as a Historical Process: Appendix**

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p. 19 of text:

China's share of global trade rose from 1.3 percent in 1913 to 2.1-2.3 percent during 1927-1929 and 3.7 percent in 1936; comparable PRC figures languished below one percent throughout 1968-1980, regaining the 1936 level only after 2000.<sup>51</sup> Throughout the early 20<sup>th</sup> century, China was also a major beneficiary of foreign direct investment, much of it from advanced countries. By the 1930s, China held more than ten percent of the global stock of inbound foreign direct investment and over 15 percent of the stock located in developing nations, with the largest portion directed toward (mostly rail) transportation.<sup>52</sup>

### **China's share of global trade since 1913**

Table A-1 in the Appendix provides data and documentation for China's share of global merchandise trade.

### **China's share of the global stock of inbound FDI during the 1930s**

C.M. Hou, *Foreign Investment and Economic Development in China, 1840-1937* (Cambridge: Harvard University Press, 1965), 13, places China's 1936 stock of foreign direct investment (including Japanese-controlled northeastern provinces) at US\$2.682 billion, with transport absorbing 25 percent.

J.H. Dunning and S.M. Lundan, *Multinational Enterprises and the Global Economy* (2<sup>nd</sup> ed., Cheltenham: Elgar, 2008), 175, gives a global 1938 total for foreign direct investment of US\$24.3 billion, of which US\$15.969 billion was located in developing economies.

We use Hou's estimates for China's FDI stock in 1936 and Dunning and Lundan's global estimates for 1938.

### Indicators of growing state access to discretionary funds

p. 48: between 1992/93 and 2007, central government revenue, state enterprise assets and profits, nationwide financial deposits and foreign exchange reserves each rose far more rapidly than China's GDP.

Table A-2 assembles data for each of these variables.

### China and U.S. government spending compared

p. 51: China's government spending exceeds its U.S. counterpart.

Bloomberg News estimates China's overall 2019 government spending at RMB 37.2 trillion or, at RMB7 to the dollar, US\$5.3 trillion (<https://www.bloomberg.com/news/articles/2020-03-13/unraveling-the-mysteries-of-china-s-multiple-budgets-quicktake> , accessed 072420).

Combined 2019 spending by U.S. federal, state and local governments was \$3.7 trillion (U.S. Bureau of Economic Analysis, "System of National Accounts," Table 1.1.1, accessed 24 July 2020 via [https://en.wikipedia.org/wiki/Government\\_spending\\_in\\_the\\_United\\_States#cite\\_note-:10-27](https://en.wikipedia.org/wiki/Government_spending_in_the_United_States#cite_note-:10-27) ).

### Assets of China's non-financial state-owned enterprises and firms in the S&P 500 compared

p. 51: [China's] non-financial state enterprises, whose combined assets eclipse those of the 500 largest U.S. companies.

Year-end 2018 assets of China's non-financial SOEs were RMB 210.4 trillion or US\$30.1 trillion, exactly equal to the year-end capitalization of the companies in the U.S. S&P 500 index. See 国务院关于 2018 年度国有资产管理情况的综合报告 , accessed 072420 from <http://www.sasac.gov.cn/n2588025/n2588119/c12390466/content.html>

"The historical total market capitalization of the 500 largest public U.S. companies" was \$22,065,655.2 million at the end of 2018 and \$28,125,589.1 million at the end of 2019 (<https://siblisresearch.com/data/total-market-cap-sp-500/> accessed 101720).



Table A-1. China Position in Global Merchandise Trade and Foreign Direct Investment, Selected Years, 1913-2019

Year	China share of Global Merchandise Trade (percent)	China Share of Global Foreign Direct Investment Flow & Stock (%)				China Rank Among Global FDI Flow	
		Inflow	Inward FDI Stock	Outflow	Outward FDI Stock	Recipients	Originators
1913	1.9						
1914			7.6				
1927	2.1						
1928	2.3						
1929	2.1						
1936/38			11.0				
1950	0.9						
1955	1.6						
1960	2.0						
1965	1.2						
1970	0.7						
1975	0.9						
1978	0.8						
1980	0.9						
1985	1.8						
1990	1.6	1.7	0.9	0.3	0.2	12	25
1992	2.2	6.7	1.4	1.9	0.4	5	22
1995	2.7	10.9	2.8	0.6	0.4	2	21
2000	3.6	3.0	2.6	0.1	0.4	8	22
2005	6.7	7.6	2.4	1.5	0.5	3	27
2007	7.7	4.4	1.8	1.2	0.6	6	24
2010	9.7	8.2	2.9	4.9	1.5	2	19
2015	11.9	6.6	4.6	8.5	4.1	5	10
2019	12.0	9.2	4.9	8.9	6.1	2	3

**Sources:****GLOBAL MERCHANDISE TRADE**

- 1913 L. Brandt, T.G. Rawski and X.D. Zhu, "International Dimensions of China's Long Boom," in W.W. Keller and T.G. Rawski eds., *China's Rise and the Balance of Influence in Asia* (Pittsburgh: University of Pittsburgh Press, 2007), 17.
- 1927-29 League of Nations data cited in N.R. Lardy, *China in the World Economy* (Washington: Institute for International Economics, 1994), 2.
- 1936 Between 1929 and 1936, trade volume for China (including Manchuria) rose by 5.2 percent, while global trade volume fell by 28.3 percent; see T.G. Rawski, "Economic Growth and Integration in Prewar China" (Toronto: University of Toronto-York University Joint Centre on Modern East Asia Discussion Paper #2, 1982), 49 and "International Trade Statistics 1900-1960" (New York: United Nations, 1962), Table 1.
- 1950-2019 <https://timeseries.wto.org/> accessed 070320

**FOREIGN DIRECT INVESTMENT****China**

- 1914 C.M. Hou, *Foreign Investment and Economic Development in China, 1840-1937* (Cambridge: Harvard University Press, 1965), 13, places China's 1914 stock of foreign direct investment at US\$1,067.0 million.
- 1936 Hou, 13, places China's 1936 stock of foreign direct investment (including Japanese-controlled northeastern \provinces) at US\$ 2,682 million.

**Global**

- 1914/1938 J.H. Dunning and S.M. Lundan, *Multinational Enterprises and the Global Economy* (2nd ed., Cheltenham: Elgar, 2008), 175, estimate the global stock of FDI as follows

	Global Inbound FDI Stock (US\$ Millions)		China's Share of FDI (percent)	
	Total	Developing Countries	Global	Developing Countries
1914	14,085	8850	7.6	12.1
1938	24,315	15969	11.0	16.8

1990-2019: UNCTAD *World Investment Report 2020*

**Table A-2 State Sector Indicators, Selected Years, 1978-2019**

Panel A: Nominal Values (RMB Billion, except Forex US\$ billion)

Year	GDP	Central Govt. Revenue	State Enterprise (SOE) Assets	Non-financial SOE Profits		State Sector Gross Domestic Fixed Capital Formation	Financial Deposits	Forex Reserve US\$ billion
				Pre-tax	After tax			
1978	367.87	17.577	448.8	n.a.	n.a.	107.4	115.5	0.2
1992	2719.45	97.951	1649.8	224.3	59.8	571.6	2314.4	19.4
2007	27023.23	2774.916	34706.8	3488.55	1744.18	2884.7	38937.1	1528.2
2010	41303.03	4248.847	64021.4	4797.25	2142.82	<b>5993.1</b>	71823.8	2847.3
2018	91928.1	8545.646	2104000	8224.74	3615.77	8644.4	177500.0	3072.7
2019	99086.5	n.a.	2339000	8362.42	3785.71	9242.2	192900.0	3107.9

Panel B. Nominal Indicators as Percentage of Current Year Nominal GDP

1978	100	4.8	122.0	n.a.	n.a.	29.2	31.4	
1992	100	3.6	60.7	8.2	2.2	21.0	85.1	
2007	100	10.3	128.4	12.9	6.5	10.7	144.1	
2010	100	10.3	155.0	11.6	5.2	14.5	173.9	
2018	100	9.3	2288.7	n.a.	3.9	9.4	193.1	
2019	100	n.a.	2360.6	n.a.	3.8	9.3	194.7	

Panel C. Index Number of Nominal Indicator Value, with 1992=100

1978	13.5	17.9	27.2	n.a.	n.a.	18.8	5.0	0.9
1992	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2007	993.7	2833.0	2103.7	1555.3	2916.7	504.7	1682.4	7860.2
2010	1518.8	4337.7	3880.6	2138.8	3583.3	1048.5	3103.3	14644.5
2018	3380.4	8724.4	127530.6	3666.8	6046.4	1512.3	7669.4	15803.7
2019	3643.6	n.a.	141774.8	3728.2	6330.6	1616.9	8334.8	15984.7

## Table A-2: Notes and Sources

Yearbook refers to annual issues of the China Statistical Yearbook 中国统计年鉴, each with the previous year's data

### GDP (current prices)

1978-2017 Yearbook 2018, Table 3-1

2018 & 2019 NBS 2019 Communique [http://www.stats.gov.cn/tjsj/zxfb/202002/t20200228\\_1728913.html](http://www.stats.gov.cn/tjsj/zxfb/202002/t20200228_1728913.html) accessed 101820

### Central government revenue

1978-2018 Yearbook 2019, Table 7-1

2019 NBS 2019 Communique [http://www.stats.gov.cn/tjsj/zxfb/202002/t20200228\\_1728913.html](http://www.stats.gov.cn/tjsj/zxfb/202002/t20200228_1728913.html) accessed 101820

### SOE assets

1978 项安波, 国企改革四十年的经验与启示 《中国发展观察》2018 年第 201818 期  
<http://www.1xuezhexuezhexue.com/Qk/art/677849?dbcode=1&flag=2> accessed 070120

1992 国家国有资产管理局关于发布国有资产统计结果的函 (document dated 1994-05-12)  
at <http://www.reformdata.org/1994/0512/20961.shtml> accessed 070120  
(both available via authors' file State owned assets 1992-2007 DL 070120)

2007 & 2010 K.J. Lin et al, "State-owned Enterprises in China: A Review of 40 Years of Research and Practice,"  
China Journal of Accounting Research 13 (2020), Table 1

2018 <http://www.npc.gov.cn/npc/c30834/201910/9b41e133a8cb45abaebbb44893a2eb55.shtml>  
accessed 102120

2019 <http://www.sasac.gov.cn/n2588025/n2588139/c15698634/content.html> accessed 102120

### SOE profits

1992 中国国有资产年鉴1993, electronic version accessed 102520 (figures in RMB Billion)

	Pre-tax profit Net profits	
All SOEs	329.1	117.6
Non-financial SOEs	224.3	59.975
Financial SOEs	104.8	57.625

Profits of major banks were taxed at 55% (Lardy, *China's Unfinished Economic Revolution*, 100)  
We apply this rate to profits of all financial SOEs. In 1993, banks held 94.6 percent of the combined  
assets of banks, insurance firms and non-bank financial SOEs; see 中国国有资产年鉴1994.

Pre-tax profits of Non-financial SOEs derived as a residual  
*red italicized data derived; other data from indicated source*

2007-2019 Estimates courtesy of Andrew Batson

Table A-2: Notes and Sources (Continued)

**State Sector Gross Domestic Fixed Capital Investment (GDFKF)**

Published statistics on Fixed Asset Investment (FAI) 固定资产投资 are widely seen as problematic.

We therefore estimate state sector investment as follows:

1. Calculate the state sector's share in Fixed Asset Investment (FAI)
2. Apply the resulting percentage figure to aggregate gross domestic fixed capital formation from the national accounts.
3. Take the resulting figure as our estimate of State sector investment in fixed assets

**Derivation for State Sector Gross Fixed Capital Formation (GDFKF)**

Year	Aggregate FAI	State Sector FAI		National Accounts GDFKF	State Sector GDFKF
	RMB Bill. A	RMB Bill. B	% Share C	RMB Bill. D	RMB Bill. E
1978	n.a.	66.9	69.5	107.4	74.6
1992	785.5	527.4	67.1	851.4	571.6
2000	3291.8			3266.9	
2001	3721.3			3708.8	
2002	4350.0			4267.2	
2003	5556.7			5257.5	
2004	7047.7			6397.5	
2005	8877.4			7385.2	
2006	10999.8	3296.3	30.0	8497.9	2546.6
2007	13732.4	3870.6	28.2	10234.5	2884.7
2008	17282.8	4870.5	28.2	12470.1	3514.2
2009	22459.9	6969.3	31.0	15269.1	4738.0
2010	25168.4	8331.7	33.1	18104.1	5993.1
2011	31148.5	8249.5	26.5	21401.7	5668.1
2012	37469.5	9622.0	25.7	23832.1	6120.0
2013	44629.4	10985.0	24.6	26398.0	6497.5
2014	51202.1	12500.5	24.4	28224.2	6890.7
2015	56200.0	13971.1	24.9	28997.0	7208.6
2016	60646.6	12903.8	21.3	31014.5	6599.0
2017	64123.8	13907.3	21.7	34830.0	7554.0
2018	64567.5	14171.6	21.9	39384.8	8644.4
2019	56087.4	n.a.	21.9	42201.9	9242.2

**A. Aggregate Fixed Asset Investment, FAI (全社会固定资产投资)**

1992 Yearbook 1992, Table 5-1

2000-2019 NBS website [www.stats.gov.cn](http://www.stats.gov.cn) accessed 102220

Fixed asset investment for 2019 may be measured in "comparable prices" (*kebi jiage*);  
prior investment figures are in current prices

**B. State-sector FAI (国有全社会固定资产投资)**

1978 & 1992 Yearbook 1993, Table 5-5

2006-17 NBS website [www.stats.gov.cn](http://www.stats.gov.cn) accessed 102220

国有全社会固定资产投资

2018 Yearbook 2019, Table 10-11 reports yearly increase of 1.9%.

2019 Derived from SOE percent share of FAI

**C. State sector FAI Share (%)**

1978 Assumed same as 1981 - see 1950-1985 中国固定资产投资统计资料 (Beijing: China Statistics Press, 1987), 15.

1992-2018 Calculated from Cols. A & B

2019 Assumed same as 2018

**D. Aggregate Gross Fixed Capital formation from National Accounts (current prices)**

1978 & 1992 *Data of Gross Domestic Product of China 1952-2004* (Beijing: China Statistics Press, 2005), 25.

2000-2019 NBS website [www.stats.gov.cn](http://www.stats.gov.cn) accessed 102220

**E. State Sector Gross Domestic Fixed Investment**

Calculated from Columns C and D

**Table A-2: Notes and Sources (Continued)****Financial deposits**

1978 & 1992	Total RMB deposits in financial institutions; <i>China Compendium of Statistics 1949-2008</i> (Beijing: China Statistics Press, 2009), 65.
2007	Total deposits in financial institutions; Yearbook 2008, Table 19-1
2010	Total deposits in financial institutions; Yearbook 2011, Table 19-1
2018-19	Deposits in financial institutions; NBS 2019 Communique <a href="http://www.stats.gov.cn/tjsj/zxfb/202002/t20200228_1728913.html">http://www.stats.gov.cn/tjsj/zxfb/202002/t20200228_1728913.html</a> accessed 101820

**Forex**

1978-2018	Yearbook 2019 Table 18-7, excluding gold holdings
2019	NBS 2019 Communique <a href="http://www.stats.gov.cn/tjsj/zxfb/202002/t20200228_1728913.html">http://www.stats.gov.cn/tjsj/zxfb/202002/t20200228_1728913.html</a> accessed 101820