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Capital accumulation and beyond in post-Covid China

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Abstract

China has enjoyed a long period of economic growth but has also accumulated a number of long-term economic and social problems. In particular, since the mid-2010s, China's unique mix of neoliberal policies and state intervention and regulation seems to increasingly lose its effectiveness, as capital accumulation and economic growth remarkably slow down. China is at an important crossroads now as the pandemic makes many long-term challenges more acute. This paper starts with an analysis of the characteristics of capital accumulation in China and explores the causes of such a dramatic slowdown. In the context of the so-called debt-driven growth, this paper discusses the political and economic factors that prevent a major fiscal expansion in China. Then the paper goes beyond capital accumulation and discusses the issues of social equity as well as the urgent environmental/ecological challenges. To address the challenges from capital accumulation and beyond, the paper argues that China needs to move away from deregulation and supply-side doctrines and start a large scale public investment plan based on ecological principles and free from profit motives.

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China, capital accumulation, economic growth, crisis

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Capital accumulation and beyond in post-Covid China

Zhun Xu[1]

Introduction

Many Chinese people had a feeling of déjà vu when news and rumors started to circulate online about a potential outbreak of a new transmissible disease in January 2020. They still had a vivid memory of the stories of SARS back in 2003 when the government did not handle the crisis well at the beginning and the novel virus quickly sent society into a panic. The two crises soon turned out to be drastically different. The 2020 crisis is much more profound. The epidemic of SARS affected 26 countries and resulted in more than 8000 cases and less than 1000 deaths in 2003 before it disappeared later. On the other hand, in less than a year in 2020, the Covid-19 pandemic has already caused close to 50 million confirmed cases and more than a million deaths globally.

Moreover, from a long term perspective, the historical conditions in 2020 for China has become decidedly different from those in 2003. In terms of confirmed cases and casualties, the Chinese society has been relatively well protected from the Covid-19 pandemic, with rapid government responses and a mass-based program of epidemic control. But in terms of political economy, China is definitely in a more worrying situation in 2020.

Indeed, in 2003, China was at the start of a long boom. The GDP growth rate was around 10 percent. The country was about to finish its first major structural adjustment program from the 1990s that saw then 40 million public sector jobs eliminated and a large share of formerly state-owned enterprises privatized in a few years. The huge profits from the structural reforms and the much weaker working class became the basis for the rapid growth of private investment and employment in the 2000s. At the same time, the global economy was more welcoming, and China joined the World Trade Organization in 2001, thus diving deeper into the global economy and facilitating the expansion of an export-driven economy.

The situation has changed much in 2020, as China's economy has slowed down considerably in recent years and many long-term economic and social problems in China have gradually surfaced. The GDP growth rate had gravitated towards 5 percent before the pandemic. Despite years of development, the Chinese government acknowledged that more than 40 percent of the population has a monthly income of no more than 1000 yuan (or about 141 USD).[2] Referring to increasing competition and longer working days, academic jargon such as "involution" has become part of the daily language for the younger generation. Even without the pandemic, the prospect of the global economy already seems dismal and the conflicts between China and the US make the future even more uncertain.

China's rise and its crisis tendencies have long been a topic of interest for scholars and policymakers in and out of China. Broadly speaking, there are two types of analysis regarding China's prospects. The first group of writers believes that the Chinese economy is likely to stagnate or even collapse unless it fully adopts the US model, including Western electoral politics, privatization, and marketization among others. For example, in a comprehensive report prepared in collaboration with a leading Chinese official think tank, the World Bank suggests that China needs to aggressively deregulate the market and privatize the state-owned enterprises so that it can achieve the goal of becoming a "modern" society (World Bank and the Development Research Center of the State Council, China 2013). A commonly used concept is the so-called "middle-income trap" which suggests that countries will not be able to move from middle income to high-income levels without neoliberal structural reforms. Stronger (and often more careless) versions of this analysis argue that there needs to be a complete overhaul of the Chinese political system to make China's growth sustainable. For example, David Shambaugh, a China expert, wrote in 2015 that the endgame of the Chinese regime has now begun due to factors such as lack of confidence among Chinese elites themselves and the state-owned enterprises' refusal to further neoliberal reforms.[3] In the earlier days of the current pandemic, it was popular to predict that the outbreak in Wuhan would become China's Chernobyl and Western democracy can better control the virus, until the US and others proved themselves much more incompetent in dealing with this public health crisis.[4]

Another group of writers takes an opposite stance, arguing that the current Chinese model is fairly robust and stable. One type of analysis argues that China has developed an authoritarian but effective state, in the sense that the special interests have limited impact on the Chinese government (unlike, for example, the pharmaceutical industry in the US). Conservatives such as Francis Fukuyama argue that the Chinese government is responsive to people's demands and praise the Chinese political system for its ability to make large, complex decisions quickly, and to make them relatively well.[5] As another example, Yao Yang, a professor at Beijing University, argues that the Chinese government is neutral/disinterested, and potentially presents a better model than electoral politics as it largely avoids populism.[6] The image of a neutral state above all social classes is of course no more than a fantasy, but it is true that the Chinese ruling class so far has maintained a pragmatic mindset. For example, China kept firm capital controls and carried out reforms on a gradual basis. Other scholars have highlighted the difference between the Chinese model and capitalism, and argue that China presents a possible model of socialism (Lo and Zhang 2011, Laibman 2020). In the current pandemic, many writers have highlighted the effective control of the virus and negation of the profit-oriented medical model as strong evidence that the people-oriented Chinese model is efficient and resilient.[7]

These two approaches offer important insights, but also suffer from certain limitations. The first type of analysis is often keen on finding concrete problems in the Chinese economy and society, but always tends to jump to solutions such as austerity, neoliberalism, and electoral politics. When such transitions seem not to happen (fast enough), these writers naturally arrive at the prediction of China's collapse. And not surprisingly, these predictions all turn out to be wrong. The second type of research is particularly useful since it does not judge the sustainability of the Chinese economy by its similarity with US capitalism. But these writings also tend to overlook the many acute problems and contradictions in the Chinese political economy.

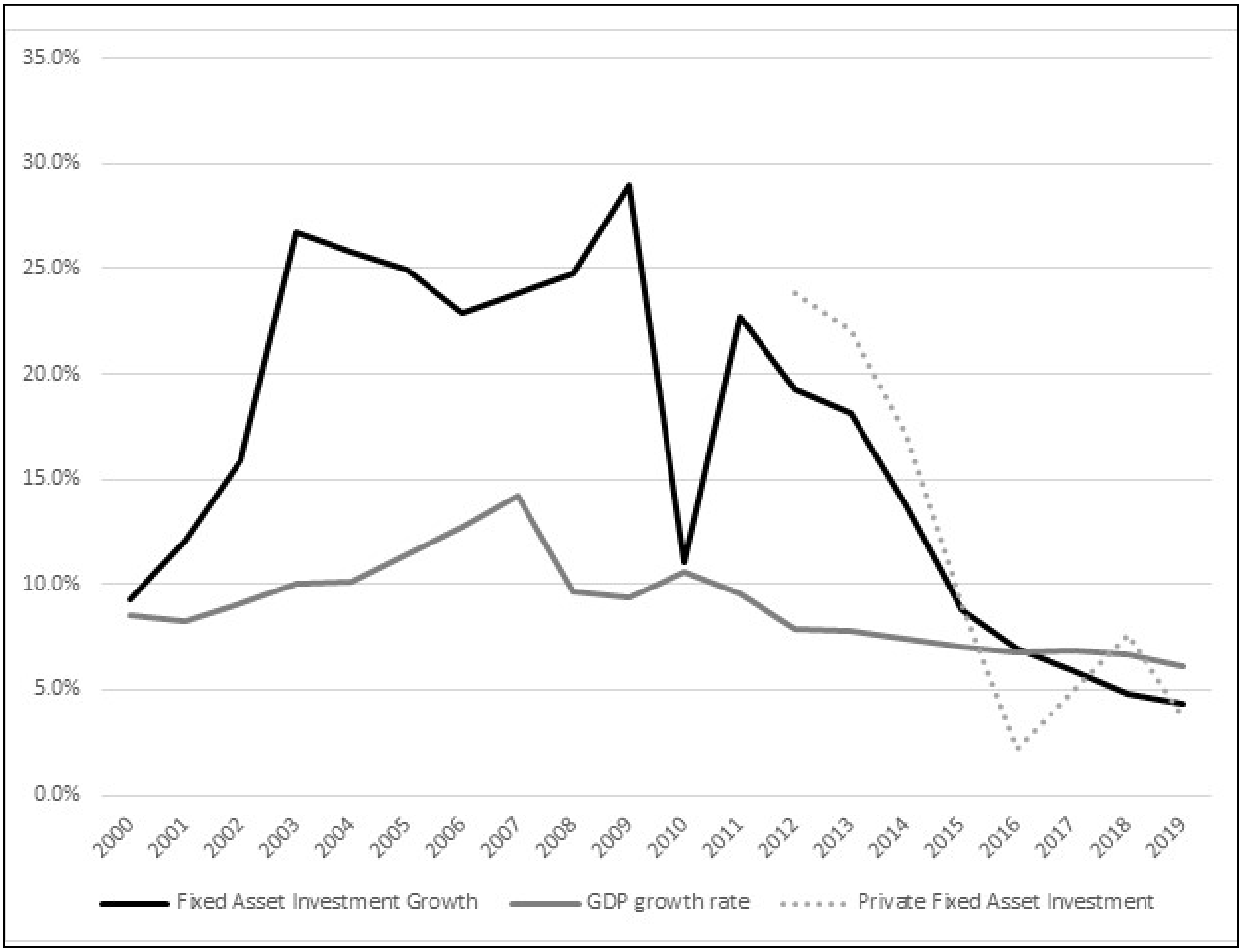
An alternative approach, that this paper follows, argues that China now has a primarily market-based economy. It is for the most part capitalist but has maintained certain legacies from the socialist period. The mixed model has provided China some great advantages in promoting economic development in the past few decades. Contrary to some opinions mentioned above, we suggest that China's advantage in development is exactly because it has not fully adopted the neoliberal model. But this paper also differs from the other group because we view the Chinese economy is in constant conflict and transition instead of having achieved some sort of stable alternative. Historically speaking, every social-economic model has its own contradictions and it is always a matter of time for a major crisis in a market-based economy. China has accumulated a number of long-term economic and social problems arising from the very model that has facilitated fast growth in the past. These long-term problems will in turn determine the major crisis tendencies in the coming decades.

We may categorize the major challenges in China into three groups. First, from the growth aspect, capital accumulation has been decidedly slowing down. The next section starts with an analysis of the characteristics of capital accumulation in China and explores the causes of such a dramatic slowdown. In the third section, in the context of the so-called debt-driven growth, we discuss the political and economic factors that prevent a major fiscal expansion in China. In the fourth section, we go beyond capital accumulation and discuss the issues of social equity including labor relations, the rural-urban gap as well as gender inequality. We will discuss the urgent environmental/ecological issues and the needed policy responses. The last section concludes the paper.

Neoliberalism and capital accumulation

A remarkable feature of the Chinese model is the high saving/investment rate. The gross domestic saving rate in China, for the most part of the last two decades, was above 40 percent. The gross domestic saving rate in China was about 45 percent in 2018, much higher than the US (18 percent), Japan (25 percent), or India (30 percent). Similarly, the Chinese share of investment in GDP was about 44 percent in 2018, while the shares in the US, Japan and India were 21, 24 and 32 percent respectively. In terms of investment, the average annual growth rate of total social fixed asset investment between 1980 and 2018 was about 20 percent.[8] As a rough comparison, over the same period of time, the average growth rate of fixed private investment in the US was just about 5 percent.[9]

Figure 1: Investment and GDP growth



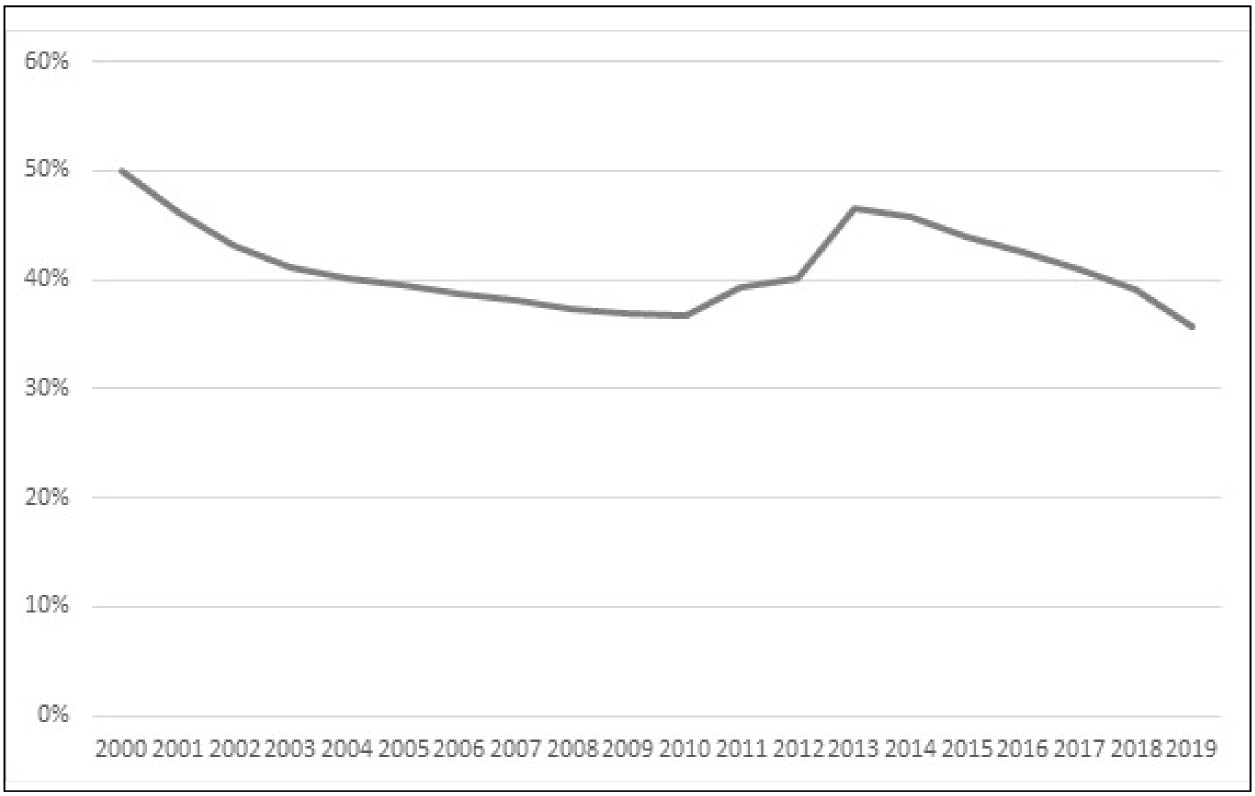
Source: NBS.

Notes: The numbers are real growth rates.

In recent years, however, China's capital accumulation has clearly slowed down. Figure 1 presents the trends of three indicators between 2000 and 2018. In terms of fixed assets investment, China started to enter a high investment period in the early 2000s which lasted until after the recent global financial crisis. After 2014, the growth of fixed assets investment became much slower.[10] More than 60 percent of the total fixed-asset investment is private investment (that is, fixed-asset investment from non-state-owned or state-holding enterprises). And a considerable portion of the slowing down came from the changes in private investment. Based on Figure 1, private investment used to grow faster than total investment (thus public investment), but it started to often grow slower than total investment since 2016. From 2012 when statistics of private investment became available to 2019 right before the pandemic, the annual growth rate of private fixed-asset investment dropped from more than 20 percent to less than 5 percent. Partly because of this, the GDP growth rate also has been declining steadily in recent years. China used to grow around 10 percent in the 2000s, but the growth rate decreased to around 6 percent in 2019. It is still a fairly high record for most economies, but the relative fatigue in the Chinese economy is more than clear.

Slower capital accumulation also has had a direct influence on jobs. Like many other developing countries, China has a large informal economy. The changes in the relative size of the formal employment often illustrate the overall opportunities for getting decent jobs and the general health of the economy (Xu and Chen 2017). The structural reforms starting in the 1990s generated large informal employment, but around 2007 there was an increase in formal employment opportunities. As Figure 2 shows, the share of formal employment in the total urban employment decreased from 50 percent to about 37 percent in the first half of the 2000s, and bounced back to about 47 percent in 2013, and started to decline again.

Figure 2: Formal employment as a share of urban employment



Source: NBS.

What has caused the rather fast decline in capital accumulation? The Chinese model has two distinct investment decision-makers, namely, the private enterprises and the state-owned enterprises/governments, following different sets of rules. It is then interesting to note that both public and private investment have slowed down significantly. Therefore, the question becomes twofold. First, what has happened to private fixed-asset investment? Basically, this is a question regarding the investment decisions of the capitalist class in China. Second, what are the considerations behind the Chinese state's decision to slow down public investment at the same time?

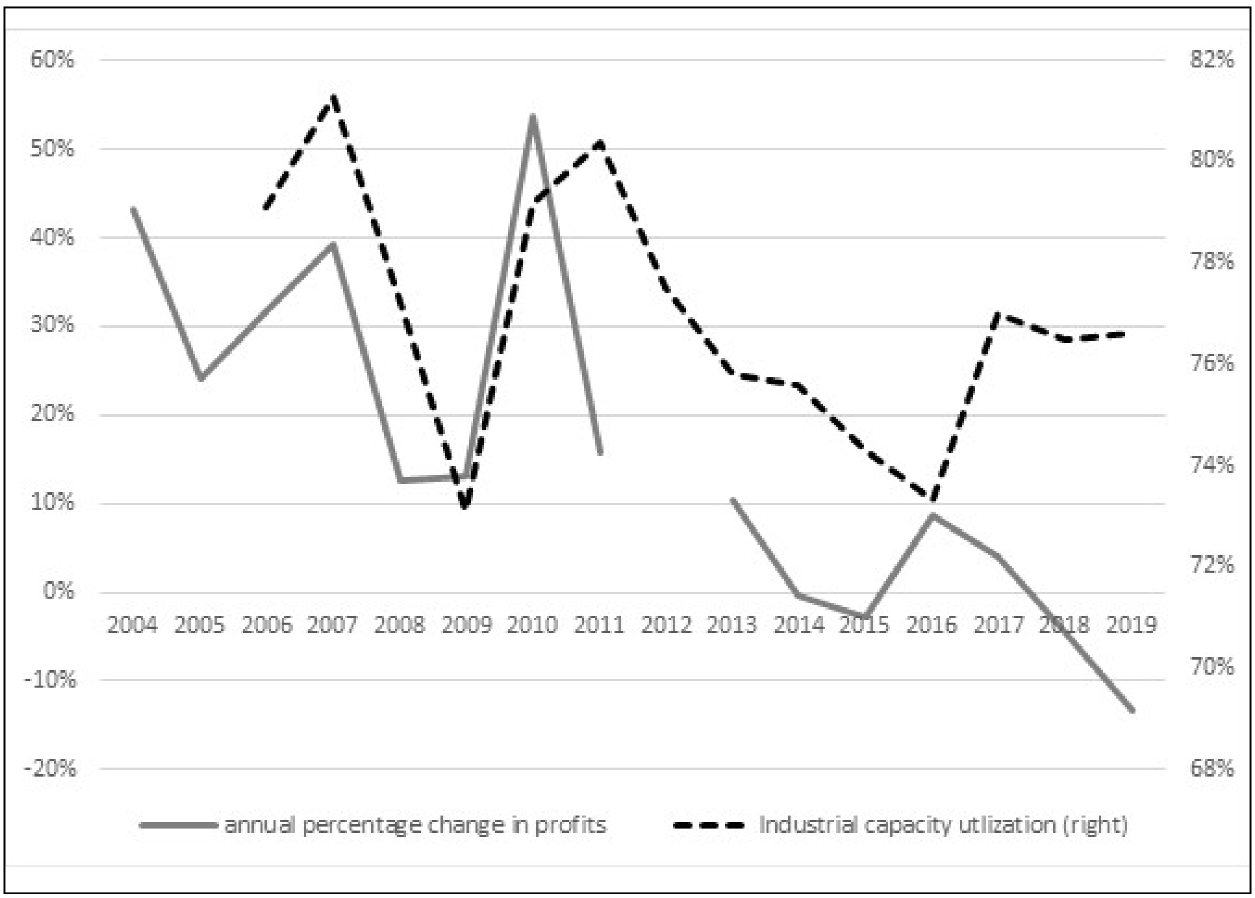
Let's first focus on private investment and leave the question of public investment to the next section. The Chinese government has been paying close attention to the declining trend of private investment. As early as 2016, for example, Prime Minister Li Keqiang stated in the State Council meeting that bureaucracy, market regulations, and the competition from state-owned enterprises have damaged the confidence of the private investors.[11] The State Council then concluded that further deregulation and marketization would be needed to encourage more private investment, which became the official policy response so far to the worrying signs from the economy.

These explanations, however, do not seem convincing. It is unlikely that long-existing factors such as regulations and bureaucracy could account for a change in the trend of capital accumulation. And there is hardly any solid evidence that regulation or state-owned enterprises have caused any harm to the confidence of the market. Moreover, the declining trend continued over the years despite further deregulation and marketization since 2016. So the changes in private investment decisions must be due to other factors.

Other analysts have pointed to the central role of declining profitability in this process. Liu (2016) shows that since 2014 the profits of the above-scale industrial firms have started to decline, and the negative growth remained throughout 2015, and Liu argues this has directly led to a change in private investors' expectations and thus investment decisions. The impact of profitability expectation in private investment is well documented in the literature. Using Marxian methodology, Li (2017) calculates the economy-wide profit rates in China between 1980 and 2015. The results suggest that for the Chinese economy as a whole, profit rates started to decline quickly in the 2010s, and so did the rate of accumulation (defined as the growth rate of real capital stock).

As Figure 3 shows, the year-to-year percentage change in profit among the above scale industrial enterprises was around 20-30 percent throughout the 2000s, suggesting a phase of increasing profitability. And after 2012, a new phase emerged and industrial profitability seemed to steadily decline. Not surprisingly, the profitability (Figure 3) seems to predict private investment (Figure 1) fairly well. The dip in profits in 2014 and 2015 was followed by a substantial decline in investment growth in 2015 and 2016. The investment rebounded moderately in 2017 and 2018 after the profits recovered in 2016 and 2017. And the investment in 2018 declined again after profits decreased in 2018. Given the large drop in profits in 2019, it would be reasonable to predict that, were there no pandemic in 2020, the private investment would still decline considerably.

Figure 3: Changes in above designated size industrial enterprises' profits and industrial capacity utilization



Source: NBS.

Notes: Before 2006, above scale industrial firms include all state-owned industrial firms and non-state-owned industrial firm with more than 5 million yuan annual revenue. Between 2007 and 2011, above scale industrial firms include all industrial firms with more than 5 million yuan in principal business revenue. Since 2011, the measure includes only industrial firms with more than 20 million yuan in principal business revenue.

Analysts have often explained the decline in profitability in China as a result of excess capacity. Excess capacity refers to the massive production capacity in Chinese industries and the lack of effective demand and thus underutilization of capital. For example, the Wall Street Journal reported that China had the capacity to produce 43 million cars but only produced fewer than 29 million in 2018.[12] Sectors such as iron, coal, and concrete have long suffered from low capacity utilization rates.[13] Using information from the People's Bank of China, NBS, as well as Asian Development Bank staff estimates, Hu and Zhuang (2015), shows that overcapacity was prevalent in the 1990s, while the utilization rate greatly improved in the 2000s before it started to fall in the early 2010s. Using the official NBS estimates, Figure 3 shows that in recent years the industrial capacity utilization rate remained well below 80 percent and it has shown a downward trend in the last decade or so. It is likely that increasing excess capacity or lack of effective demand had a negative influence on private investment. However, excess capacity has long been a key feature of the Chinese economy and the overcapacity was even worse in the 1990s (Hu and Zhuang, 2015), and capital accumulation and economic growth during those years were in general considerably higher than in the 2010s. Thus the relatively moderate increase in excess capacity in the last decade could not explain the whole story of declining private investment.

Another often mentioned factor is rising labor costs. A consequence of rapid capital accumulation has been a stable rise in labor demand and compensation. Between 2000 and 2018, the average labor compensation in the formal sector grew at about 13 percent annually, while the GDP grew at about 9 percent. According to Li (2017), the labor share of national income declined dramatically from the mid-1980s to the end of the 2000s and started to quickly rise around 2010. This change is sometimes called the Lewis turning point, as scholars argue that the gradual rural-to-urban migration has depleted the previous ample surplus labor in the countryside (Zhang et al 2011, Kwan et al 2018). The mainstream scholars also emphasize that the demographic transition to an aging society in China decreased the labor supply and the one-child policy has made the transition faster (Cai 2010, Zhang et al 2011). Other researchers have also documented the increasing labor militancy and strikes since the late 2000s which obviously have contributed to labor's bargaining power (Elfstrom and Kuruvilla 2014, Pringle 2013, Xu and Chen 2019).

The two explanations (excess capacity and rising labor cost) actually follow quite distinct logical routes. In many cases, they even contradict each other. Excess capacity, or lack of effective demand, implies a crisis tendency of under-consumption where capital receives too much while labor receives too little. The rising labor cost is often associated with the crisis tendency of a profit squeeze, where increasing the labor share in national income pushes down the profit rate. In the case of China or the developing countries in general, we argue these two can co-exist for a prolonged period of time. Chinese capital maintains a rather thin profit margin in the global division of labor, which is in turn based on the cheap but productive working class in China. Since the 2000s, the Chinese workers get slightly more from their work, thanks to their struggles and the long economic boom. Meanwhile, Chinese capital suffers from overcapacity and its lack of monopoly power in the global economy, so it cannot maintain the previous profit rate while remaining competitive. Thus, the Chinese model has seen a peculiar combination of under-consumption and a profit squeeze in the 2010s.

The coexistence of dual-crisis tendencies creates a rather tricky dilemma for Chinese policymakers. One way of addressing increasing excess capacity is by providing more effective demand including more household consumption. This basically requires a substantial pro-labor redistribution and/or some major welfare state policies. But this would almost certainly exacerbate the profit squeeze and contributes to the declining trend of private accumulation. Similarly, if China seeks to improve the profitability of private capital without a major change in its position in the global value chain, ultimately it has to race further to the bottom by suppressing the cost of labor and damaging nature/ecology. And this would definitely decrease domestic demand and increase excess capacity.

Since 2016, the Chinese government has adopted a temporary fix to the dilemma. That is, directly reducing production capacity by industrial restructuring and merger. This would alleviate excess capacity to a certain extent, and at the same time, reduce formal employment. The central government estimated that the restructuring of coal and steel industries would lead to about 18 million job losses.[14] The indirect job losses resulting from the contraction in production would be potentially much larger. Partly as a response, the central government has for years been calling for a new era of mass self-employment and entrepreneurship.[15] These labor market shocks would impose downward pressures on wages and help maintain profitability. Thus at least theoretically, the capacity reduction reform can kill two birds with one stone.

It is, however, highly doubtful how effective these measures can be in the current context. First, it has always been a core mission of all levels of government to maintain social order (often called "wei wen", or keeping balance in Chinese).[16] A large-scale structural reform, like the one in the 1990s with millions losing their jobs, could be politically unsettling. Therefore, the scale of the restructuring has to be limited and the process has to be gradual. Second, a hard supply-side contraction would have devastating impacts on local governments' finances. Xi et al (2017), for example, show that firms in the excess capacity industries are often important local tax bases and local governments have strong incentives to maintain, if not increase, industrial production. Last but not least, a fundamental restructuring of the industries would require a detailed national plan. But this goes directly against the market-oriented principles of the Chinese reforms. In fact, Prime Minister Li Keqiang has repeatedly stated that the market will play the leading role in the supply-side reforms and economic planning has only made the reforms harder.[17] It is thus not surprising that the efforts at reducing capacity seem to have had little impact. The production of crude steel, as an example of a severe overcapacity industry, increased 5.5 percent annually during the reform period between 2015 and 2019.[18] It is far from clear if and when the capacity reduction reform will succeed.[19]

Based on the discussions above, it is virtually impossible to address the dual-crisis tendencies in China if its policy space is constrained in the traditional market economy model based on private capital and profit motives. As a matter of fact, many of these problems are the direct result of the development of the market economy itself. The excess capacity problem is a consequence of deregulation and relentless competition. Privatization and commodification have greatly contributed to the lack of effective demand. And rising labor cost is also an (unintended) result of capital accumulation and industrialization.

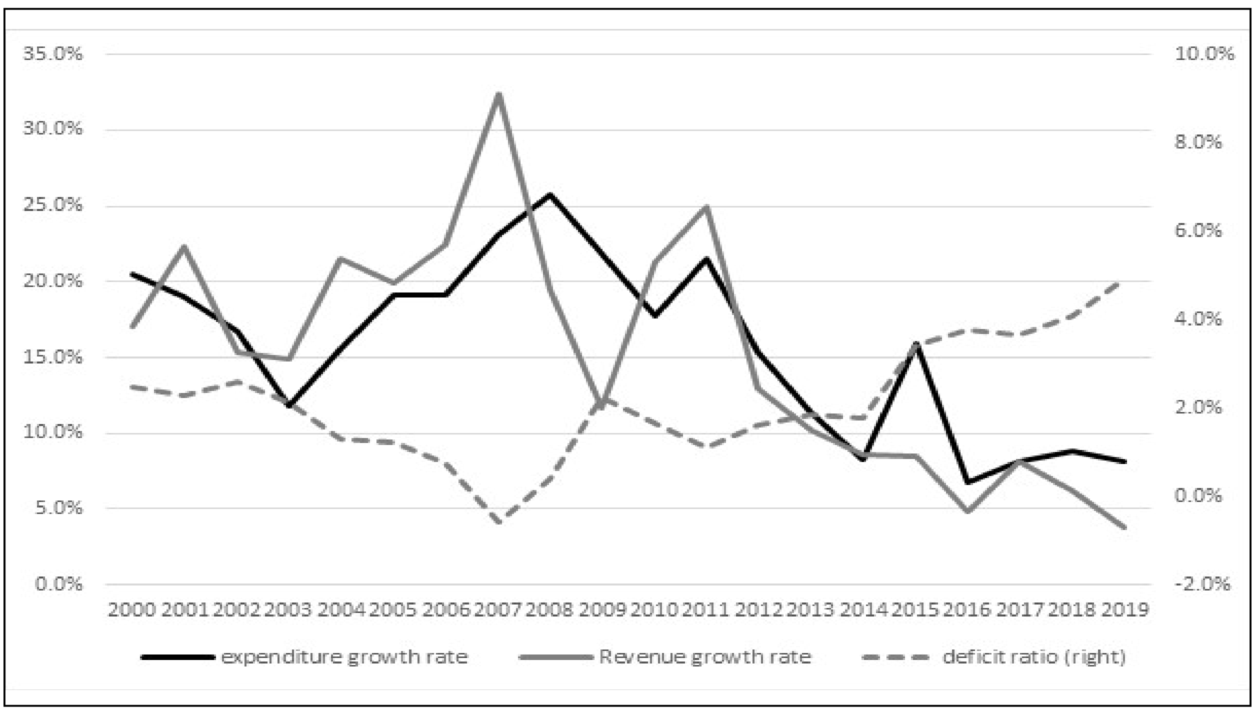
Since China has not fully adopted the neoliberal doctrine, it may have more tools than a typical capitalist economy. An effective solution involves at least three related policies. First, China could reduce excess capacity by stricter regulations and national economic planning. Second, more social spending on affordable healthcare and education will improve domestic consumption and help address the excess capacity problem. At least a part of this cost can be offset by the positive impact on profits from the reduction in excess capacity and competition. Third, China could use public investment to create employment with decent wages and benefits in the public sector. This can absorb the workers who may lose their jobs from the reform.

All these policy suggestions essentially ask for a moderate version of economic planning and an expansion of public investment. Even though theoretically they can help address the long term challenges that China faces, these proposals would nevertheless meet some serious political and financial obstacles in China. The next section explores such questions.

Fiscal spending, state-owned enterprises, and debt

China has a strong tradition of state intervention and still kept a sizable state-owned sector despite waves of privatization in the neoliberal era. In terms of fiscal expenditure, the Chinese government has not followed the guideline of a balanced budget or the so-called Golden Rules in the European Union which allows for a maximum of 1 percent deficit to GDP ratio if the debt to GDP ratio is low enough.[20] But there have been some clear shift in China's public finance. Figure 4 illustrates the evolution of China's fiscal spending between 2000 and 2019. China's total government expenditures (including central and local governments) increased by about 19 percent annually during the 2000s, and the rate started to decline in the 2010s. Meanwhile, the ratio of total government deficit to GDP first decreased from above 2 percent in the early 2000s to a tiny surplus in 2007 and then started to increase until reaching 4.9 percent in 2019.

Figure 4: Government expenditure and revenue in China



Source: NBS.

Notes: Deficit ratio is (government expenditure-government revenue)/GDP.

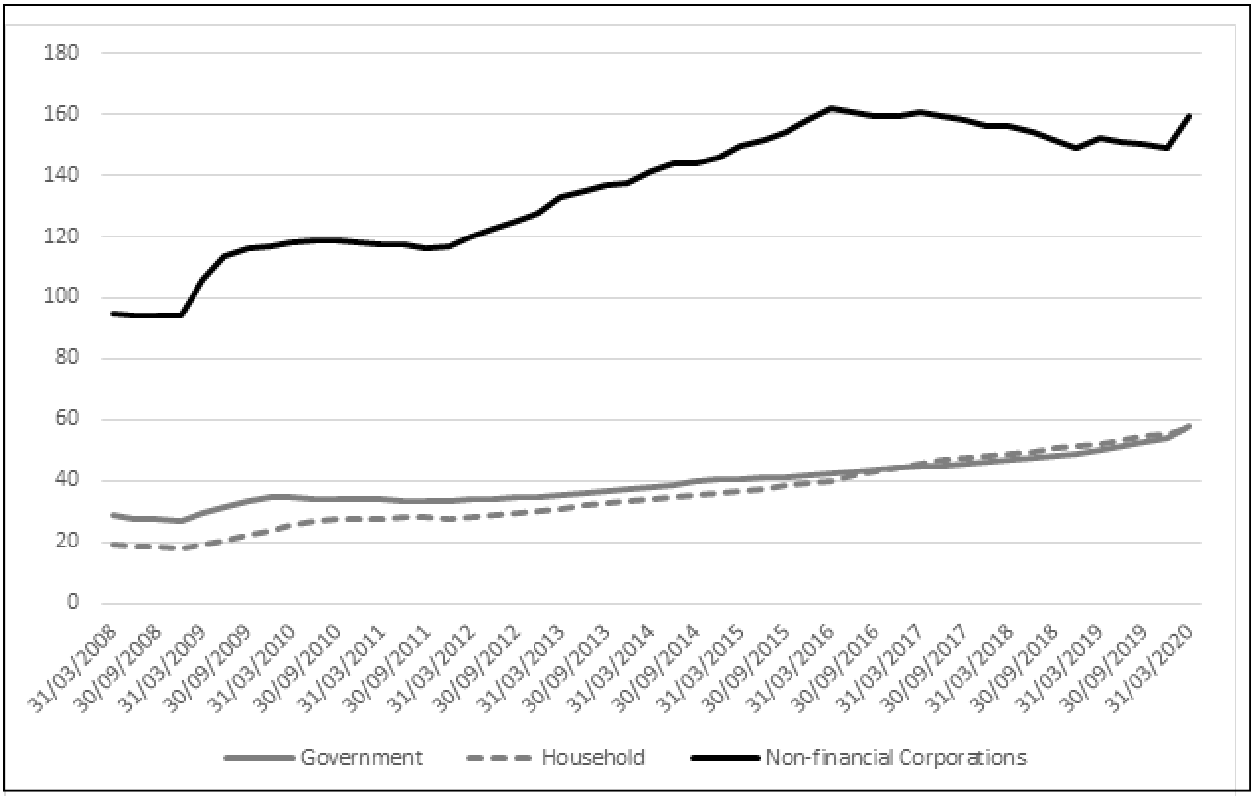
The increasing deficit to GDP ratio in recent years was not so much because of a rapid increase in government spending, but rather the fact that government revenue has been increasing much slower. This observation partly suggests an interesting compromise between the expansionist and conservative lines among the policymakers, which is crucial for understanding the current state of public investment in China. On the one hand, there is a continuous effort from the central government to cut taxes, mainly for the corporations. For example, China implemented a major tax reform to replace business tax with value-added tax which reduced tax income by about 300 billion USD between 2012 and 2018.[21] And just in 2019, China cut its taxes and fees by another 298 billion USD.[22] On the other hand, both the central and local governments still maintain a certain level of deficit spending, and the deficit to GDP ratio has increased. The message from the central leadership is often mixed. Prime Minister Li Keqiang has repeatedly called for austerity measures in government spending, but at the same time also emphasized the importance of securing local jobs and wage levels.[23] The two objectives are often in conflict, and the result has partly been tax cuts and deficit spending at the same time.

The somewhat unusual combination of austerity economics and Keynesian policies probably reflects the contradictions of the Chinese technocrats on the policymaking level. The Chinese elites have had extensive experiences with using public spending in the past, especially in the cases of insufficient effective demand. This was evident in the aftermath of the global financial crisis in the late 2000s when the Chinese leadership announced its bold 4 trillion Yuan (about 13 percent of 2008 Chinese GDP) fiscal stimulus plan. But in the last decade, a new generation of central leaders has emerged. While the earlier post-Mao leaders mostly had science and engineering degrees, the new generation often had their training in economics. For example, President Xi Jinping's final degree was a Doctor of Law with a dissertation titled "the marketization of the Chinese countryside". Prime Minister Li Keqiang received a PhD in economics. The top economic advisor to President Xi Jinping is vice-Prime Minister Liu He, who received his undergraduate education in economics and later an MPA from Harvard University. The governor of the Chinese central bank, Yi Gang, received his PhD in Economics from the University of Illinois. As the pro-free market thoughts have prevailed in Chinse and US economics education in the last few decades, these top-level leaders are mostly trained in the more conservative traditions. Such pro-market bias has been clear from the supply side reforms or the so-called Likonomics since the current generation leadership took office.

So far, the current leadership has stuck with free-market doctrines, tax cuts, and deregulation. At the same time, at least a section of them seems to learn from reality about the crucial functions of state regulation and public investment. President Xi Jinping, for example, has emphasized the importance of state-owned enterprises. Such conflicts in ideology have led to a conservative turn in the management of state-owned enterprises, but not fully eliminating them. For example, the central government has been actively pushing for the mixed-ownership reform among the state-owned enterprises, essentially starting semi-privatizing many of these firms.[24] At the same time, the government has also initiated the transition in how it regulates and intervenes in the economy.[25] Previously the central government had a more direct role in these state-owned enterprises' employment and investment decisions, but now the new guideline is to remove this direct involvement and focus instead on the rate of return on state assets.

Such a compromise between the more conservative and more interventionist forces has also deeply shaped the overall development of China's finance, most notably shown in the rapid increase in domestic debt after 2008. The total credit to the non-financial sector, including households, government, and non-financial corporations, increased from 6.5 trillion USD to 36.8 trillion USD in 2019, or from 139 to 258.7 as a percentage of China's GDP. Figure 5 presents the change in the three components in the overall debt. Since 2008, there has been some moderate increase in household and government debt, while the corporations have recorded a remarkable increase in debt. In just 7 years, the debt of non-financial corporations as a share of GDP has increased from about 95 percent in early 2008 to more than 160 percent in early 2016. After that, the debt ratio stabilized and declined slightly until a huge increase in the

Figure 5: Components of China's debts to GDP ratio



Source: Bank for International Settlements.

Notes: The numbers are in percentage. The data are from the first quarter of 2008 to the first quarter of 2020.

The debt problem in China has received much attention in recent years. Indeed, the central government itself has been very concerned with the rising debt. Prime Minister Li Keqiang has launched a nationwide survey of local debt soon after he came into office.[26] And the central leadership has been calling for deleveraging reform for years.[27] Part of the result of such reforms was a temporary stabilization of corporate debt after 2016, but it has not changed the overall trend.

Many commentators believe the rising debt will lead to a financial crisis. For example, the former governor of the Chinese central bank, Zhou Xiaochuan, warned in 2017 that fast-rising debt could lead to a "Minsky Moment" with a sudden drop in asset prices.[28] Scholars such as Atif Mian and Amir Sufi argue that China's growth has been relying on fast increasing debt, either more foreigners' borrowing from China (pre-global financial crisis), or more domestic debt (post-global financial crisis), but neither is sustainable.[29] In Paul

Krugman's words, people used to worry about America experiencing a China syndrome; now they need to worry about China experiencing an America syndrome.[30] Other analysts believe the Chinese debt problems, despite its seriousness, is often overstated and remains manageable. For example, Liang (2016) argues that China's debt is largely domestic-owned, and the huge foreign reserve and tight capital controls as well as the government's political will, experience, and sovereignty makes a major financial crisis in China unlikely. Similarly, Huang and Boslet (2014) argue that China's credit boom is a result of a deliberate state stimulus program that did not show external imbalances or evidence of widespread financial distress. They also suggest that the shadow banking system only generates marginal risks or are too disconnected from the banking system to threaten financial stability. But even these relatively more optimistic scholars recognize the need for reforms.

As for the needed policy responses, the dominant voice comes from pro-market institutions and scholars who advocate for austerity, privatization, and marketization. Chen (2015) claims that unless China quickly starts further privatizing state-owned enterprises, cutting government spending, and selling public assets, a crippling crisis will become unavoidable. Ana Swanson wrote in the Washington Post that China could continue liberalizing the financial system, privatizing the state-owned enterprises, and expand property taxes to increase revenue.[31] An IMF working paper makes similar suggestions, claiming that a necessary comprehensive restructuring plan would trade-off short-term economic pain (including an estimated 7.8 million layoffs in just 7 sectors) for larger longer-term gain (Maliszewski et al 2016).

Most of these policy suggestions fail to understand the debt problem in the historical context of China's long-term challenges. The privatization and deregulation reforms are highly unlikely to address the excess capacity and rising labor cost problems without causing a major crisis first. Furthermore, a close examination of the debt problem shows that the rising corporate debt is itself a product of the pro-market policies.

From the early 2000s, China has relied on external demand to support its rapid growth. When the global financial crisis was underway in 2008 and 2009, net exports declined by about 40 percent and it was clear the old growth strategy would not work well. The Chinese leadership quickly announced its massive stimulus plan. But as Bai et al (2016) show, the actual increase in government spending was only about a quarter of the planned spending, and the government deficit only increased slightly. The rest three-quarters of the task was basically "outsourced" to the local governments.

Under the Chinese tax rules, the local governments are responsible for most local public spending, but they do not share much tax revenues and are not allowed to run a deficit until very recently. One way for them to be able to increase spending is indirectly borrowing from banks and/or shadow banks via some off-balance-sheet companies, or the local government funding vehicles (LGFVs). There is not much regulation of these LGFVs; in fact, the central government deliberately loosened financial regulations and encouraged the local governments to attract and incentivize financial institutions to fund public spending (Bai et al 2016, Pan et al 2017).

The contradiction in the Chinese government's stimulus plan could not be clearer. It saw the need to increase public investment, however, it did not intend to resort to the traditional deficit spending to increase government debt which very likely reflected the influence of conservative doctrines. Technically speaking, despite the strict budgetary rules against local government borrowing, the central government can borrow money and give transfer payments to local governments (Bai et al 2016). However, the central government did not choose this more traditional and safer option. And it resorted to deregulation and "innovation" in the hope that such measures would provide the investment needed to generate growth without a significant budget deficit.

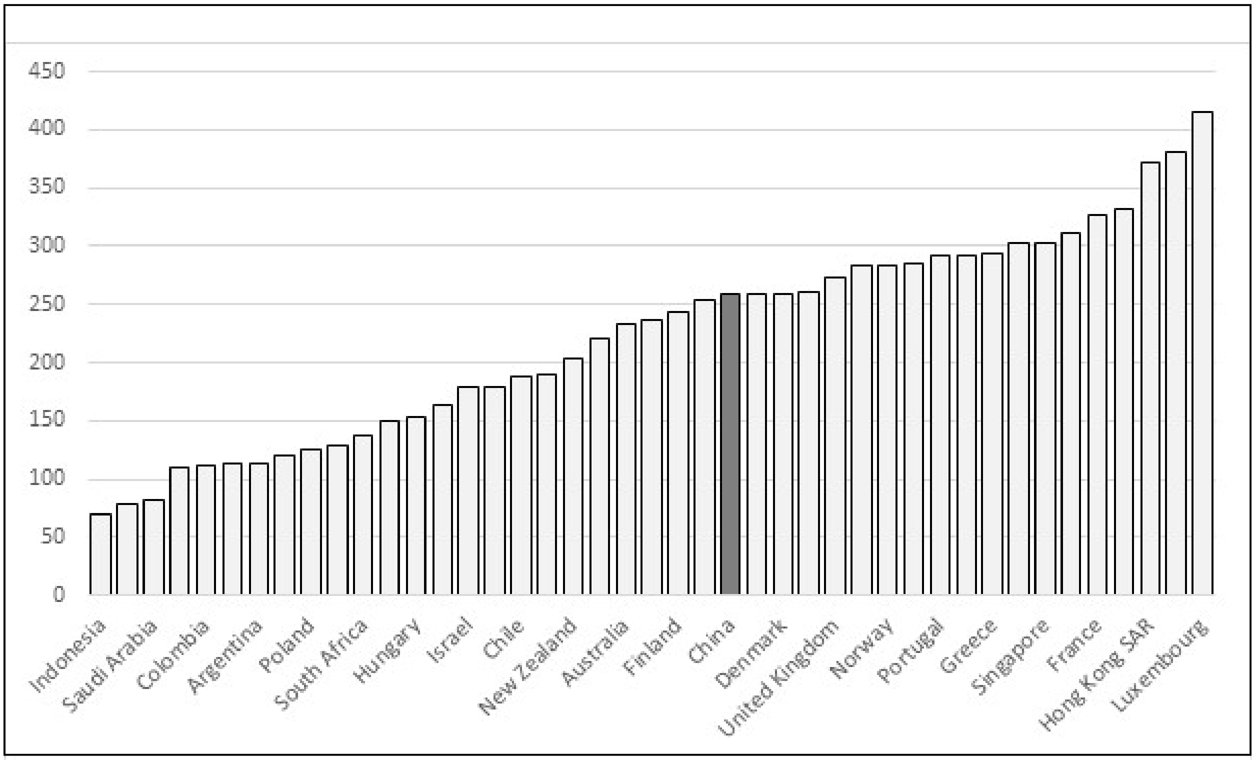
Eventually, the LGFVs and other state-owned enterprises took on the bulk of the new investment and the associated debt. As of mid-2018, about 82 percent of total corporate debt is accumulated by the state-owned enterprises (Molnar and Lu, 2019). The relative lack of private capital involvement is probably not because of crowding out, as aggregate private domestic investment did not suffer from LGFVs' growth (Bai et al 2016). After all, the stimulus plan has designated areas of investments mainly consisting of infrastructure building and social welfare.[32] According to the national audit of the government debt in 2013, more than 60 percent of the local government off-balance-sheet borrowings were invested in municipal construction, transportation, and social welfare programs (National Audit Office of China 2013). These investments often provide a crucial basis for further development and profitable opportunities for private business but are unlikely to generate quick profits if at all, which made it understandably less appealing to private capital.

The influence of conservatism is also strong in the sense that the planned public investments are restricted to the less profitable and high investment sectors. For years, state-owned enterprises have been accused of making too much profit and called upon to quit profitable industries. This obvious political pressure has contributed to the low return from public investments and hence the buildup of debt. Ironically, the low profitability from these public investments becomes new evidence for the need for further privatization.

The deregulation and the resulting off-balance-sheet borrowing is certainly risky. The local governments and their LGFVs often use land value as collateral to get loans. This works when land value and the real estate sector are doing well, but this is unlikely to last long. In an opinion piece in the Financial Times, Jonathan Wheatley suggests that the increasing borrowings are on the basis of the property market boom.[33] But given that 90 percent of Chinese households own at least one property and 35 percent own two or more, the property price may soon stop increasing and then the credit bubble will burst.

However, we should be clear that the debt level by itself is not really unbearable for the Chinese economy. In other words, the problem is not the amount of public investment or deficit, but the means of funding the public investment: deregulation and off-balance-sheet borrowing. Since a large part of the debt is in fact government debt, though in the name of corporations (LGFVs), it makes more sense to look at the aggregate debt levels. Figure 6 presents the overall debt of the non-financial sector to GDP ratio for selected countries. Considering that the many countries with more market economy and less regulation have clearly higher levels of debt, it is not clear how further deregulation and marketization could necessarily lower China's debt burden. It is true that China's overall debt increased by about 120 percentage points between 2008 and 2019, but China also maintained an annual growth rate of 7.8 percent. At the same time, China has built some of the world's leading extensive infrastructure such as the nationwide high-speed rail system which has dramatically reduced the cost and time in domestic transportation. Without such aggressive measures, the Chinese (and the world) economy would almost certainly be in a much more worrying state.

Figure 6: Non-financial sector debt to GDP ratio in 2019



Source: Bank for International Settlements.

Notes: The numbers are in percentage.

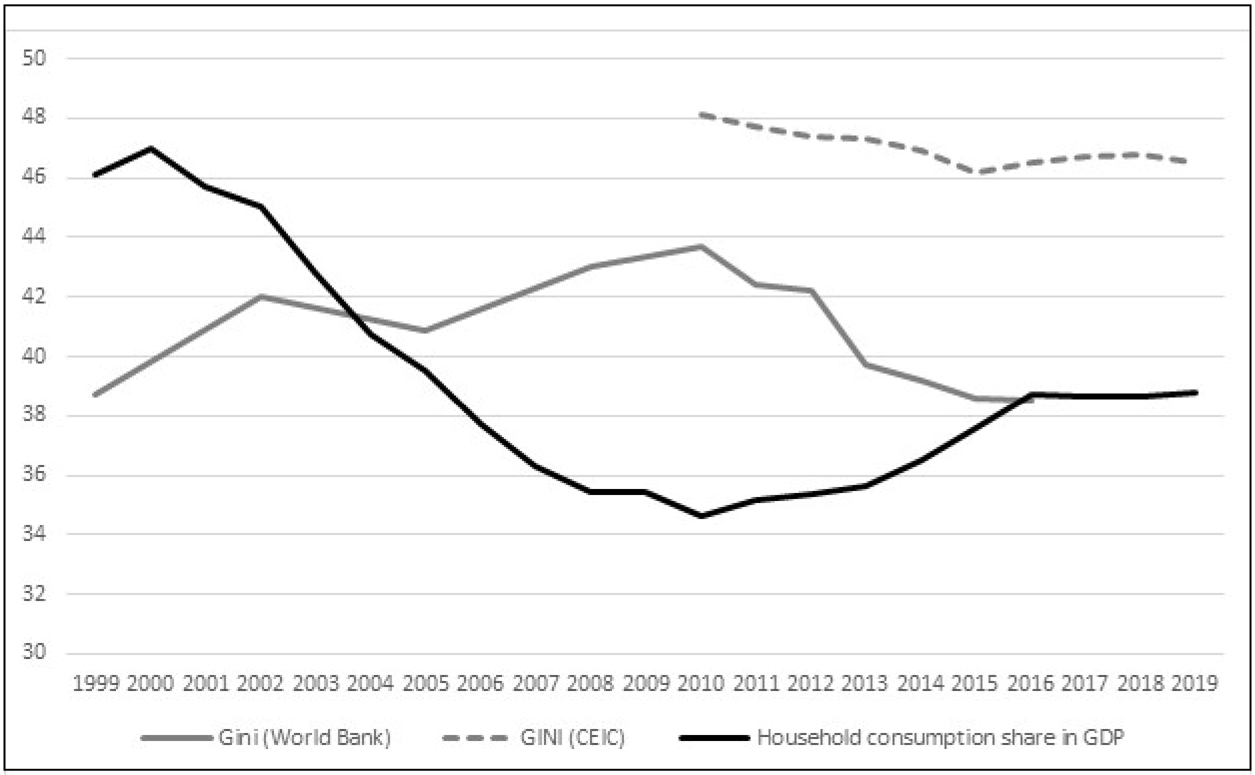
We have already seen the necessity of more public spending in the previous section. As this section shows, the conservative politics and economic doctrines of the current generation leadership shaped the implementation of the last major fiscal expansion, which contributed to the deregulation and fast rise of corporate debt. The conservative turn as well as the existing debt level have increased the difficulty of adopting another major round of public spending. As long as China plans to grow and generate enough jobs, the old neoliberal policies of deregulation and tax cuts would only lead to slower growth and riskier finance. To achieve its own goals, China needs a sufficiently large public spending program that is beyond basic infrastructure building and generates formal employment and growth. This will help address the great challenges of slowing down capital accumulation and stabilizing the overall debt level in the long run.

Beyond capital accumulation: social equity and the environment

The urge to overcome fiscal conservatism is as strong, if not stronger when we further consider other issues beyond capital accumulation. The discussion above focuses on private and public investment. While capital accumulation is important, China also needs to maintain a healthy balance between consumption and investment. The flip side of the high investment/saving rate is that China has kept household consumption very low for years. In the long run, China needs to gradually rebalance and increase household consumption. This would help improve working people's living conditions and address the problem of insufficient domestic demand which in turn affects capital accumulation.

China's changing income distribution clearly plays a central role in the determination of household consumption. As Figure 7 shows, the share of household consumption in GDP declined from about 47 percent in 2000 to 35 percent in 2010 and then started to slowly rise until reaching about 39 percent in 2016 and stabilized around that level. This largely corresponds to the trend of income inequality in China. According to the World Inequality Database, the lower 40 percent income share declined from about 19 percent in 1980 to 9 percent in 2010, while at the same time the top 10 percent income share increased from about 27 percent to 42.6 percent.[34] A moderate but clear improvement started to take place between 2010 and 2015. The lower 40 percent income share increased by 0.5 percentage point and the top 10 percent income share declined by 1.2 percentage point. The Gini coefficient estimates suggest a similar trend. Figure 7 presents the overall rend from two different estimates, which suggest a dramatic increase in the Gini coefficient between 1990 and 2010 and a moderate decline between 2010 and 2015, followed by a slight increase.

Figure 7: Household consumption and income Gini coefficient



Source: The World Bank Gini coefficient estiamtes are from World Bank database https://data.worldbank.org/ . The CEIC Gini coefficient estimates are from www.ceicdata.com. Household consumption share of GDP is from NBS.

Notes: The numbers are in percentage.

It is probably not a coincidence that the improvement in income distribution took place in the era of the major fiscal expansion after 2008. Social welfare programs were an important part of this spending; for example, China basically established universal health insurance between 2008 and 2015. Moreover, as previous sections show, formal employment, as well as labor share, were also improving up to 2015. But as both private and public investment started to quickly slow down since the mid-2010s, the economic growth dropped and labor share stagnated. And the improvement in income distribution has come to a halt.

The Chinese government has repeatedly emphasized the need to rebalance its economy on the basis of domestic consumption. The question for China then, is whether the country can soon see a more dramatic improvement in income distribution than what we observed between 2010 and 2015. This needs not only stable economic growth but also going beyond the comfort zone of redistribution. China can and should more actively intervene in three board areas of distribution and social equity.

First of all, the Chinese working class, in general, does not receive a living wage, despite some improvement in the labor share in the last decade. In the industrial sector, both the state-owned enterprises and the non-domestic enterprises pay more than the living wage. But the domestic private enterprises which employ the most workers pay substantially less than the living wage (Xu et al 2015). This does not even consider the fact that the workers increasingly have to work overtime. According to the NBS surveys, for example, more than 70 percent of the 282 million migrant workers work more than the legal working day limit.[35] Even among the traditionally more apolitical software engineers, there is growing discontent with the harsh working conditions and long labor day, sometimes called "996" (9 am to 9 pm, 6 days a week).[36] China passed a pro-labor Labor Contract Law in 2008 and briefly tolerated the development of labor NGOs and explored collective bargaining between the mid-2000s and mid-2010s (Xu and Chen 2019). But since 2015, the Chinese state has transitioned to a more pro-capital stance. In 2020, the central government started to implement a pilot comprehensive reform package which further pushes for widespread flexible employment in Shenzhen, a leading industrial area in south China.[37] Not to mention that the expansion of the gig economy and flexible employment associated with online commerce and taxi services have already put millions of workers in precarious conditions.

Second, a large rural-urban gap has long been a feature of Chinese society. The urban-biased development since the 1990s has made the gap even larger, which manifests itself via a large number of migrant workers from the countryside. The ratio of per capita income of urban and rural residents grew from 2.2 in 1990 to 3.3 in 2010, then started to decline and reached 2.6 in 2019.[38] This likely played a major role in the reduction of the Gini coefficient of income in the 2010s. Zhuang and Li (2016) suggest that rapid urbanization and government support policies such as rural infrastructure investment and anti-poverty programs could explain the improvement. All of these would have been impossible but for the major fiscal spending in the post-2008 years. If China plans to carry on the great progress it has made towards reducing the rural-urban gap, it needs to create better job opportunities for rural migrant workers and provide better infrastructure and income support to the small producers staying in the countryside.

Last but not least, much more work needs to be done in improving women's status in Chinese society. A major source of economic and social inequality in China (and the world) has been between genders. One striking trend of the Chinese women is they have been increasingly moving out of the labor force. The female labor force participation rate has declined from 73 percent in 1990 to about 60 percent in 2020.[39] A decline of such a magnitude would not be possible without a major shift against women in labor and social relations. Even among employed women, the gender wage gap has also been growing fast since the 1990s. Attané (2012) shows that urban women in 1990 were paid 77.5 percent of men's average wages, while in 2010 the share was down to 67.3 percent, and rural women fared even worse. Li et al (2011) estimate that among the urban employees, after controlling for other factors, the gender wage gap was 10.5 percent in 1995, 17.4 percent in 2002, and 29.7 percent in 2007. A key reason for the deterioration of women's status has been the decline of socialist ideology and the withdrawal of the welfare state from social protection and social reproduction (Cook and Dong 2011).

All the three issues discussed above arise directly and indirectly from the market-oriented reforms and a retreat of state intervention and regulation on the labor market and investment decisions. As a much-needed response, China can use more public investment to expand its public sector which offers a living wage to the workers regardless of gender, and also implement gender equality in the hiring process. Such public investments have the potentials to overcome urban bias and help further reduce the rural-urban gap.

The discussions so far have not directly addressed the severe environmental degradation that China has experienced in recent decades. China's growth has caused deforestation, water, and air pollution among others. According to the Global Forest Watch, from 2001 to 2019, China lost 9.92Mha of tree cover, equivalent to a 6.1% decrease in tree cover since 2000, and 3.18Gt of CO_2 emissions.[40] In 2015, more than 85% of the surface water in Shanghai was deemed unsafe to drink, while in Beijing, 39.9% of water was so polluted that it was essentially functionless.[41] Despite the improvement in air quality due to emission control in recent years, Yin et al (2020) estimate 1.24 million deaths in China were attributable to air pollution in 2017. Liu and Yang (2012) report that two-thirds of China's 669 cities have water shortages, more than 40% of its rivers are severely polluted, 80% of its lakes suffer from eutrophication, and about 300 million rural residents lack access to safe drinking water. In agriculture, average chemical fertilizer (nitrogen, phosphorus, and potassium) and pesticides use per hectare of cropland in China are two to four and two to seven times those of other countries/regions, and such intensified fertilizer use in China has caused significant soil acidification, soil degradation, and pollution (Guo et al 2010, Wu et al 2018).

China's growth so far has also generated a tremendous amount of greenhouse gas emissions. As the largest greenhouse gas emitter today, China has a strong obligation to gradually decrease its carbon emissions. Li (2016, 167-8) points out that between 1991 and 2014, with each increase in the economic growth rate by one percentage point, the carbon dioxide emissions growth rate tended to increase by 0.79 percent. Li (2016, 168) convincingly shows that under the old fossil fuel model, climate stabilization requires that China's economic growth rate will have to fall below 5 percent after 2020, and below 2 percent after 2030.

The concern of environmental and climate change strongly reinforces the case for more regulation and planning. Some of these issues may be addressed via stricter rules and more public environmental spending. For example, Ebenstein (2012) estimates that doubling China's levy rates for firm dumping of untreated wastewater and an additional 500 million dollars in annual spending would save roughly 17,000 lives per year. At the same time, from a long term perspective, studies have shown the profit-based capitalist economy is incompatible with environmental protection and climate stabilization (for example, see Magdoff and Foster 2010, Li 2016).

A large scale public investment plan based on ecological principles and free from profit motives might be the only option to generate reasonable growth and employment without dragging us further into an environmental and climate catastrophe. Once again, China urgently needs to overcome the politically powerful fiscal conservatism and address both the macroeconomic issues such as growth and debt and social and environmental issues.

Concluding remarks

Based on the discussion of the long-term challenges facing China, this paper makes three main arguments. First, it is virtually impossible to address the dual-crisis tendencies in China if its policy space is constrained in the traditional market economy model based on private capital and profit motives. Sustained capital accumulation and growth requires an active role of state regulation and planning. Second, China needs a sufficiently large public spending program that is beyond basic infrastructure building and generates employment and growth. The debt level should not be the main concern, but China should move away from financial deregulation and off-balance-sheet borrowing. Third, from the view of social equity, environment, and climate change, China also urgently needs to have large scale public investment plan based on ecological principles and free from profit motives.

China's struggle for sustainable development continued during the pandemic. The virus for sure adds to the long term challenges, and the tension between a more pro-market/private business path and a more pro-regulation/planning path is transparent in all possible ways. A few weeks into the pandemic, the Chinese Prime Minister Li Keqiang started to encourage the so-called "ditan" economy, or street vendors, as a major way to increase employment.[42] Such rare official endorsement of informal employment as a way forward shows the influence of pro-market forces in the central leadership. Relatedly, much unlike in 2008, China has not had any plan to initiate a major national stimulus. Meanwhile, the Chinese president Xi Jinping, has been advocating for a new model based on "domestic circulation". The term might sound vague, but Xi's top economic adviser Liu He made it clear in his recent article that "domestic circulation" will be based on improved income distribution and China needs to increase the labor share in national income.[43] This clearly differs from the pro-market approach above.

It remains to be seen whether China will be able to address the long term challenges and transition to a more sustainable model. The results of China's struggles in the coming years will likely conclude the scholarly debates on the China model and will have a long lasting impact on the global political economy.

Notes

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2 "A Rising China's Underclass Is Suddenly Thrust Into the Light", https://www.wsj.com/articles/a-rising-chinas-underclass-is-suddenly-thrust-into-the-light-11591788379, accessed November 1, 2020.

3 "The Coming Chinese Crackup", https://www.wsj.com/articles/the-coming-chinese-crack-up-1425659198, accessed November 1, 2020.

4 For example, see "Coronavirus 'cover-up' is China's Chernobyl", https://www.reuters.com/article/healt-coronavirus-usa-china/coronavirus-cover-up-is-chinas-chernobyl-white-house-adviser-idUSKBN23106X, accessed November 1, 2020.

5 "US democracy has little to teach China", https://www.ft.com/content/cb6af6e8-2272-11e0-b6a2-00144feab49a, accessed November 1, 2020.

6 "Zhongxing zhengfu yu guojia zhengzhi jingying de xuanba (in Chinese)", http://www.21bcr.com/zhongxingzhengfuyuguojiazhengzhijingyingdexuanba, accessed November 1, 2020.

7 For example, see Vijay Prashad's nuanced analysis of China and socialism: https://www.qiaocollective.com/en/articles/conversation-vijay-prashad, accessed November 1, 2020; and also see Pan Wei's commentary here: https://www.thepaper.cn/newsDetail_forward_7528424, accessed November 1, 2020.

8 As an often-used measure in China, the total social fixed asset investment is different from gross fixed capital formation in several ways. For example, the total social fixed asset investment only includes planned investment above 5 million yuan and tangible fixed assets while gross fixed capital formation does not have such restrictions.

9 The numbers are based on the World Bank database, https://data.worldbank.org/ and Federal Reserve Economic Data, fred.stlouisfed.org.

10 The numbers in Figure 1 are calculated based on official growth rates reported by the Chinese National Bureau of Statistics (NBS). Note that the annual values of fixed asset investment published by the NBS offer a sometimes much lower growth estimate since 2017, for example, the growth rate would be negative for 2019 if we directly calculated from the absolute investment numbers from the NBS. The NBS mentions there is an adjustment in measurements for the last few years but does not offer details. It is unclear why the official (adjusted) growth rate of investment is comparable with the unadjusted rate for 2017 but much different for 2018 and 2019. However, the declining trend is clear with either estimate.

11 http://www.gov.cn/guowuyuan/2016-06/22/content_5084447.htm, accessed November 1, 2020.

12 "China's Car Slump Leaves Foreign Auto Makers With Idle Factories", https://www.wsj.com/articles/idle-hands-in-china-workshops-as-foreign-car-makers-struggle-with-zombie-factories-11545750002, accessed November 1, 2020.

13 For some descriptions of the most over-capacity sectors, see the discussion here http://www.sic.gov.cn/News/455/7349.htm, accessed November 1, 2020.

14 http://www.gov.cn/xinwen/2016-02/29/content_5047432.htm, accessed November 1, 2020.

15 Officially the program is called dazhong chuangye, wanzhong chuangxin (mass business start-up and innovation), see http://www.gov.cn/zhengce/content/2015-06/16/content_9855.htm, accessed November 1, 2020.

16 For example, the central government in 2016 made it explicit that the local leadership would be penalized if social unrest took place. See http://politics.people.com.cn/n1/2016/0324/c1001-28222211.html, accessed November 1, 2020.

17 See Prime Minister's comments here: http://finance.sina.com.cn/china/hgjj/2016-01-11/doc-ifxnkkux1068614.shtml, accessed November 1, 2020.

[18] Based on the NBS database, data.stats.gov.cn.

[19] By the end of 2020, the reform is supposed to be finished. See the government announcement here: http://www.gov.cn/xinwen/2020-06/18/content_5520260.htm, accessed November 1, 2020. But the steel industry just had to start another round of capacity reduction. See here http://www.xinhuanet.com/2020-07/27/c_1126287754.htm, accessed November 1, 2020.

[20] The EU framework for fiscal policies, https://www.europarl.europa.eu/factsheets/en/sheet/89/the-eu-framework-for-fiscal-policies, accessed Nov 17, 2020.

[21] http://www.gov.cn/xinwen/2018-01/18/content_5257720.htm, accessed November 1, 2020.

[22] https://www.bbc.com/news/business-47450223, accessed November 1, 2020.

[23] http://www.gov.cn/guowuyuan/2019-05/24/content_5394560.htm, accessed November 1, 2020.

[24] http://www.gov.cn/guowuyuan/2019-11/10/content_5450524.htm, accessed November 1, 2020.

[25] http://www.sasac.gov.cn/n4470048/n10286230/n12924139/n12924144/c12927371/content.html, accessed November 1, 2020.

[26] https://opinion.huanqiu.com/article/9CaKrnJEzlh, accessed November 1, 2020.

[27] http://www.gov.cn/zhengce/2018-08/13/content_5313416.htm, accessed November 1, 2020. Also see the central bankers' support of the deleveraging reform, http://www.xinhuanet.com//english/2017-05/01/c_136248655.htm, accessed November 1, 2020.

[28] https://www.reuters.com/article/us-china-congress-debt-minskymoment/china-central-bank-warns-against-minsky-moment-due-to-excessive-optimism-idUSKBN1CO0D6, accessed November 1, 2020.

[29] https://houseofdebt.org/china-and-the-dangers-of-debt, accessed November 1, 2020.

[30] https://krugman.blogs.nytimes.com/2014/03/14/chinese-debt-worries, accessed November 1, 2020.

[31] https://www.washingtonpost.com/news/wonk/wp/2015/02/11/chinas-increase-in-debt-is-massive-and-unsustainable, accessed November 1, 2020.

[32] http://www.gov.cn/gzdt/2009-05/21/content_1321149.htm, accessed November 1, 2020.

[33] https://www.ft.com/content/17943d46-62fa-11ea-b3f3-fe4680ea68b5, accessed November 1, 2020.

[34] https://wid.world/country/china.

[35] http://www.stats.gov.cn/tjsj/zxfb/201704/t20170428_1489334.html, accessed November 1, 2020.

[36] https://www.reuters.com/article/us-china-tech-labour/rare-overtime-protest-by-china-tech-workers-goes-viral-idUSKCN1RH12B, accessed November 1, 2020.

[37] http://www.gov.cn/zhengce/2020-10/11/content_5550408.htm, accessed November 1, 2020.

[38] Calculated based on China statistical yearbook online and NBS database.

[39] Based on the World Bank database, data.worldbank.org.

[40] www.globalforestwatch.org.

[41] https://www.theguardian.com/global-development-professionals-network/2017/jun/02/china-water-dangerous-pollution-greenpeace, accessed November 1, 2020.

[42] https://www.theguardian.com/world/2020/jun/12/chinas-lifeblood-street-hawkers-make-surprise-return-to-fire-up-ailing-economy, accessed November 1, 2020.

[43] http://www.gov.cn/guowuyuan/2020-11/25/content_5563986.htm, accessed November 26, 2020.

References

Attané, I. (2012). Being a woman in China today: A demography of gender. China Perspectives, 4, 5-15.

Bai, C., Hsieh, C. T., & Michael, S. Z. (2016). The Long Shadow of a Fiscal Expansion. Brookings Papers on Economic Activity, 47(2), 129-181.

Cai, F. (2010). Demographic transition, demographic dividend, and Lewis turning point in China. China Economic Journal, 3(2), 107-119.

Chen, Z. (2015). China's dangerous debt. Foreign Affairs, 94, 13.

Chen, Y., & Xu, Z. (2017). Informal employment and China's economic development. The Chinese Economy, 50(6), 425-433.

Cook, S., & Dong, X. Y. (2011). Harsh choices: Chinese women's paid work and unpaid care responsibilities under economic reform. Development and Change, 42(4), 947-965.

Ebenstein, A. (2012). The consequences of industrialization: evidence from water pollution and digestive cancers in China. Review of Economics and Statistics, 94(1), 186-201.

Elfstrom, M., & Kuruvilla, S. (2014). The changing nature of labor unrest in China. ILR Review, 67(2), 453-480.

Guo, J.H., Liu, X.J., Zhang, Y., Shen, J.L., Han, W.X., Zhang, W.F., Christie, P., Goulding, K.W.T., Vitousek, P.M. and Zhang, F.S., (2010). Significant acidification in major Chinese croplands. science, 327(5968), 1008-1010.

Hu, B., & Zhuang, J. (2015). Knowledge work on excess capacity in the People's Republic of China. Asian Development Bank.

Huang, Y., & Bosler, C. (2014). China's Debt Dilemma: Deleveraging While Generating Growth. Wahington, DC: Carnegie Endowment for International Peace.

Kwan, F., Wu, Y., & Zhuo, S. (2018). Surplus agricultural labour and China's Lewis turning point. China Economic Review, 48, 244-257.

Laibman, D. (2020). China: In the Perspective of Historical Materialism. Science & Society, 84(2), 171-203.

Li, M. (2016). China and the Twenty-first-century Crisis. Pluto Press.

Li, M. (2017). Profit, accumulation, and crisis: Long-term movement of the profit rate in China, Japan, and the United States. The Chinese Economy, 50(6), 381-404.

Li, S., Jin, S., & Liu, X. (2011). Evolution of the gender wage gap among China's urban employees. Social Sciences in china, 32(3), 161-180.

Liang, Y. (2016). Inside shadow banking in China: Credit driven growth vs. financial stability. Journal of economic issues, 50(2), 461-470.

Liu, S. (2016). Dramatic slowdown of private investment growth and macroeconomic fluctuations (minjian touzi zengsu yanzhong xiahua yu hongguan jingji bodong, in Chinese), Zhongguo gongye jingji, (11), 5-12.

Liu, J., & Yang, W. (2012). Water sustainability for China and beyond. Science, 337(6095), 649-650.

Lo, D., & Zhang, Y. (2011). Making sense of China's economic transformation. Review of Radical Political Economics, 43(1), 33-55.r

Magdoff, F., & Foster, J. B. (2010). What every environmentalist needs to know about capitalism. Monthly Review, 61(10), 1-30.

Maliszewski, W., Arslanalp, M. S., Caparusso, J., Garrido, J., Guo, M. S., Kang, J. S., ... & Liao, W. (2016). Resolving China's corporate debt problem. International Monetary Fund.

Molnar, M., & Lu, J. (2019). State-owned firms behind China's corporate debt. OECD Economics Department Working Papers No. 1536.

National Audit Office of China. (2013). "Audit Results of Nationwide Governmental Debts" (in Chinese). Audit Report no. 32, December 30. Beijing.

Pan, F., Zhang, F., Zhu, S., & Wójcik, D. (2017). Developing by borrowing? Inter-jurisdictional competition, land finance and local debt accumulation in China. Urban Studies, 54(4), 897-916.

Pringle, T. (2013). Reflections on labor in China: From a moment to a movement. South Atlantic Quarterly, 112(1), 191-202.

Wu, Y., Xi, X., Tang, X., Luo, D., Gu, B., Lam, S.K., Vitousek, P.M. and Chen, D., (2018). Policy distortions, farm size, and the overuse of agricultural chemicals in China. Proceedings of the National Academy of Sciences, 115(27), 7010-7015.

Xi, P., Liang, R., Xie, Z., Su, G. (2017). Fiscal Stress, Excess Capacity and Supply-side Reform (in Chinese), Iingji yanjiu, 2017(9), 86-102.

Xu, Z., & Chen, Y. (2019). Spatial shift in China's labor struggles: Evidence and implication. Journal of Labor and Society, 22(1), 129-138.

Xu, Z., Chen, Y., & Li, M. (2015). Are Chinese workers paid the correct wages? Measuring wage underpayment in the Chinese industrial sector, 2005-2010. Review of Radical Political Economics, 47(3), 446-459.

Yin, P., Brauer, M., Cohen, A.J., Wang, H., Li, J., Burnett, R.T., Stanaway, J.D., Causey, K., Larson, S., Godwin, W. and Frostad, J. (2020). "The effect of air pollution on deaths, disease burden, and life expectancy across China and its provinces, 1990–2017: an analysis for the Global Burden of Disease Study 2017." The Lancet Planetary Health 4, no. 9: e386-e398.

Zhang, X., Yang, J., & Wang, S. (2011). China has reached the Lewis turning point. China Economic Review, 22(4), 542-554.

Zhuang, J., & Li, S. (2016). Understanding recent trends in income inequality in the People's Republic of China. Asian Development Bank Economics Working Paper Series, (489).