3. People's Republic of China: features and recent evolution of corporate debt

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The surge of corporate debt in the People's Republic of China (PRC) has given cause for much concern (Chivakul and Lam 2015; Maliszewski et al. 2016; Lv and Bai 2019). For instance, Standard and Poor's Ratings Services (2014) since 2013 has described the PRC's total corporate debt to be the largest in the world and twice that of the United States (US). International experience suggests that the credit boom in the PRC is on a dangerous trajectory (Chen and Kang 2018) and has increasingly threatened financial and macroeconomic stability (Walter and Howie 2012; Chapter 7). Some reports predict that corporate debt will become less sustainable in the PRC as growth slows, especially with the impact of the COVID-19 pandemic triggering a wave of defaults (Lee 2020).

Following a review of the features and evolution of corporate debt in the PRC in the next two sections, this chapter discusses the impact of structural reforms on corporate debt in section 3 and of COVID-19 in section 4. Section 5 concludes with some policy recommendations.

1. CONTRIBUTING FACTORS TO THE SURGE OF CORPORATE DEBT IN THE PRC

The shocks caused by the global financial crisis and the massive earthquake in 2008 led to a steep decline in economic growth, with unemployment rising substantially and international trade dropping. To minimize the impact on growth, the central government responded with a \$586 billion (12.6 percent of gross domestic product (GDP) in 2008) fiscal stimulus package for 2009 and 2010, most of which was financed by debt, including bank lending, local government bonds, and Treasury bonds.²

At the same time, the government put in place moderately easy monetary policies to enable banks to increase credit supply to the real economy. Some of these policies involved lower bank reserve requirement ratios and benchmark lending rates, and higher quotas for total loans. These measures accelerated growth in money supply (M2) to 28.5 percent in 2009, higher than the economy's double-digit expansion in 2003–2007.

The stimulus package reversed the downward trend during 2005–2007, causing the total debt-to-GDP ratio to soar from 141 percent in 2008 to 180 percent in 2010—a rise of nearly 40 percentage points as total debt increased by CNY29.4 trillion (\$4.4 trillion at the end of 2010) during the two stimulus years (Figure 3.1).³ By the end of 2019, the PRC's total debt amounted to \$35 trillion or 243 percent of GDP.

The PRC's total debt-to-GDP ratio is comparable to that of the US, the United Kingdom, Italy, and Greece, and is much higher than other emerging market countries and developing

economies such as Brazil and India, whose ratios are below 160 percent (Figure 3.2). In other words, as a developing country, the PRC bears a similar debt burden to that of developed countries, and its debt ratio is still rising rapidly.

We find that household debt, nonfinancial corporate debt, and local government debt have escalated faster than central government debt in the PRC (Figure 3.1). Since 2008, the debt-to-GDP ratio of the household sector has exploded—from 18 percent in 2008 it reached 56 percent in 2019—and the total debt of this sector surged tenfold to \$8 trillion in 12 years. The ratio of central government debt (mainly outstanding Treasury bonds) to GDP has remained relatively stable since 2008, at around 15 percent, with the total central government debt at \$2.4 trillion at the end of 2019. Local government debt (mainly outstanding local government bonds) has also risen rapidly, from 11 percent of GDP in 2008 to 23 percent in 2019, with total debt surging from \$0.5 trillion to \$3.3 trillion. More importantly, a dominant part of total debt in the PRC is nonfinancial corporate debt, which consists mainly of corporate loans and bonds—from \$4.4 trillion in 2008 it surged to \$22.3 trillion in 2019, with its ratio to GDP jumping from 95 percent in 2008 to 156 percent in 2019.⁴

Notes:
GDP = gross domestic product; PRC = People's Republic of China.
Total debt does not include the debt of the financial sector.
Sources: National Bureau of Statistics of China. <http://www.stats.gov.cn/english/> (accessed December 2020); and the PRC's Research Center for National Balance Sheets. <http://114.115.232.154:8080/>.

Figure 3.1 Total debt-to-GDP ratio by sector in the PRC (%)

Note: GDP = gross domestic product; PRC = People's Republic of China; UK = United Kingdom; US = United States.

Source: Bank for International Settlements.

Figure 3.2 Total debt-to-GDP ratio (%)—selected economies, Q3 2019

Note: GDP = gross domestic product; PRC = People's Republic of China.

Sources: Bank for International Settlements and International Monetary Fund.

Figure 3.3 Nonfinancial corporate debt-to-GDP ratio—selected economies, 2018

The PRC's nonfinancial corporate debt-to-GDP ratio ranked first among the 15 countries with the highest GDP in the first quarter (Q1) of 2019. In the past decade, its ratio climbed by 45 percentage points.⁵ We plot the debt-to-GDP ratio of the nonfinancial corporate sector versus GDP per capita of selected countries and find a wide gap between the debt ratio of the corporate sector and economic development from 2009 to 2018 (Figure 3.3). As of Q1 2019, the debt-to-GDP ratio of the PRC's nonfinancial corporate sector was double that of the US (Figure 3.4). Also noteworthy is that the concentration of debt in the PRC has been different from that of the US where household borrowing is perhaps the main concern.

Notes:
GDP = gross domestic product; PRC = People's Republic of China; US = United States.
Consumer loans in the PRC do not include mortgage loans.
Sources: CEIC database; People's Bank of China; Thomson Reuters Datastream; and ABN Amro.

Figure 3.4 Total debt-to-GDP ratio (%) by sector—United States and the PRC, 2006–2019

One important reason for the PRC's debt issues, particularly the extraordinarily high debt-to-GDP ratio of the nonfinancial corporate sector, is that the capital market is still dominated by indirect financing, which consists mainly of bank loans. In 2018, indirect financing accounted for 83 percent of the increased total national financing, notably funds provided by commercial banks and trusts, while direct financing consisting mainly of bond and equity finance made up only 17 percent (10 percent corporate bond financing and 7 percent equity-based funds). Also, in 2018, 93 percent of the increased total national financing

of CNY20 trillion (about \$2.9 trillion) consisted of debt-based funds, while in the US, equity finance accounted for about 70 percent.⁶

2. KEY FEATURES OF CORPORATE DEBT RATIO IN THE PRC

Next, we study the key features of and changes in the PRC's corporate debt ratio (that is, total debt/total assets) using micro-level data pertaining to around 4 million observations of non-listed and listed industrial firms. Specifically, we look at the statistics of firms listed in the Annual Survey of Industrial Firms (ASIF), which is maintained by the National Bureau of Statistics of China (NBS) and covers all state-owned enterprises (SOEs) and non-state enterprises above a threshold size from 1998 to 2013.⁷ We exclude 2010 data because of very poor quality. The dataset covers most of the industrial firms in the PRC and is the most comprehensive firm-level panel database available. We applied several criteria to check the sample firms in the raw data and dropped the outliers.⁸

The simple average and median of corporate debt ratios of around 4 million observations in the ASIF dataset decreased from 65 percent in 1998 to 51 percent in 2013, representing a steady decline of 14 percentage points in 16 years and averaging nearly 1 percentage point annually (Figure 3.5). Furthermore, in breaking down total debt into short-term debt (matured within 1 year) and long-term debt, we find that the average long-term debt ratio (total long-term debt/total assets) dropped from 11 percent to 6 percent during the same period. However, the median long-term debt ratio was zero for most of the years, indicating that half of the sample firms had no long-term debt on their account at all.

Note: PRC = People's Republic of China.

Source: ASIF conducted by the NBS of China.

Figure 3.5 Debt ratio of non-listed industrial enterprises in the PRC (1998–2013)

We then divide the entire sample of firms according to various standards and find that corporate debt is highly “structural”, that is, much of that debt is concentrated in a fraction of firms—mainly large, state-owned, and listed ones—showing a rising trend over the decade, as opposed to the constant downward trend of the debt ratio in most firms. Indeed, while the average debt ratio of large enterprises was relatively stable over the decade, that of the small and medium-sized enterprises (SMEs) dropped sharply from 65 percent in 1998 to 50 percent in 2013, declining 15 percentage points (Figure 3.6).⁹ Since 2003, the average debt ratio of SMEs has grown increasingly lower than that of large enterprises. The existing literature has almost entirely ignored the significant and general “deleveraging” trend of these firms.

Narrowing the sample down to stable and persistent enterprises that have survived from 1998 to 2013, we find that the debt ratio of these stable SOEs edged up to 62 percent in 2013 from 59 percent in 1998, whereas the debt ratio of other stable firms declined significantly (Figure 3.7). Since 2008, the average debt ratio of SOEs has far outstripped that of the private sector, with the latter’s debt ratio generally higher than foreign firms.¹⁰ Based on statistics released by the State Council, the total debt of SOEs reached \$20 trillion in 2018, accounting for around 77 percent of the total nonfinancial corporate debt, whereas the return on total assets was less than 2 percent, thus posing a relatively high debt risk.¹¹ By contrast, private firms were increasingly having difficulty raising funds.

Early in 1998, the average debt ratio of listed industrial firms was about 40 percent, lagging far behind non-listed industrial firms (Figure 3.8). This is a logical consequence of the ability of listed firms to raise funds through equity financing, which results in a lower proportion of debt financing in their portfolios than non-listed firms. Nevertheless, while the average debt ratio of non-listed industrial firms continuously declined for over 16 years, that of the listed firms steadily climbed by 12 percentage points and has since 2009 exceeded that of non-listed firms.

Source: ASIF conducted by the NBS of China.

Figure 3.6 Debt ratio by enterprise size (1998–2013)

Source: ASIF conducted by the NBS of China

Figure 3.7 Debt ratio of stable and persistent enterprises by ownership (1998–2013)

Notes: The data of non-listed industrial enterprises are from the ASIF database. We use listed industrial enterprises traded on the Main Board of the PRC as sample firms since it is the only board of stock market existing before 2004. The statistics on listed enterprises are from the China CSMAR.

Sources: ASIF conducted by the NBS of China; and the CSMAR Database. <https://www.gtadata.com/csmar.html?v=#/index> (accessed December 2020).

Figure 3.8 Debt ratio of listed and non-listed enterprises (1998–2013)

The data also point to the sharp concentration of corporate debt in the PRC (Figure 3.9). In 2013, the ASIF dataset had about 345,000 enterprises, with a total debt of about

CNY49.1 trillion (\$7.4 trillion). Nearly half of that total debt was found in the top 2,000 enterprises (CNY23.5 trillion), while more than a quarter was held by the top 500 enterprises (CNY13.5 trillion).

Note: PRC = People’s Republic of China.
Source: ASIF conducted by the NBS of China.

Figure 3.9 Concentration of corporate debt in the PRC (1998–2013)

3. IMPACT OF SUPPLY-SIDE STRUCTURAL REFORM ON CORPORATE DEBT

In response to the rising corporate debt default risk and the downward pressure on economic growth, President Xi Jinping proposed for the first time a “supply-side structural reform” in November 2015 (Xinhuanet 2015). This reform started with the improvement of supply quality and promotion of innovation-driven activities to restructure the economy. The reform identified five priority tasks: cutting overcapacity, destocking, deleveraging, lowering costs, and strengthening areas of weakness. Of the five priority tasks, deleveraging is the most relevant for this chapter.

In October 2016, the State Council proposed seven approaches to reduce the leverage ratio of enterprises.¹² Except for “implementing corporate bankruptcy”, which emphasizes the liquidation of inefficient firms, the other six approaches focus on lowering corporate debt risks by improving the financing environment and the quality of assets and liabilities, and bolstering the performance of firms. Considering the structural nature of corporate debt, the central government adopted successively a series of policies and specific measures aimed at “structural deleveraging”. For instance, several key departments jointly urged that SOEs should lower their average debt ratio by 2 percentage points by 2020 from 2017, after which the SOEs’ debt ratio should remain at the average level of firms of the same scale in the same industry.¹³ It should be noted that the tasks of “cutting overcapacity”, “lowering costs”, and “deleveraging” are intertwined, as they all affect the debt ratio and performance of enterprises. To reduce their

debt-to-asset ratio, firms should not only scale down total indebtedness, optimize their debt structure, and eliminate high-interest debt, but also raise equity capital and enhance profitability, so as to deleverage by lowering the numerator (total debt) and increasing the denominator (total assets).

Notes:

ASIF = Annual Survey of Industries Firms; PRC = People's Republic of China; SOE = stated-owned enterprise. The sample firms in Figures 3.10 to 3.14 cover the industrial firms with the same criteria as the ASIF database, and here we use only the statistics on industrial SOEs. The total fixed assets are the national aggregate fixed assets of industrial SOEs. The fixed assets ratio is the aggregate total fixed assets divided by the total assets.

Source: NBS of China. <http://www.stats.gov.cn/english/> (accessed December 2020).

Figure 3.10 Capacity reduction and fixed assets of industrial SOEs in the PRC (2011–2017)

Using the aggregate data of industrial SOEs that satisfy the same criteria as the ASIF database, we find that in terms of total assets, the industrial SOEs have made remarkable efforts in reducing capacity after implementing supply-side structural reform.¹⁴ A large number of SOEs are in the upstream portion of the industrial chain, such as steel, coal and mining, which are the major targets of “cutting overcapacity”. We find that the total fixed assets of industrial SOEs—an important indicator of capacity—reached \$0.4 trillion by the end of 2017, down 16 percent from \$0.5 trillion two years earlier (at the beginning of reform). In addition, the proportion of total fixed assets in total assets showed a continual decline from 44 percent in 2015 to 42 percent in 2017 (Figure 3.10). Likewise, inventory pressure on industrial SOEs has eased considerably, with total inventory tumbling almost \$20 billion (33 percent) from 2015 to \$43 billion in 2018, and the ratio of total inventory to total assets falling from 5.6 percent to 4.1 percent during the same period (Figure 3.11).

Notes:
PRC = People’s Republic of China; SOE = stated-owned enterprise.
The total inventory is the national aggregate inventory of industrial SOEs, and the inventory ratio is the aggregate total inventory divided by the total assets.
Source: NBS of China. <http://www.stats.gov.cn/english/> (accessed December 2020).

Figure 3.11 Inventory reduction by industrial SOEs in the PRC (2011–2017)

The drastic reduction of excess and outdated capacity, coupled with decreasing inventory pressure, enhanced the profitability of industrial SOEs significantly (Figure 3.12). The supply-side structural reform contributed to a steady increase in the return on sales (total profit over sales income), return on assets (total profit/total assets), and return on equity (total profit/total equity) of these SOEs since 2015, significantly improving profitability (Figure 3.13). These developments have increased the firms’ total equity mainly through retained earnings, thus expanding total assets without increasing debt, and thereby reducing corporate debt ratio.

Simultaneously, several measures such as disposal and elimination of “zombie enterprises”, mergers and acquisitions, debt restructuring, and debt-for-equity swap have evidently lightened the debt burden of indebted firms.¹⁵ For instance, the State-Owned Assets Supervision and Administration Commission (SASAC) indicates that from 2015 to 2019, central SOEs have effectively disposed of and liquidated more than 1900 zombie firms and their subsidiaries. Statistics released by the People’s Bank of China, the central bank, indicate that the scale of the market-oriented debt-for-equity swap had exceeded \$0.2 trillion at the end of 2019.¹⁶

Note: PRC = People's Republic of China; SOE = state-owned enterprise.

Source: NBS of China. <http://www.stats.gov.cn/english/> (accessed December 2020).

Figure 3.12 Profits and losses of industrial SOEs in the PRC (2011–2017)

Note: PRC = People's Republic of China; ROA = return on total assets; ROE = return on equity; SOE = state-owned enterprise.

Source: NBS of China. <http://www.stats.gov.cn/english/> (accessed December 2020).

Figure 3.13 Profitability of industrial SOEs in the PRC (2011–2017)

Driven by these measures, the total debt of the sample industrial SOEs fell from \$623 billion in 2015 to \$490 billion in 2017, representing a decline of 21 percent in 2 years. Figure 3.14 shows the dramatic decline in the debt ratio of industrial SOEs. The trend in the debt ratio of SOEs that began rising in 2008 has since 2015 reversed to a rapid decline. Moreover, the average interest coverage ratio (earnings before interest and tax/interest payments) of industrial SOEs has risen steadily after 2015, indicating that the solvency of enterprises has indeed improved,

as the rise in corporate profitability has correspondingly enhanced the ability to service debt and thus mitigate debt risk.

Notes:
PRC = People's Republic of China; SOE = state-owned enterprise.
The debt ratio is the aggregate total debt divided by the total assets.
Source: NBS of China. <http://www.stats.gov.cn/english/> (accessed December 2020).

Figure 3.14 Change in debt ratio of industrial SOEs in the PRC (2000–2018)

Note: On the horizontal axis, the current year of restructuring is denoted by 0, negative numbers indicate the number of years before restructuring, and positive numbers indicate the number of years after restructuring.
Source: CSMAR Database. <https://www.gtadata.com/csmar.html?v=#/index> (accessed December 2020).

Figure 3.15 Change in the average debt ratio of listed privatized enterprises

It is noteworthy that, apart from the five priority tasks, SOE reform also plays a vital role in supply-side structural reform and is embedded in these key tasks. Government agencies have emphasized the advancing of mixed-ownership of SOEs as one of the most critical aspects of SOE reform in the PRC and have accelerated its implementation. According to SASAC, from 2013 to 2020, the private sector invested more than \$0.23 trillion in the mixed-ownership reform of central enterprises. In 2018, central firms and their subsidiaries set up 2,880 mixed-ownership enterprises.¹⁷ In 2019, several departments together emphasized that mixed-ownership reforms can be combined with market-oriented debt-to-equity swaps to optimize the equity structure and reduce the debt ratio of SOEs. The sample data indicate that the debt ratio of the firms undergoing mixed-ownership reform have indeed declined (Figure 3.15).

4. IMPACT OF COVID-19 ON LISTED FIRMS IN THE PRC

The outbreak of COVID-19 in early 2020 and its global spread have dealt a heavy blow to the global economy. Although the PRC has made remarkable progress in controlling its spread, the pandemic still poses an enormous challenge for deepening the PRC's structural reform. In the early stage of the COVID-19 outbreak, the closure of production companies and social isolation resulted in a 6.8 percent year-on-year (yoy) drop in GDP in Q1 2020, compared with 6.4 percent growth (yoy) in the same period in 2019. Secondary- and especially tertiary-sector firms were hit hard with a 35.3 percent (yoy) drop in the value-added of hotels and catering services in Q1 2020 (Table 3.1).

Table 3.1 *Quarterly growth rate of value-added by industry (%)*

	Q2 2020	Q1 2020	Q2 2019	Q1 2019
Gross domestic product	3.2	-6.8	6.2	6.4
Primary industry	3.3	-3.2	3.3	2.7
Secondary industry	4.7	-9.6	5.6	6.1
Tertiary industry	1.9	-5.2	7.0	7.0
Agriculture, forestry, animal husbandry, and fishery	3.4	-2.8	3.4	2.9
Manufacturing	4.4	-10.2	5.5	6.5
Construction	7.8	-17.5	5.1	6.2
Wholesale and retail trades	1.2	-17.8	6.0	5.8
Transport, storage and post	1.7	-14.0	7.3	7.3
Hotels and catering services	-18.0	-35.3	6.4	6.0
Financial intermediation	7.2	6.0	7.6	7.1
Real estate	4.1	-6.1	2.5	2.6
Information transmission, software and information technology	15.7	13.2	20.1	21.2
Leasing and business services	-8.0	-9.4	7.5	8.5
Others	-0.9	-1.8	5.7	5.5

Source: NBS of China. <http://www.stats.gov.cn/english/> (accessed December 2020).

Due to data limitations at the time of this study, we use available data of listed nonfinancial firms in the PRC. To assess the impact of COVID-19 on the operation, solvency, debt structure, and financing activities of firms by industry, we study the structural differences of the epidemic's impact and the effects of policy implementation from a micro perspective. We find that the COVID-19 outbreak adversely affected revenue and profitability of most of the sample firms (Table 3.2). Overall, the average revenue of all nonfinancial firms declined by 12 percent (yoy) in Q1 2020, compared with a growth of 16 percent (yoy) in the same quarter of 2019; the average net profit took a nosedive of 31 percent (yoy); and the return on equity of almost all industries declined.¹⁸ The impact varied by industry, with the high export-dependent firms suffering the most.

Table 3.2 *Impact of COVID-19 on profitability of firms by industry*

Industry	YOY Growth of Operating Revenue		YOY Growth of Net Profit		Gross Margin		Expense Ratio			ROE			
	Q1 2019	Q1 2020	Q1 2019	Q1 2020	Q1 2019	Q1 2020	YOY Change	Q1 2019	Q1 2020	YOY Change	Q1 2019	Q1 2020	YOY Change
Conglomerate	39%	-86%	110%	-68%	8%	10%	2%	7%	17%	9%	1%	1%	0%
Entertainment	27%	-52%	85%	-155%	42%	44%	2%	33%	41%	9%	3%	-2%	-6%
Household appliances	6%	-32%	7%	-56%	24%	25%	1%	17%	17%	0%	4%	2%	-2%
Automobile	-5%	-28%	-26%	-79%	16%	15%	-1%	12%	14%	2%	2%	0%	-2%
Construction materials	28%	-21%	46%	-44%	29%	28%	-2%	13%	18%	5%	3%	1%	-2%
Chemicals	14%	-18%	-22%	-107%	20%	17%	-2%	7%	8%	1%	2%	0%	-2%
Commerce	14%	-15%	22%	-75%	15%	15%	0%	12%	13%	1%	2%	1%	-2%
Media	8%	-13%	-21%	-51%	28%	26%	-2%	18%	22%	4%	2%	1%	-1%
Light manufacturing	1%	-12%	-24%	-30%	22%	22%	-1%	16%	18%	2%	2%	1%	-1%
Textile and apparel	-5%	-10%	-3%	-80%	30%	32%	2%	22%	21%	-1%	2%	1%	-2%
Tele- communication	1%	-10%	575%	-44%	25%	27%	2%	20%	21%	1%	1%	1%	-1%
Electrical equipment	21%	-9%	14%	-2%	22%	22%	-1%	17%	18%	0%	1%	1%	0%
Architectural decoration	14%	-9%	19%	-29%	11%	11%	0%	6%	6%	0%	2%	1%	-1%
Mechanical equipment	11%	-9%	38%	-42%	22%	23%	2%	16%	18%	2%	2%	1%	-1%
Mining	10%	-8%	6%	-73%	23%	23%	-1%	8%	9%	1%	2%	0%	-1%
Computer	18%	-8%	59%	-114%	26%	25%	0%	22%	27%	5%	1%	0%	-1%
Utilities	20%	-8%	30%	-18%	20%	21%	1%	11%	13%	2%	2%	1%	-1%
Health care	22%	-1%	22%	-11%	35%	34%	-1%	24%	24%	-1%	3%	2%	-1%
Real estate	23%	-1%	27%	-30%	31%	32%	1%	12%	13%	1%	2%	1%	-1%

Industry	YOY Growth of Operating Revenue		YOY Growth of Net Profit		Gross Margin		Expense Ratio			ROE			
	Q1 2019	Q1 2020	Q1 2019	Q1 2020	Q1 2019	Q1 2020	YOY Change	Q1 2019	Q1 2020	YOY Change	Q1 2019	Q1 2020	YOY Change
Ferrous metal	5%	0%	-44%	-35%	15%	10%	-4%	6%	7%	1%	2%	1%	-1%
Transportation	0%	3%	26%	-119%	13%	14%	2%	7%	8%	1%	3%	0%	-3%
Food and beverage	16%	3%	24%	1%	50%	51%	1%	18%	17%	0%	7%	6%	-1%
Electronics	100%	5%	13%	-9%	22%	15%	-7%	11%	12%	0%	2%	1%	0%
Agriculture	15%	7%	-36%	249%	17%	14%	-2%	11%	10%	-1%	1%	4%	3%
Nonferrous metal	7%	8%	-34%	-43%	12%	10%	-2%	6%	6%	-1%	1%	1%	-1%
Defense	7%	27%	-12%	246%	14%	14%	0%	13%	13%	0%	0%	1%	1%
Average	16%	-12%	35%	-31%	23%	22%	0%	14%	16%	2%	1%	1%	-1%

Notes:

ROE = return on equity; yoy = year on year.

Gross margin = total gross profit/total operating revenue; expense ratio = the sum of financial, selling, general and administrative expenses/total operating revenue; Industries are listed in ascending order of their operating revenue growth (yoy) in Q1 2020.

Source: CSMAR Database. <https://www.gtadata.com/csmar.html?v=#/index> (accessed December 2020).

The disruption of operations and decline in profitability further affected the solvency of enterprises, making them more vulnerable. The average current ratio (current assets/current debt) of the whole industry in Q1 2020 decreased by 3 percentage points (yoy, Table 3.3). With the dive in net profits, the average interest coverage ratio of the entire industry plummeted to only 3.8, an average decrease of 2.3 percentage points (yoy). The interest coverage ratio of the chemicals and transportation industries fell below 1, which means that the earnings before interest and tax of enterprises were not enough to repay interests.

Cash flow from operating activities, an essential source for debt repayment, shrank significantly in most industries, indicating the weakening ability to generate profit. Cash flow in industries such as chemicals, textile and apparel, and transportation collapsed by more than 200 percent. The coverage of cash flow from operating activities to financial expenses also decreased widely to -4.2 on average for the whole industry. Thus, COVID-19 intensified the risk of higher debt default even in listed firms. However, the debt ratio in most industries trended downward during the pandemic mainly as trade credit declined due to the shrinking operations of most firms, lowering their operating debt (mostly trade credits) and the proportion of operating debt to total debt. Overall, COVID-19 does not appear to have had a major impact on the debt accumulation of listed firms.

To bail out firms, the central government launched policies, including a proactive fiscal policy such as tax and fee reduction measures, and issued \$0.53 trillion of special local government bonds in May 2020. Monetary policy also remained accommodative as the People's Bank of China increased special relending and rediscounting by \$0.14 trillion in April, and announced two special loan programs worth a combined \$114 billion to support key industries, particularly SMEs. These measures improved the operating finances of most industries (Table 3.3).

Table 3.3 *Impact of COVID-19 on solvency, debt ratio, and financing activities of firms by industry*

Industry	Current Ratio			ICR			Operating Cash Flow / Financial Expenses			Debt Ratio			Operating Liabilities / Total Liabilities			YOY Growth of Cash Inflow from Debt Financing		
	Q1 2019	Q1 2020	YOY Change	Q1 2019	Q1 2020	YOY Change	Q1 2019	Q1 2020	YOY Change	Q1 2019	Q1 2020	YOY Change	Q1 2019	Q1 2020	YOY Change	2019	2020	2020
Health care	1.67	1.67	-0.01	9.58	10.75	1.17	0.03	1.30	1.27	48%	49%	1%	35%	31%	-3%	5%	225%	
Transportation	0.92	0.92	0.00	6.83	0.50	-6.33	3.01	-3.06	-6.07	37%	40%	3%	55%	49%	-6%	23%	83%	
Food and beverage	2.48	2.44	-0.04							56%	56%	0%	48%	44%	-3%	-3%	58%	
Agriculture	1.18	1.27	0.08	4.18	11.01	6.83	3.04	4.39	1.35	54%	53%	-1%	46%	42%	-4%	15%	55%	
Chemicals	1.06	0.98	-0.08	6.59	0.48	-6.12	0.43	-5.93	-6.36	80%	79%	-1%	48%	27%	-21%	22%	50%	
Mining	0.97	0.85	-0.12	5.63	2.74	-2.90	7.78	1.70	-6.08	42%	49%	7%	47%	49%	2%	-3%	27%	
Construction materials	1.39	1.45	0.06	10.58	5.20	-5.38	1.48	-3.81	-5.28	57%	57%	0%	48%	43%	-5%	16%	26%	
Electronics	1.42	1.45	0.03	3.99	4.30	0.30	3.19	3.69	0.50	63%	62%	-1%	18%	16%	-2%	59%	25%	
Architectural decoration	1.15	1.17	0.02	4.51	3.86	-0.66	-20.08	-23.93	-3.85	51%	49%	-2%	62%	49%	-13%	31%	24%	
Mechanical equipment	1.43	1.44	0.01	5.91	3.85	-2.06	-1.81	-5.71	-3.91	52%	53%	2%	36%	30%	-5%	4%	24%	
Textile and apparel	1.83	1.50	-0.34	10.76	3.21	-7.55	1.30	-3.44	-4.74	54%	55%	1%	51%	47%	-4%	-16%	23%	
Nonferrous metal	0.77	0.80	0.03	4.40	3.18	-1.22	3.56	0.42	-3.15	41%	42%	1%	53%	44%	-9%	17%	21%	
Commerce	1.15	1.10	-0.05	5.71	2.22	-3.49	-1.51	-4.69	-3.18	62%	60%	-3%	52%	48%	-4%	46%	17%	
Defense	1.54	1.62	0.08	8.67			-52.40			42%	41%	-2%	43%	40%	-3%	21%	16%	

Industry	Current Ratio			ICR			Operating Cash Flow / Financial Expenses			Debt Ratio			Operating Liabilities / Total Liabilities			YOY Growth of Cash Inflow from Debt Financing		
	Q1 2019	Q1 2020	YOY Change	Q1 2019	Q1 2020	YOY Change	Q1 2019	Q1 2020	YOY Change	Q1 2019	Q1 2020	YOY Change	Q1 2019	Q1 2020	YOY Change	Q1 2019	Q1 2020	YOY Change
	2019	2020	Change	2019	2020	Change	2019	2020	Change	2019	2020	Change	2019	2020	Change	2019	2020	Change
Automobile	1.25	1.22	-0.03	8.04	2.88	-5.16	-6.28	-4.92	1.35	76%	75%	-1%	49%	43%	-6%	15%	14%	-1%
Real estate	1.48	1.40	-0.07	5.82	3.83	-1.99	-7.39	-10.37	-2.98	58%	57%	-1%	23%	19%	-4%	16%	13%	-3%
Utilities	0.66	0.71	0.05	2.86	2.38	-0.47	3.25	2.84	-0.41	46%	46%	0%	38%	33%	-6%	13%	11%	-2%
Computer	1.82	1.81	-0.01	9.25	1.22	-8.03	-26.90	-29.72	-2.82	58%	58%	0%	51%	48%	-3%	3%	9%	-3%
Ferrous metal	1.14	1.07	-0.07	2.95	2.13	-0.82	1.49	2.15	0.67	52%	50%	-2%	31%	30%	-1%	13%	8%	-3%
Entertainment	1.60	1.44	-0.16	14.92			11.12	-13.33	-24.45	57%	60%	3%	51%	40%	-11%	40%	5%	-11%
Media	1.84	1.64	-0.19	11.36	6.64	-4.72	-1.33	-0.31	1.02	31%	31%	1%	67%	47%	-20%	17%	4%	-20%
Light manufacturing	1.25	1.33	0.07	3.94	3.21	-0.73	0.51	-0.69	-1.20	49%	47%	-1%	53%	54%	0%	22%	3%	-1%
Electrical equipment	1.44	1.39	-0.05	3.35	4.15	0.80	-4.45	-4.22	0.23	44%	44%	0%	40%	39%	-2%	14%	-7%	-1%
Household appliances	1.27	1.33	0.06	20.08			17.68			43%	44%	0%	50%	45%	-5%	21%	-32%	0%
Telecommunication	0.98	1.09	0.11	6.00	4.35	-1.65	5.70	3.42	-2.28	55%	56%	1%	24%	23%	-1%	74%	-39%	1%
Conglomerate	1.37	1.28	-0.09	2.59	2.48	-0.11	-3.29	-1.87	1.42	64%	55%	-9%	30%	32%	2%	50%	-85%	-9%
Average	1.35	1.32	-0.03	7.14	3.84	-2.29	-2.47	-4.18	-3.00	53%	53%	0%	44%	39%	-5%	21%	22%	-5%

Notes:

ICR = interest coverage ratio; yoy = year on year.

Current ratio = current assets/current liabilities; debt ratio = total debt/total assets; operating liabilities include notes payable, accounts payable, advance payment, payroll payable, tax payable, and other payables. Industries are listed in descending order of their cash inflow growth from debt financing activities in Q1 2020.

Source: CSMAR Database. <https://www.gtadata.com/csmar.html?v=#/index> (accessed December 2020).

According to the Ministry of Industry and Information Technology, the recovery rate of SMEs exceeded 70 percent by the end of March 2020.¹⁹ According to the NBS, the added value of most industries had turned positive after April 2020. As of mid-June, the scale-sized industrial enterprises, which satisfy the same criteria as the ASIF database, had fully resumed operations, and the operating profit margin of industrial enterprises surged from 3.4 percent in February to 6.7 percent in June. GDP growth and the growth rate of total retail sales of consumer goods had turned positive, and the export of goods increased by 1.8 percent (yoy).

5. CONCLUSIONS AND POLICY RECOMMENDATIONS

The total debt-to-GDP ratio in the PRC is high and it has been rising sharply since 2008, mainly driven by nonfinancial corporate debt, which is highly structural and concentrated in a small fraction of firms, mostly large, state-owned, and listed. The majority of other firms have been able to deleverage continuously over the decade. The key to reducing the risk of corporate debt in the PRC is to reduce the debt ratio of inefficient but highly indebted firms, most of which are SOEs.

Supply-side structural reforms have noticeably improved the firms' performance, reduced the debt ratio, and alleviated the debt default risks of SOEs. Easing overcapacity, handling overstocked inventory, and cutting costs have improved the operating efficiency and profitability of SOEs; and the disposal of zombie enterprises, debt restructuring, and debt-for-equity swap have lowered corporate debt. Thus, the PRC has gradually realized some slowdown in the debt ratio of its SOEs. Although the COVID-19 outbreak has temporarily slowed the pace of reform and affected the profitability and solvency of firms, the policies to bail out firms have been fruitful and thus, the outbreak has had little impact on corporate debt accumulation.

Despite the PRC's progress, corporate debt ratio has remained high for two reasons: the dominance of indirect financing in the capital market and the massive debt held by many inefficient SOEs. Reducing the debt burden of SOEs will require (1) the deepening of capital market reforms, especially developing a strong equity capital market so that enterprises can rely more on equity financing rather than debt financing to replenish capital; and (2) continued structural reforms to enhance the efficiency of SOEs. Although the pace of SOE reforms has accelerated significantly since the inception of the supply-side structural reform, further measures are needed.

The inefficiency of some SOEs is a consequence mainly of the many functions they perform in support of government policies, such as ensuring employment, stabilizing economic growth, and promoting investment. These functions prevent SOEs from operating as profit-oriented market entities, inhibiting their profitability and vitality. SOEs are also more likely to obtain abundant, low-cost capital, owing to their soft budget constraints, thereby crowding out many private SMEs. State-owned banks in the PRC readily offer SOEs cheap and sufficient funds to expand their production capacity and loans to inefficient SOEs to maintain their survival. This raises the debt ratio of SOEs, and even of many low-efficiency SOEs, well above that of private enterprises. Therefore, to enhance efficiency and reduce their debt burden, the rights and responsibilities of SOEs should be clearly delineated, their government-related operations eliminated, their budget constraint hardened, and the incentive and promotion mechanisms of

government officials and executives in SOEs modified to instead reward productivity. The PRC government should manage SOEs based on market-oriented criteria and, in particular, establish a market-related exit strategy for high-debt and low-efficiency enterprises.

NOTES

1. The views expressed therein are those of the authors and do not necessarily reflect the views and policies of ADB, its Board of Governors or the governments they represent.
2. Local government and nongovernment organizations financed about two-thirds through borrowing from banks or issuing new bonds, and the central government provided the remainder. Refer to PRC National Development and Reform Commission (2009).
3. According to the NBS and the People's Bank of China, as the main part of total debt, the aggregate outstanding loan balance of all financial institutions accounted for 100 percent of GDP in 2010.
4. Here, nonfinancial corporate debt also includes the debt owed by local government financing vehicles. These companies were created to help local governments raise funds and existed before 2008, but their activities were heavily restricted for a long time. With the implementation of the PRC's 2008 stimulus plan, the central government encouraged and facilitated the establishment of local government financing vehicles to give local government access to external financing. See Bai et al. (2016). Besides, there has been renewed interest in the PRC's rapidly growing government debt since the 2008 financial crisis (see Chapter 6).
5. The 15 countries with the highest GDP in the first quarter (Q1) of 2019 worldwide are the US, the PRC, Japan, Germany, India, France, the United Kingdom, Brazil, Italy, Canada, the Republic of Korea, the Russian Federation, Australia, Spain, and Mexico. Data sources: Bank for International Settlements (BIS). <https://www.bis.org/statistics/totcredit.htm>.
6. Data sources: CEIE and the People's Bank of China.
7. The ASIF database includes all SOEs and non-state firms with an annual operating income of CNY5 million (\$73 000) or more in the industry sector, and the threshold has been raised to CNY20 million (about \$3 million) in annual revenues since 2011. This database contains statistics until 2013 only. We also find consistent conclusions using the national aggregate data of firms that satisfy the same criteria in the ASIF database from 1998 to 2018.
8. First, in the 2010 dataset, only 0.3 percent of samples matched the accounting equation, total debt + total equity = total asset, so we excluded these data samples. Second, we follow the procedure by Zhong et al. (2019) to check the sample firms, which resulted in a total of 3,616,716 observations. Third, for registered firms, we follow the procedure by Brandt et al. (2012) and Hsieh and Song (2015) to match firms over time. Fourth, we follow the existing literature to identify SOEs (see Dollar and Wei 2007; and Hsieh and Song 2015). Although the equity structure of listed firms is diversified, we define as SOEs firms in which the state is the actual controller or controlling shareholder.
9. The NBS and other departments define SMEs as firms that have fewer than 2,000 employees, or annual revenues of less than about \$45 million, or total assets of less than \$60 million, and others as large enterprises.
10. Regarding this result, see Li et al. (2009) for a careful discussion based on the dataset from the 2000–2003 Industrial Census.
11. See SASAC (2019a).
12. These approaches were to “encourage business mergers and restructuring, perfect modern corporate systems to strengthen self-discipline, revitalize stock assets, improve corporate debt structure, market-based debt-for-equity swaps with banks, implement corporate bankruptcy, and develop equity financing”. See The State Council of the People's Republic of China (2009, 2016).
13. See The State Council of the People's Republic of China (2018) and General Office of the State Council of the CPC Central Committee (2018).
14. The ASIF database contains statistics on enterprises only until 2013, while data after 2015 are needed here to assess the impact. Thus, we use the aggregate data of industrial SOEs at the national level. It should be noted that this database contains the greatest number of SOEs among the public

- databases. We also analyze the aggregate data of industrial SOEs at the province level, and find that the conclusions are consistent with other results.
15. Kane (1987) first proposed the concept of “zombie enterprises”, referring to insolvent enterprises that are unable to make any profit and which should have been withdrawn from the market, but still survive mainly because of subsidies and bailouts from the government and external financing from banks and other financial institutions.
 16. See “Review the Financial Reform of the Central Bank of the PRC in Key Areas in 2019”, <https://mp.weixin.qq.com/s/pZBNCOBW3n73ZY9qiYH9Wg>.
 17. See SASAC (2019b, 2020).
 18. We use the weighted average method to calculate yoy growth. That is, we first calculate the difference between the sum of the relevant variables of all sample firms in each industry for the current quarter and the sum of the same period of the previous year, and then divide by the number for the same period of the previous year to obtain the overall yoy growth of the industry.
 19. See The State Council Information Office of the People's Republic of China (2020).

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