Forging Economic Resilience in the People’s Republic of China Through Value Chain Upgrading and Economic Rebalancing

INTRODUCTION

The extensive participation of the People’s Republic of China (PRC) in international production and trade is often cited as a model of success. After joining the World Trade Organization (WTO) in 2001, the PRC became more closely connected to the rest of the world through cross-border production-sharing arrangements. Global value chains (GVCs) were a prominent driving force behind the global economic transformation, with the PRC being one of the major economies that participated in the GVCs. However, greater integration into the world economy came with the risk of becoming more vulnerable to disruptions in global trade, as in the case of trade tensions between the PRC and the United States (US). Nonetheless, the PRC was able to balance these risks against the benefits of greater GVC integration, and to build resilience by upgrading its role in GVCs and rebalancing its economy. Both strategies were evident in the increasing localization of the economy’s production networks, with the support of its massive and rapidly growing domestic consumption base. This policy brief delves into this narrative by examining the GVC indicators for the 2000–2019 period, and discusses how the coronavirus disease (COVID-19) crisis could amplify current trends.

MACROECONOMIC TRENDS IN THE PRC

Between 2000 and 2019, the PRC economy grew rapidly, at an average annual rate of 9%. In real terms, the economy became five times as large. The PRC’s economic history within the last 2 decades may be divided into two distinct periods: before the global financial crisis (GFC) of 2007–2009 (pre-GFC period), and after the crisis (post-GFC period). The distinction between these two periods is apparent in the PRC’s rate of gross domestic product (GDP) growth and the GDP share of its trade balance, as shown in Figure 1.

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In the pre-GFC period, the PRC sustained double-digit growth in real GDP, averaging 10.8% yearly from 2000 to 2007. Trade balance as a percentage of GDP increased from 2.4% in 2000 to 8.6% in 2007. During the GFC, the PRC’s economy continued to grow, but at reduced rates, from 14.2% annual growth in 2007 to 9.4% in 2009. Trade balance as a percentage of GDP also declined significantly, from a peak of 9.4% in 2008 to 5.7% the following year. In the post-GFC period, the PRC’s growth trajectory did not revert to pre-GFC levels, with real GDP growth slowing down to an annual average of 7.2% between 2010 and 2020. Similarly, trade balance as a percentage of GDP no longer exceeded 3% for most of the last decade.

More recently, the COVID-19 pandemic has brought much of the global economy to a halt. The PRC experienced a contraction of 6.8% in the first quarter of 2020. While many economies continued to report negative real GDP growth for as late as the third quarter of 2020, the PRC has recovered rapidly from the crisis, recording year-on-year growth rates of 3.2% in the second quarter, 4.9% in the third quarter, and 6.5% in the fourth quarter, amounting to a growth rate of 2.3% for 2020 as a whole (National Bureau of Statistics of China 2020).

Although a net positive growth rate was achieved for 2020, it was still significantly lower than any experienced since 2000, and lower than pre-pandemic forecasts made by the World Bank (2020) and Asian Development Bank (ADB) (2019).

The table summaries the PRC’s estimated losses in nominal GDP and value-added exports in 2020 relative to a counterfactual for 2020 without the pandemic. To derive these estimates, the pandemic was simulated as a demand-side shock on the current-price 2019 ADB multiregional input–output table (MRIOT), which shows sector-level production and consumption linkages across 62 economies and an aggregate for the rest of the world. Estimates for 2020 show that the PRC may have lost $654.1 billion in nominal GDP (4.3% of counterfactual GDP), including $87 billion in value-added exports (7.7% of counterfactual value-added exports).

In 2021, GDP growth is expected to bounce back to 8.1% following a low base in 2020. Consumption is projected to be the main driver of this growth. Trade surplus is also expected to increase in 2021 as a result of high demand for consumer goods abroad (ADB 2021).

**FOSTERING ECONOMIC RESILIENCE THROUGH VALUE CHAINS**

While the full extent of the COVID-19 crisis can be quantified only much later, recent macroeconomic trends in the PRC point to a rapid economic recovery, owing partly to the PRC’s resilience in the face of global trade disruptions. Such resilience has been forged through the upgrading of the economy’s role in GVCs and its economic rebalancing strategies. This structural change, manifested by the increasing localization of its production networks, is supported by the PRC’s massive and fast-growing domestic consumption base. The evolution of several indicators within the last 2 decades attests to the changing role of the PRC in global production networks.

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1 To simulate the pandemic as a demand-size shock, the final demand components for all economies in the 2019 ADB multiregional input–output tables (MRIOT) were adjusted on the basis of the latest available data for these components for 2020. The corresponding changes in production and trade were calculated through input–output analysis, and the effect on the PRC itself was isolated. A similar process was followed in simulating the counterfactual for a 2020 without the pandemic: pre-pandemic forecasts made by the World Bank (2020) were used as the basis for adjusting the final demand components of the 2019 ADB MRIOT. Since these figures are in nominal terms and are relative to a 2020 counterfactual rather than to 2019 levels, they should not be compared with forecasts for 2020 relative to 2019, which are also often made in the context of real GDP.
A clear understanding of the importance of structural change in GVCs will provide a good grasp of the economic impact of the COVID-19 pandemic, as well as the potential impact of virtually any kind of threat to global supply chains, including climate change, political instability, cyberattacks, financial crises, and pandemics. These supply chain disruptions vary in duration and in frequency of occurrence, and could affect production and trade in different sectors to varying degrees, depending on their vulnerability (McKinsey Global Institute 2020).

**Expanded PRC participation in global trade**
The PRC’s accession to the WTO in 2001 enabled the economy to increase its gains from participation in international trade. Through lowered trade barriers, increased foreign direct investment, and broadened market access, the PRC expanded its imports and exports at unprecedented rates. Between 2000 and 2019, the PRC became the largest economy in East Asia, increasing its domestic value-added (DVA) flows tenfold in current prices (from $226 billion to $2.3 trillion). This propelled the PRC to the core of the global production network in less than 2 decades.

Figure 2 shows the shift in the PRC’s role as a supplier and user of value-added goods and services between 2000 and 2019, as represented by the lines emanating from and connecting to the PRC, respectively. In 2000, the PRC traded heavily with Japan and the US. By 2019, it had already established stronger trade connections with other developed economies like France, Germany, the Republic of Korea, and the United Kingdom, as well as with emerging economies like India, the Philippines, and Viet Nam.

The increase in trade with the PRC over the last 2 decades is driven by both trade in goods for final consumption (traditional trade) and trade in goods for intermediate use (GVC). The latter is the result of the proliferation of cross-border production agreements that allow firms to locate segments of their production in other economies where production is more efficient. On average, from 2000 to 2019, 52% of the PRC’s exports came from traditional trade, while 48% were from GVC activity. Of the PRC’s imports during the same period, 47% were from traditional trade, while 53% were from GVC activity, on average.

**Trade diversion from the PRC to other Asian economies**
Figure 3 shows the evolution of the PRC’s GVC participation in billions of US dollars. Forward GVC participation measures the DVA generated from GVC production activities. This captures the PRC’s DVA in intermediate exports used by a direct importing country for the production of goods for domestic consumption or for export to a third country. In contrast, backward GVC participation captures the value-added content in final goods production contributed by both domestic and foreign factors, which reflects intercountry production-sharing activities (Wang et al. 2017).
Republic of Korea and ASEAN also reflect countervailing factors noted, however, that the declining GVC participation rates of the other Asian economies, the GVC participation rates of other states like Malaysia and Viet Nam (Gentile, Li, and Mariasingham 2020; AMRO 2020). GVC participation rates for the Republic of Korea and ASEAN, although also on the decline in the post-GFC period, were still higher than the PRC’s. Despite trade diversion to other Asian economies, the GVC participation rates of other economies in the region did not increase since 2018. It should be noted, however, that the declining GVC participation rates of the Republic of Korea and ASEAN also reflect countervailing factors that potentially net out the positive trade diversion effects of the US–PRC trade tensions on the GVC activities of other Asian economies. These countervailing factors include, among others, localization and regionalization effects. In contrast, rising GVC participation rates are generally observed in Germany, Japan, and the US in the post-GFC period.

While the PRC’s engagement in GVC activities remains significant in absolute terms, there was a decline in the relative importance of both forward and backward GVC participation in the post-GFC period. Forward GVC participation rates are computed as the GDP share of DVA generated from GVC trade, and backward participation rates, as the share of GVC activities in final goods. As shown in Figure 4, the PRC’s forward GVC participation rates declined from 10.7% in 2010 to 7.9% in 2019. Similarly, its backward GVC participation rates decreased from 13.7% to 8.8% over the same period. This decline in GVC participation rates can be partly ascribed to the PRC’s trade tensions with the US since 2018. As a result of these tensions, firms have started to establish production hubs in other Asian economies, and these relocation trends may have benefited Japan, the Republic of Korea, and a few Association of Southeast Asian Nations (ASEAN) member states like Malaysia and Viet Nam (Gentile, Li, and Mariasingham 2020; AMRO 2020). GVC participation rates for the Republic of Korea and ASEAN, although also on the decline in the post-GFC period, were still higher than the PRC’s. Despite trade diversion to other Asian economies, the GVC participation rates of other economies in the region did not increase since 2018. It should be noted, however, that the declining GVC participation rates of the Republic of Korea and ASEAN also reflect countervailing factors that potentially net out the positive trade diversion effects of the US–PRC trade tensions on the GVC activities of other Asian economies. These countervailing factors include, among others, localization and regionalization effects. In contrast, rising GVC participation rates are generally observed in Germany, Japan, and the US in the post-GFC period.

Figure 4 also shows that in the PRC, backward GVC participation rates were relatively greater than forward GVC participation rates in all years, indicating the PRC’s more active engagement in downstream production activities in the global production networks. However, it can also be observed that the gap between forward and backward GVC participation rates of the PRC had been narrowing in the post-GFC period. In 2010, backward and forward GVC participation rates were at 13.8% and 10.7%, respectively, while in 2015, these rates declined to 9.5% and 9.0%, respectively. The gap between backward and forward GVC participation rates remained at less than 1% in 2019. This narrowing gap reflected the gradual shift of the PRC toward more upstream activities in the global production networks. Such a move upstream narrowed the PRC’s external dependence and thus reduced the economy’s exposure to systemic shocks such as the COVID-19 pandemic.
Export diversification to mitigate the impact of trade disruptions

Over time, the PRC has expanded its role in international supply chains and diversified its connections with the rest of the world. Estimates of value-added exports using ADB’s MRIOT data reveal that the share of the top–15 destinations in the PRC’s value-added exports declined from 87% in 2000 to 78% in 2019. This is indicative of diversification of trading partners. In conventional economic theory, the diversification of any given financial portfolio can mitigate risks from shocks. Similarly, diversifying exporting sectors and exports destinations may protect an economy from the negative effects of economy-specific disruptions experienced by some of its trading partners.

As the PRC expanded its export destinations and import sources, it also diversified its export basket. Figure 5 shows the concentration of the PRC’s exports per sector group, which describes how differentiated the exporting sectors in the economy are. Lower concentration indices imply that exports are not concentrated, but are instead more evenly distributed across several sectors. Among all sector groups in the PRC, its manufacturing sectors were the most diversified. It can also be observed that the distribution of the PRC’s exports in the business services sector had become more uneven over time (increasing sector concentration in Figure 5), suggesting some specialization in sectors where its core competencies lie.

Sectoral diversification had also been observed, particularly in the manufacturing sectors. The narrowing concentration of the manufacturing sectors’ export basket signified the expansion of tasks and competencies covered in both the medium- and high-tech manufacturing (MHTM) and low-tech manufacturing (LTM) sectors. The repositioning of sectors away from specialization and toward greater expansion may be indicative of the PRC’s strategy to move up the value chains as well as its production localization initiative.

At the same time, the PRC had been increasing specialization in the business services sector to focus on knowledge-intensive tasks, especially those in Industry 4.0 technologies, such as automation and digitization in manufacturing, artificial intelligence, the use of big data and analytics, three-dimensional (3-D) printing, and robotics (UNCTAD 2019). This increased specialization sheltered the PRC against trade flow disruptions, such as those occurring during a global pandemic (Ralston and Blackhurst 2020; Agrawal et al. 2020).

The PRC’s current export structure has thus supported its increasing self-reliance in recent years, enabling it to satisfy both local and foreign demand.

Traditional and new industrial development paradigms

The rise of GVCs had also led to a shift toward a new industrial development paradigm. Traditionally, the development trajectory called for a move from agriculture to manufacturing, and then to services. In a GVC-linked world, an economy moves instead into the higher-value-added segments of industries in which it has already gained expertise (Frederick et al. 2017). Therefore, the gains that economies derive from trade are dependent on the types of tasks that firms undertake in the GVCs. Participation in higher-value-added tasks, in industries in which economies are already active, enhances the benefits of trade from innovation, knowledge building, and domestic input–output propagation (Kee and Tang 2019). According to the smile curve of value creation, high-value-added tasks are concentrated at both ends of the production chain, and involve creative and knowledge-intensive activities. Upstream, these tasks cover the generation of patents and copyrights, while downstream, they involve the creation of brands, trademarks, and goodwill (Mudambi 2008). Firms that initially latched onto the value chains through labor-intensive and low-value-added tasks therefore upgrade by moving either more upstream or more downstream relative to their initial position. Only with the upgrading of a critical mass of firms within an economy will that economy improve its position in the GVCs (Frederick et al. 2017).

In the PRC, industrial development in the new millennium had been marked by both traditional and new paradigms. Figure 6 shows that the DVA exports of the five broad sectors—primary, LTM, MHTM, business services, and personal and public services (PPS)—followed an upward trend from 2000 to 2019. The MHTM and business services sectors in particular experienced huge boosts in DVA exports during the pre–GFC period between 2000 and 2007.
Figure 6, however, clearly shows a shift in the trajectory of DVA exports between the pre- and post-GFC periods. For the primary, LTM, MHTM, and business services sectors, DVA exports enjoyed steeper growth in the pre-GFC period than in the post-GFC period, much like the GDP trends shown in Figure 1. DVA exports declined more sharply in the MHTM sector than in the business services sector during the 2007–2009 GFC; and the business services sector followed a steeper growth trajectory after that. By 2013, the DVA exports of the business services sector ($649 billion) had surpassed those of the MHTM sector ($641 billion), reflecting the PRC’s gradual shift from manufacturing to services. This shift is supported by the PRC’s 12th Five-Year Plan target of expanding the GDP share of services from 43% to 47% and increasing the magnitude of trade in services to reach $600 billion by 2015 (Jiang 2016). By 2015, DVA exports of the PRC’s business services and PPS sectors already totaled $780 billion (Figure 6).

While the DVA exports of the business services sector experienced a decline in 2016, they went on a sustained climb thereafter, reaching a peak of $872 billion by 2019. The continuous and steep growth of DVA exports in the PRC’s business services sector finds its basis in the PRC’s Catalogue for Key Development Areas of the Service Outsourcing Industry, issued in 2016, which promotes the enhancement of the PRC’s information technology outsourcing, business process outsourcing, and knowledge process outsourcing segments (Jiang 2016).

Inter-sectoral upgrading to higher-value-added sectors

By 2019, despite its unprecedented increase in DVA exports, the PRC’s services sector had not gained comparative advantage.4 Even so, the revealed comparative advantage (RCA) index for
both the business services and PPS sectors followed an upward trend over the last decade (Figure 7). In the same period, there was also a narrowing of the gap between the RCA indices for the business services sectors in the PRC and in advanced economies, particularly Germany and Japan. The PRC’s business services sector registered an RCA index of 0.87 in 2019, while Germany and Japan posted 0.92 and 0.88, respectively. The RCA and concentration indices for the business services sector, when juxtaposed, exhibit a positive correlation. This is a preliminary indication of how increasing specialization in the business services sector allowed the PRC to advance to Japan’s level in terms of comparative advantage.

While the PRC’s business services sector is slowly converging with its counterparts in Japan and Germany in terms of RCA, the opposite is true for the MHTM sector in the post-GFC era. As seen in Figure 7, the PRC’s MHTM sector had achieved comparative advantage by 2007; however, it was not able to close the gap with the MHTM leaders Germany, Japan, and the Republic of Korea. Its RCA index plateaued after the GFC, even as the corresponding indices for the MHTM leaders continued to rise.

By 2019, the PRC’s five broad sectors still generally lagged behind their counterparts in advanced economies, albeit by a narrower margin than in 2000. The evolution of indicators presented in Figures 7 and 8, however, suggests a gradual upgrading as the PRC moves up the value chains (new paradigm of industrial development). Value chain upgrading may have been set in motion as early as the PRC’s accession to the WTO in 2001. It began in the MHTM sector during the pre-GFC period, as seen in the steep rise in DVA exports (Figure 6) and the RCA index (Figure 7) for the sector. A slowdown in GVC expansion was triggered during the GFC, not just in the PRC but also in many other major economies, as the inherent vulnerabilities of manufacturing to global shocks were exposed.

Figure 7 shows a declining RCA index for the PRC’s primary and LTM sectors over the 2000–2019 period, with only the LTM sector maintaining comparative advantage by 2019. Meanwhile, the RCA index for the MHTM, business services, and PPS sectors gradually increased, although at varying rates, during the post-GFC period. These opposing trends signal a switch in focus from lower-value-added sectors (primary and LTM) to higher-value-added ones (MHTM and business services). This switch was also evident in advanced economies like Germany, Japan, the Republic of Korea, the United Kingdom (UK), and the US. For example, Japan, the Republic of Korea, the UK, and the US showed no comparative advantage in both the primary and LTM sectors. Japan and the Republic of Korea, meanwhile, displayed comparative advantage in their respective MHTM sectors. Germany registered comparative advantage in its LTM, MHTM, and PPS sectors; the UK, in its business services and PPS sectors; and the US, in its MHTM, business services, and PPS sectors. Therefore, if the RCA index trends were to persist for the PRC’s five sectors, then the PRC would follow the same trends in industrial development as those in advanced economies.

Humphrey and Schmitz (2004) use the term “inter-sectoral upgrading” to describe the entry of a firm into a completely new sector using capabilities developed in another value chain. A firm moving from the LTM to the MHTM or business services sector, for example, must have the technological and commercial capabilities to compete in an entirely different sector. In the PRC, international mergers and acquisitions were one of the key drivers of the economy’s move to higher-value-added sectors, from 2009 onward. These gave Chinese firms access and connections to established brands, best practices, and intellectual property (Jiang 2016), despite the PRC’s lower GDP growth trajectory and the slowdown in GVC activity during the post-GFC period.

**Functional upgrading to higher-value-added tasks upstream**

As the GVC participation rates in Figure 8 indicate, gradual functional upgrading also occurred within sectors, that is, upgrading from a lower-value-added task in the value chains to one with higher value-added (Humphrey and Schmitz 2004). A sector’s relative participation in forward and backward linkages signifies its relative position in the value chains. Sectors with higher backward than forward GVC participation rates (region above the 45-degree line in Figure 8) are more engaged in downstream activities. Those with higher forward than backward GVC participation rates (region below the 45-degree line in Figure 8), meanwhile, have more upstream engagement. Figure 8 shows that since 2000, sectors have moved to take on more upstream tasks in the value chains, as the general southward movement of points between 2000 and 2019 suggests. This change is most pronounced in the electrical and
optical equipment segment of the MHTM sector (with the c14 label in Figure 8). In 2000, the backward and forward GVC participation rates for this segment were 25% and 16%, respectively. By 2019, its backward GVC participation rate had not only declined, but was also lower than its forward GVC participation rate (20% vs. 21%).

MHTM firms in the PRC entered into the GVCs in the late 1990s through final assembly, a segment involving downstream activities with low value-added (Jiang 2016; Kee and Tang 2019). By the early 2000s, the PRC government had built a national innovation system to develop its research and development arm, a potentially high-value-added and upstream activity. Coupled with the PRC’s access to the WTO Information Technology Agreement (ITA) in 2001, the national innovation system enabled the PRC to advance beyond low-value-added tasks such as product assembly—where it already had established competency—to the development of its own technology for production (Jiang 2016). Investments in technology further intensified in the years that followed (Jiang 2016), placing the PRC among the top-ranking economies in terms of global venture-capital investment in virtual reality, autonomous vehicle technology, 3-D printing, robotics, and artificial intelligence (Seong, Wang, and Woetzel 2018). This move toward higher-value-added activities, together with the shift to relatively more upstream tasks, as discussed in the previous section, had made the PRC less vulnerable to production lags that may be caused by disruptions in external production chains.

Even as the PRC moves up the value chain through inter-sectoral and functional upgrading, GVC participation in both backward and forward channels had been declining, as depicted by the movement of points toward the southwest between 2000 and 2019 in Figure 8 and corroborated by the findings presented in Figure 4. Figure 6 also shows stable levels of vertical specialization through the 2000–2019 period amid the rise in the economy’s gross exports. These support the stronger localization in the PRC in recent years, which reduced the PRC’s vulnerability to external shocks. Kee and Tang (2019) find empirical evidence that the rising DVA content in exports comes from the substitution of domestic input for foreign input. The localization initiative is also an indication of a more granular inter-sectoral upgrading. For example, in the manufacture of electronics, from merely importing components for assembly, the PRC’s MHTM sector had expanded to include not just assembly firms but also firms that manufacture the electronic components themselves.

Localization of production networks

The share of the various industry sectors in domestic GVC income had been rising. This implies that an increasing proportion of DVA is embedded in the PRC’s final goods. This indicator follows a backward linkage perspective, describing how much of the total value of the final products of each sector can be attributed to production activities taking place within the PRC. As shown in Figure 9, the primary sector, business services, and the PPS sector accounted for close to 95% of domestic GVC income in 2019. The share of the LTM and MHTM sectors reached as much as 90% and 85%, respectively. These trends were reflective of the stronger localization of PRC trade, as seen in the increasing use of production input sourced from domestic markets.

The PRC’s transition toward industrial maturity had been marked by the modernization of domestic supply chains, as the economy exported less intermediate input to support its local industries. The PRC had been rapidly modernizing its domestic industries, while it strengthened its productive capacity in terms of design, engineering, and high-tech manufacturing (McKinsey Global Institute 2019). All this is in line with its economic rebalancing strategy, as the PRC increased its reliance on its large domestic markets, while reducing its dependence on exports, to sustain economic growth.

Rising domestic consumption

The contrast between the pre- and post-GFC periods was also evident in the changing GDP share of final consumption expenditure, gross capital formation, and net exports. In the pre-GFC period, the share of final consumption expenditure declined, while the share of net exports increased. The opposite trend had been observed in the post-GFC period. Figure 10 shows the growth in domestic demand since 2007, as seen in the rise in the combined share

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5 Established by the WTO, the ITA allows signatory economies to benefit from the reduction or outright elimination of tariff and nontariff measures on a wide range of information technology products (World Trade Organization 2017).
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Gross capital formation.

...allow the economy to respond quickly to market changes, thus be able to build more resilient local or regional supply chains localization or regionalization of productive activities. The PRC will fragmentation of production processes and may also promote the (Fortunato 2020). This is expected to reduce the international relocation of productive activities closer to consumer markets The reorganization of GVCs is likely to tip further toward the digitalization of trade and reconfiguration of trade and production most significant trends that have reshaped GVCs in recent years: robust digital economy. While the full impact of the pandemic still sustain the volume of its economic activities, with the help of its rebalancing strategies and its transition from investment- and and use of new technologies present opportunities for the PRC to return to its development trajectory while maintaining its strong foothold amid global trade disruptions.

Ongoing trends amplified by the COVID-19 crisis
The COVID–19 pandemic has put the PRC’s economic resilience amid global trade disruptions to the test. The current upgrading of value chains and the transition toward economic rebalancing indicate that the PRC has succeeded in mitigating the impact of disruptions in international supply chains. It has also been able to sustain the volume of its economic activities, with the help of its robust digital economy. While the full impact of the pandemic still has to be determined, this global crisis has accelerated two of the most significant trends that have reshaped GVCs in recent years: digitalization of trade and reconfiguration of trade and production networks closer to consumer markets. Both were already observed even before the pandemic (McKinsey Global Institute 2020).

The reorganization of GVCs is likely to tip further toward the relocation of productive activities closer to consumer markets (Fortunato 2020). This is expected to reduce the international fragmentation of production processes and may also promote the localization or regionalization of productive activities. The PRC will thus be able to build more resilient local or regional supply chains that allow the economy to respond quickly to market changes, especially in times of crisis. The PRC’s digital economy is likewise expected to expand as the pandemic fast-tracks the shift to online platforms. While traditional assumptions suggest that economic resilience is forged at the expense of efficiency, the emergence and use of new technologies present opportunities for the PRC to return to its development trajectory while maintaining its strong foothold amid global trade disruptions.

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