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Reaping efficiency gains through product market reforms in China

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ABSTRACT/RÉSUMÉ

Reaping efficiency gains through product market reforms in China

The impressive emergence of China's economy is set to lose some momentum as the country catches up with more advanced economies and its rapid ageing also weighs on it. However, China can still reap the "reform dividend", especially with measures to keep up the sustained growth of productivity. Reforms that enhance competition in product markets are among those that can potentially bring about significant productivity gains. China has been lowering the burden on start-ups and simplifying administrative procedures for a while already, achieving significant progress, though more procedures could go online and a one-stop shop is still to be implemented across the country. State ownership remains dominant in most network industries and there are many SOEs even in commercially-oriented industries such as retail or catering. SOEs enjoy implicit government guarantees and are the main beneficiaries of administrative monopolies, i.e. exclusive rights granted by regulations. In addition, they also benefit from various subsidies, sometimes leading to low-level, repetitious investment, excess capacity and waste of public money. A more level playing field would bring about efficiency-enhancing competition by private and foreign firms. Some network industries such as electricity and gas have recently accelerated their opening up and competition is developing in some segments. Digitalisation is a promising candidate to lift China's long-term growth potential. Competition, in particular competitive pressure from foreign counterparts when there are few domestic players could be an important source of efficiency gains in digital services. China has been a frontrunner in business digitalisation for a while already, but the outbreak accelerated also the provision of e-government services. While strengthening of IPR protection and promoting innovative ways of financing are welcome steps to nurture innovative industries, generous tax exemptions – which by OECD standards do not constitute good tax policy - reduce the availability of public funds for other priority areas.

Key words: China, product markets, competition, regulation, administrative monopolies, red tape, start-ups, state ownership, state-owned enterprises, private firms, network industries, energy, transportation, telecommunications, professional services, e-commerce, trade in services, semiconductors, industrial robots, subsidies, digitalisation, foreign direct investment, innovation, industrial policy.

JEL codes: D40, D42, D43, H81, L11, L12, L13, L32, L41, L42, L43, L44, L50, L51, L52, L53, L63, L84, L88, L90, L91, L92, L93, L94, L95, L96, L97, L98, O25, O38, O53, P20, P21, P22, P23.

This Working Paper relates to the 2022 Economic Survey of China
https://www.oecd.org/economy/china-economic-snapshot/

Réaliser des gains d'efficacité grâce aux réformes du marché des produits en Chine

L'impressionnante émergence de l'économie chinoise est appelée à perdre un peu de son élan à mesure que le pays rattrape les économies plus avancées et que son vieillissement rapide lui pèse également. Toutefois, la Chine peut encore récolter les "dividendes de la réforme", notamment grâce à des mesures visant à maintenir la croissance soutenue de la productivité. Les réformes qui renforcent la concurrence sur les marchés de produits sont parmi celles qui peuvent potentiellement entraîner d'importants gains de productivité. Depuis un certain temps déjà, la Chine a allégé la charge pesant sur les entreprises en phase de démarrage et simplifié les procédures administratives, réalisant ainsi des progrès significatifs, bien que davantage de procédures pourraient être mises en ligne et un guichet unique devrait encore être mis en place dans tout le pays. La propriété de l'État reste dominante dans la plupart des industries de réseau et il existe de nombreuses entreprises d'État même dans les industries à vocation commerciale telles que le commerce de détail ou la restauration. Les entreprises d'État bénéficient de garanties gouvernementales implicites et sont les principaux bénéficiaires des monopoles administratifs, c'est-à-dire des droits exclusifs accordés par la réglementation. En outre, elles bénéficient également de diverses subventions, ce qui conduit parfois à des investissements de bas niveau et répétitifs, à des capacités excédentaires et à un gaspillage de l'argent public. Des règles du jeu plus équitables permettraient aux entreprises privées et étrangères de se livrer à une concurrence plus efficace. Certaines industries de réseau telles que l'électricité et le gaz ont récemment accéléré leur ouverture et la concurrence se développe dans certains segments. La numérisation est un candidat prometteur pour relever le potentiel de croissance à long terme de la Chine. La concurrence, et en particulier la pression concurrentielle exercée par les homologues étrangers lorsque les acteurs nationaux sont peu nombreux, pourrait être une source importante de gains

d'efficacité dans les services numériques. La Chine est depuis un certain temps déjà à l'avant-garde de la numérisation des entreprises, mais l'épidémie a également accéléré la fourniture de services administratifs en ligne. Si le renforcement de la protection des DPI et la promotion de modes de financement innovants sont des mesures bienvenues pour favoriser les industries innovantes, les généreuses exonérations fiscales - qui, selon les normes de l'OCDE, ne constituent pas une politique fiscale adéquate- réduisent la disponibilité des fonds publics pour d'autres domaines prioritaires.

Mots-clés: Chine, marchés de produits, concurrence, réglementation, monopoles administratifs, formalités administratives, start-ups, propriété de l'État, entreprises publiques, entreprises privées, industries de réseau, énergie, transports, télécommunications, services professionnels, commerce électronique, commerce des services, semi-conducteurs, robots industriels, subventions, numérisation, investissements directs étrangers, innovation, politique industrielle.

Codes JEL: D40, D42, D43, H81, L11, L12, L13, L32, L41, L42, L43, L44, L50, L51, L52, L53, L63, L84, L88, L90, L91, L92, L93, L94, L95, L96, L97, L98, O25, O38, O53, P20, P21, P22, P23.

https://www.oecd.org/fr/economie/chine-en-un-coup-d-oeil/

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Reaping efficiency gains through product market reforms in China

By Margit Molnar[1]

The COVID-19 pandemic is likely to have a lasting impact on economies and societies worldwide. Pandemics are shown to be followed by sustained periods of uncertainty, depressed investment opportunities, and/or heightened desires to save (Jordà, Singh and Taylor, 2020[1]), thereby reducing potential growth. To mitigate the impact of COVID-19, many governments, in addition to emergency measures to save lives and keep firms afloat, have also supported investment. China is among those countries where the policy response has been tilted towards public investment. While continuing to strike a delicate balance between keeping the pandemic under control and resuming activities, it is crucial to implement reforms that will accelerate the recovery and support growth in the medium term. The impressive emergence of China's economy is set to lose some momentum as the country catches up with more advanced economies and its rapid ageing also weighs on it. However, China can still reap the "reform dividend", especially with measures to keep up the sustained growth of productivity. COVID-19 has also triggered efficiency-enhancing reallocation (Barrero, Bloom and Davis, 2020[2]), where product market reforms, by removing barriers to entry and exit, can act as catalysts. Product market reforms can also spur reallocation between existing firms, towards the more efficient ones, another way of enhancing efficiency.

Reforms that enhance competition in product markets are among those that can potentially bring about significant productivity gains. Earlier OECD assessments gave credit to the progress in regulatory transformation and stressed the need to accelerate the momentum (OECD, 2009[3]). In particular, it highlighted the importance of raising the quality of regulatory reviews, reforms and, where necessary, removal of existing rules as well as institutions. Regulatory bodies need to be independent, with clear mandates, authority and accountability. Transparency is key to any regulatory system. Independent regulators in OECD countries are typically charged with promoting competition and the interests of consumers by levelling the playing field and ensuring that regulatory rules apply equally to all firms. If the government is both the owner and regulator, it is hard to ensure independence and conflict of interest may arise. These principles should be considered to revamp the regulatory system in China so that the implementation of reforms is ensured and is done in an efficient way. An important OECD tool, the Regulatory Impact Assessment (OECD, 2020[4]), if adopted, would help policymakers in choosing the appropriate policy solutions. Considering the costs of regulations and alternatives of suggested policy options would also help reducing adverse impacts.

Competition-related policies have been stepped up recently and this should continue. Revival of productivity growth very much hinges upon how even the playing field is. The crisis uncovered the fragility

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of the small business sector and by hitting them disproportionately harder, made the playing field less even. State-owned enterprises (SOEs) in contrast, are the major beneficiaries of the investment-driven recovery and at the same time they are also the key engine of recovery. Foreign firms have been hit by disruptions in value chains and depending on the industry, also sluggish demand.

There is a wide variation in the stringency of regulations across sectors with retail trade being less regulated than in OECD countries, while professional services and network industries are more regulated. Retailers are not subject to restrictions related to opening hours or zoning as they are in many OECD countries, making the regulatory framework more conducive to competition. Indeed, OECD estimates indicate that retail trade mark-ups are lower in China than in the other BRIICS countries, while higher in network industries, which are more heavily regulated (OECD, 2014[5])A large part of network industries is controlled by the state and, in some cases, a few incumbents divide the market among themselves. The electricity sector is no longer fully vertically integrated: the power generation segment is liberalised with traditional and renewable generators often competing. The grid is shared by two incumbents. The natural gas sector is currently undergoing significant liberalisation. Transport industries exhibit varying patterns: while railways passenger transportation is still vertically integrated, freight transportation is being liberalised nationally. Trucking is relatively unregulated, but local governments erect various barriers to outside competitors through granting administrative monopolies to local businesses (as opposed to market monopolies, administrative monopolies are granted through administrative documents/regulations). Regulations in professional services, in particular legal and notary services, are more stringent with regard to the legal form of the enterprise and ownership/voting rights by people/businesses outside the profession are restricted.

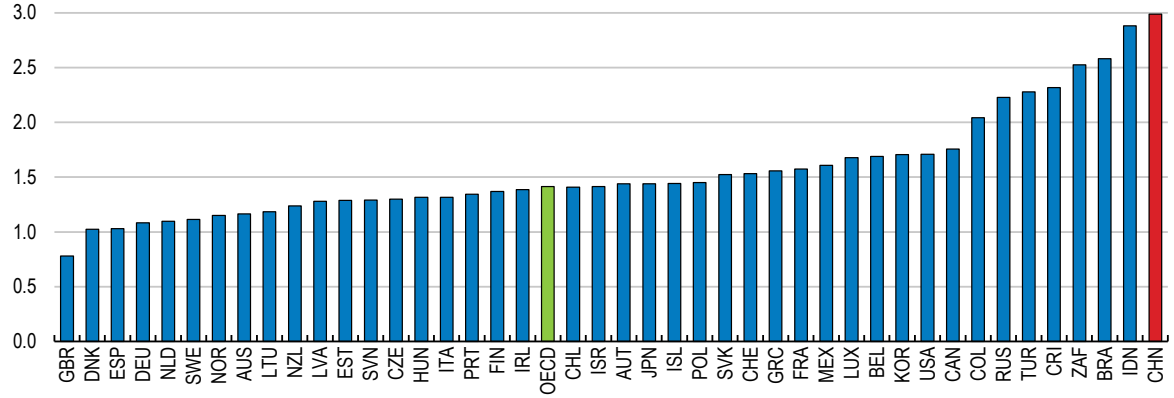
In China, national authorities regulate certain areas, while the responsibility for other areas is delegated to the provincial level. Provinces are then free to choose whether or not to introduce regulation. Hence, the stringency of regulations varies widely across the country: some provinces and municipalities are liberalising faster to reap early reformer benefits, while others are lagging behind. The Yangtze and the Pearl River Delta regions are leading in terms of the business environment and the Jingjinji region (Beijing, Tianjin and Hebei) is also a frontrunner. Among inland cities, Chengdu is a dynamic reformer (Smart China Annual Meeting Organizing Committee, China Construction Bank and Guoyong Research Academy, 2020[6]). In the Product Market Regulation indicator database, where regulations can differ by jurisdiction, the values refer to Beijing.

While COVID-19 has highlighted some of the vulnerabilities of the economy and society, it has also accelerated some processes that may push up the growth potential and ensure a sustainable recovery. In particular, digitalisation, triggered by pent-up demand for contactless services, sprinted ahead. E-government services also jumped on the digitalisation bandwagon, though they were lagging behind businesses. Part of the stimulus is frontloading the rollout of 5G, which catalyses both digitalisation and chips production. Against this backdrop, a new series of privileges have been launched for the semiconductor industry and the regulatory system for new technologies is evolving.

This paper takes stock of the current state of product market regulations, including the administrative burden on start-ups, licensing, applying the principle of competitive neutrality to SOEs, introducing competition in network industries and removing price controls, levelling the playing field for private and foreign firms and turning the crisis into opportunity by using subsidies efficiently. It discusses ongoing reforms, where relevant, provides comparisons with OECD and other non-member countries and draws recommendations for the future direction of reforms. The paper explores the lower-level indicators of the Product Market Regulation indicators as they are conducive to recommendations and as the overall indicator (Figure 1), which was designed for OECD countries, only partly captures regulatory issues in China's product markets.

Figure 1. Regulatory restrictions in China are more stringent than in other countries

PMR overall indicator, 2018



Note: Data for the United States refer to January 2021, for China and Indonesia to 2020 and for Costa Rica and Estonia to 2019. Values of the indicator vary between 0 and 6 with a higher value indicating greater restriction.
Source: OECD Product Market Regulation database.

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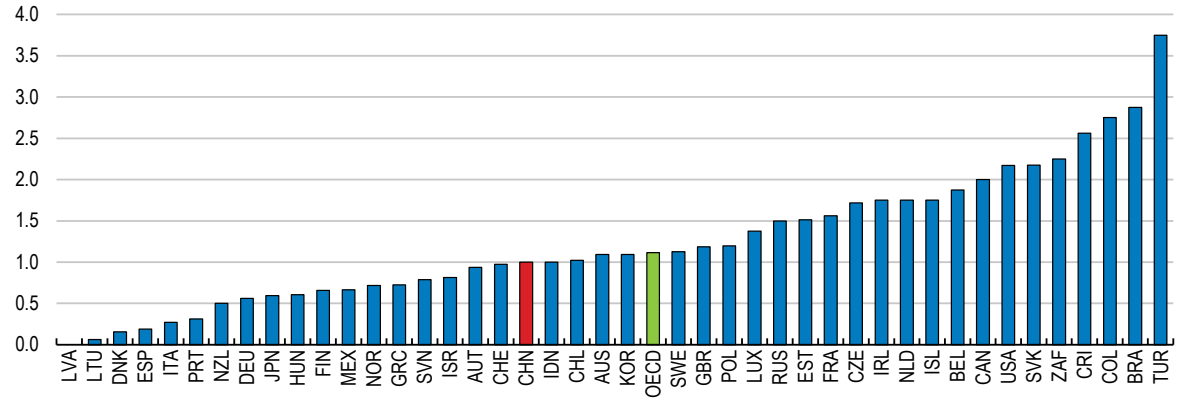
Reducing the burden on businesses

Making business transactions easier, in particular procedures to start a business, is a proven effective tool to lift productivity and China has embarked on this path. The government has made administrative simplification and product-market deregulation key government objectives. In 2015 it established an Inter-Ministerial Joint Meeting for Reducing the Burden on Enterprises, which convened in February 2021 for the 10th time. The 2016 update of the administrative burden on enterprises sub-indicator of the OECD Product Market Regulation (PMR) indicators showed that there had been progress since 2013, but there was still room to reduce the burden to the level in OECD countries. The latest PMR vintage results (Vitale, Moiso and Wanner, 2020[7]) confirm that enterprises in China are subject to somewhat lighter burden than in the average OECD country, though higher than in Japan, Germany or Italy (Figure 2). In some major non-OECD economies, such as Brazil or South Africa, the burden is much higher than in China.

Figure 2. There is room to reduce the costs of starting up a business

Administrative burden on start-ups sub-component of the PMR indicator, 2018



Note: Data for the United States refer to January 2021, for China and Indonesia refer to 2020 and for Costa Rica and Estonia to 2019. Values of the indicator vary between 0 and 6 with a higher value indicating greater restriction.
Source: OECD Product Market Regulation database.

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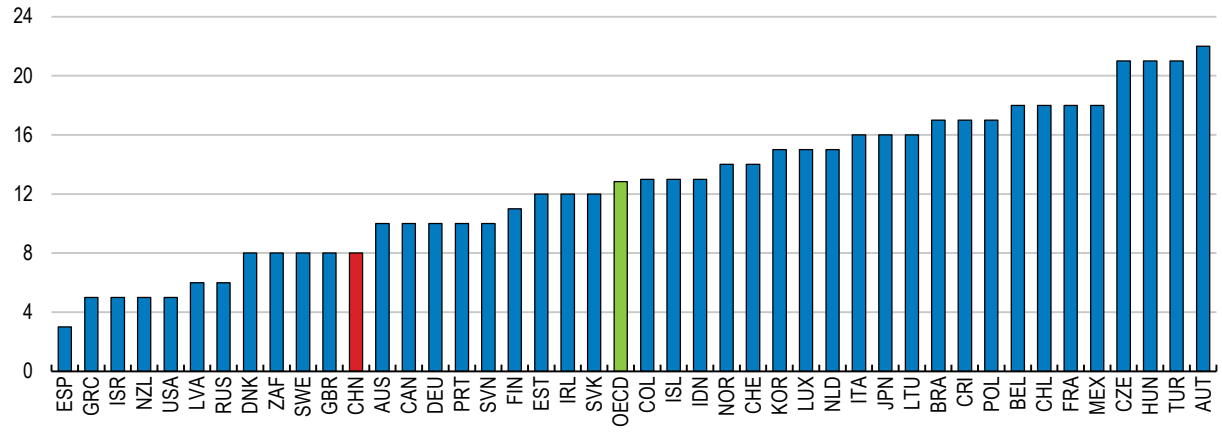
For instance, to start a limited liability company in China, 8 elements need to be completed, namely making an official seal, registration of domicile, submission of articles of association, designation of shares offered for subscription, appointment of the legal representative, directors and supervisors, acquisition of business licence, and registration with the tax office and registration with social security authorities. Six of those elements can be accomplished online. The number of elements is fewer than that in OECD countries with above-average product market regulatory stringency, such as Japan or Korea, where it is 16 and 15 procedures, respectively (Figure 3). In New Zealand, only five of those elements are required, in Greece or Latvia only six and in Spain only three.

Figure 3. The number of elements required to set up a company is below the OECD average, 2018



Note: Data for the United States refer to January 2021, for China and Indonesia refer to 2020 and for Costa Rica and Estonia to 2019.
Source: OECD Product Market Regulation database.

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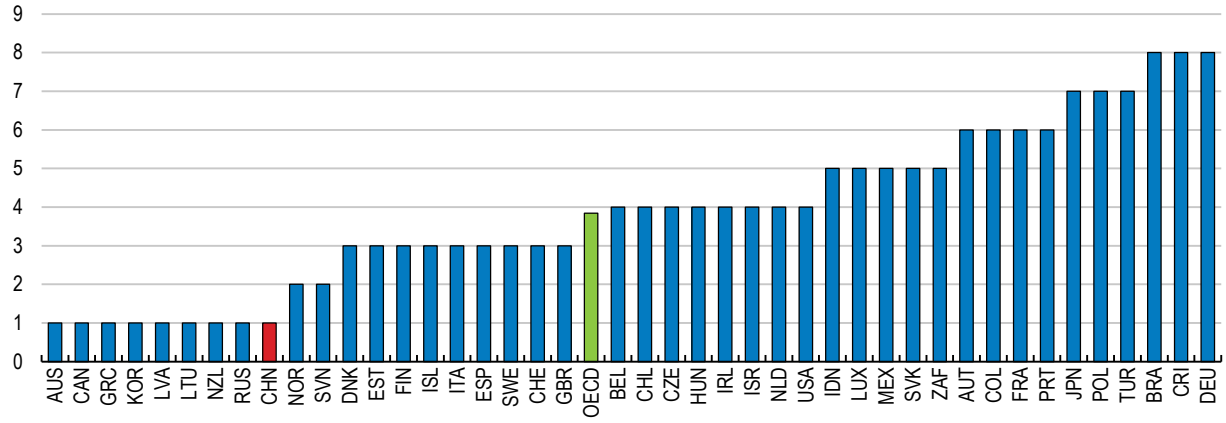
Although the number of elements that have to be completed to start a limited liability company shrank significantly, there is still room to further reduce the burden on starting up a limited liability firm. For instance, 32 out of the 36 OECD members for which the PMR indicator is available do not need a permit to conduct economic activity in order to start up a limited liability company. Furthermore, 21 OECD members do not require a formal deed of incorporation and ten not even a domicile to be registered. OECD countries are gradually shifting from an *ex ante* type of regulation towards an *ex post* approach, i.e. instead of approvals, relying on legal procedures in case of conflict. That is how now less than half of the countries (15 out of 36 OECD members for which the PMR indicator is available) require the approval of the firm's name to register, and nearly all do the registration of the company's name as part of the one-stop shop. The latest PMR vintage data refer to January 2020, however, since then, the administrative burden on start-ups has fallen. The approval of the proposed name for the firm is no longer required since 14 December 2020, when the draft changes to the Provisions on the Administration of Enterprise Name Registration were passed by the Standing Committee of the State Council. To further reduce the burden, a number of other procedures, such as the requirement to submit the articles of association could be dropped. Moreover, additional requirements at the local level are unjustified and should be abolished to have the same conditions to start-up a business all around the country.

Only one institution needs to be contacted to start a business in China, compared with the OECD average of around four (Figure 4). This is the same as in the frontrunner countries of Australia, Canada, Greece, Korea, Latvia, Lithuania or New Zealand, where to set up a new firm it is also enough to contact a single institution. The number of institutions to encounter during registration fell substantially. One-stop shops are becoming increasingly common, though there is variation across the country in implementation. By end-2020, all jurisdictions established one-stop shops where part of the procedures can take place to

start a business (i.e. filling in the application, submitting certificate of identity and of domicile in the case of personally-owned enterprises and filling in the application, confirming domicile, investors and shareholders and appointing the legal representative, directors and supervisors in the case of limited liability companies – all these are under the jurisdiction of the State Administration for Market Supervision). Moreover, tax office registration, social security registration and making a company seal are also part of the one-stop shop in most jurisdictions.

Figure 4. Only one institution need to be contacted to register a limited liability company, 2018



Note: Data for the United States refer to January 2021, for China and Indonesia to 2020 and for Costa Rica and Estonia to 2019.
Source: OECD Product Market Regulation database.

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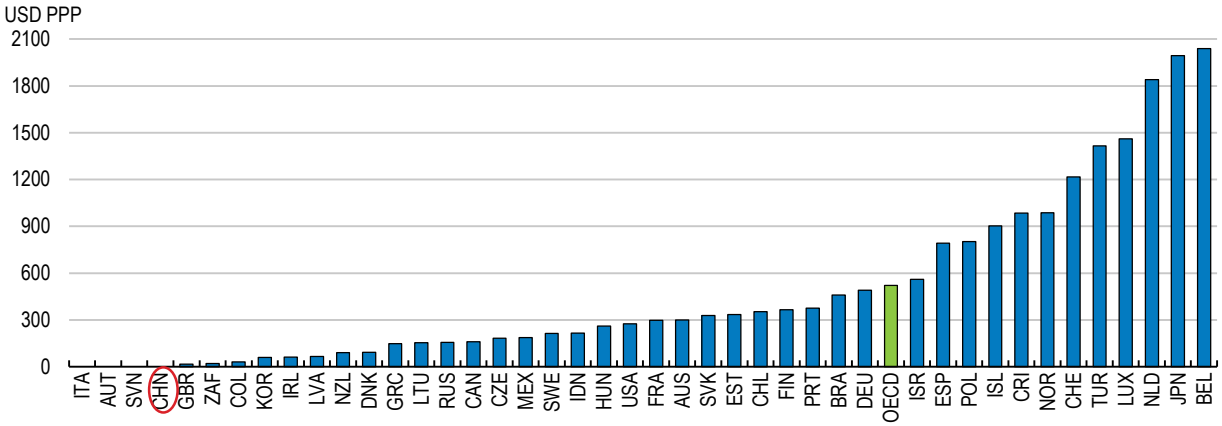
There is neither minimum capital requirement nor monetary costs for registering a limited liability firm in China, which is in line with the best practice in OECD countries (Figure 5). The monetary costs fell considerably compared to 2013 (when had already fallen relative to 2008).

Figure 5. It costs nothing to start a limited liability company, 2018



Note: Data for the United States refer to January 2021, for China and Indonesia to 2020 and Costa Rica and Estonia to 2019.
Source: OECD Product Market Regulation database.

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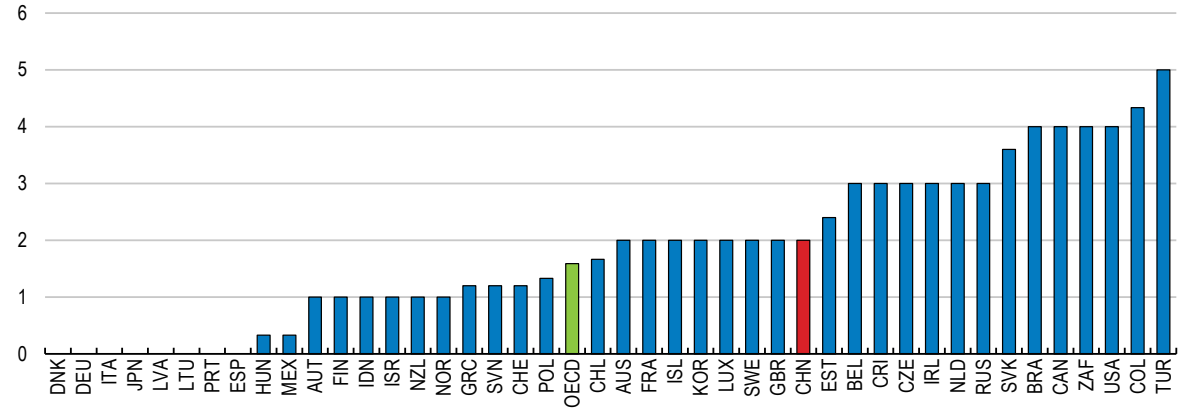
Administrative simplification, the delegation of decision making power and abolishing of licences is an on-going process, with thousands of licences becoming unneeded over the past few years. As recently as in the autumn of 2020, another set of licence requirements were abolished. On the licenses and permits sub-component of the PMR, China still applies more restrictions than the OECD average, but is doing better than Turkey, Colombia, Canada or the Slovak Republic or some BRIICS economies such as Brazil or South Africa, although not as good as Indonesia (Figure 6). Delegating to local governments the decision to simplify administrative procedures is not considered a best practice in OECD countries; instead, product market regulations should be unified across the country to create a single domestic market. Furthermore, a pre-announced schedule of such decisions would help reducing uncertainty on the need for licences and permits and would therefore help businesses plan ahead their investments. A public database with the list of licences and permits required at all levels would allow for gauging the extent of reforms.

Figure 6. The burden of licences and permits is comparable to that in some OECD countries

Licenses and permits sub-component of the PMR indicator, 2018



Note: Data for the United States refer to January 2021, for China and Indonesia to 2020, while data for Costa Rica and Estonia to 2019. Values of the indicator vary between 0 and 6 with a higher value indicating greater restriction.
Source: OECD Product Market Regulation database.

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Most transportation services need a license, including sea, coastal and inland passenger and freight water transport, road freight transport and long-distance passenger transport by coach. Licenses beyond those related to safety impose an unnecessary burden on businesses. Trucking licences, for instance, are only issued to people below 60, which is the current retirement age for men, but the next 14th Five Year Plan already factors in an increase in the retirement age, thus this age limit should be extended accordingly. Truck drivers also need to pass a qualification test on legal knowledge, which may, in some cases, constitute an entry barrier and is not necessary for the safe provision of services. Moreover, the requirement of local licenses by many cities to enter the city hinders the creation of a single domestic market.

Engineers or architects need to be employed by a firm and if the firm has a license for a certain geographical region, then they can work in that region. If, however, they wish to work in different regions, then they may need to switch employer, depending on what regions their employer is licenced for.

Levelling the playing field between SOEs and private firms

COVID-19 hit smaller firms disproportionately more in most countries. In China, smaller firms tend to be privately owned and much more fragile than firms owned by the central or local governments or government agencies. While private firms, especially large ones, have also been generous in supporting the hardest hit areas offering goods and services, the COVID-19 outbreak was an opportunity for state-owned enterprises to show their commitment to sharing the burden of addressing the outbreak and supporting the post-crisis recovery. "National service", i.e. unremunerated provision of goods and services in times of crisis was key behind the rapid response in handling the outbreak. Following the Notice (Guozifa fagui 2020/19) by the State-owned Assets Supervision and Administration Commission (SASAC) on 30 January 2020 calling SOEs to join the fight against the new coronavirus, within a month 46 similar documents with specific action plans were issued at the local level. The most common measures were donation of goods, supporting of SMEs along their supply chains and ensuring rapid resumption of production. Within a few days after the start of the lockdown, 4000 medical personnel were sent to Wuhan from state-owned enterprise hospitals around the country. The military also dispatched another few thousands. Moreover, SOEs sent protection materials and daily necessities to Hubei province. Over 70 central SOEs jointly donated goods worth several billions of yuan to the frontline as a demonstration of corporate social responsibility. SOEs in the construction sector, in addition to swiftly building two make-shift hospitals in Wuhan, have also redesigned and reconstructed over 100 hospitals across the country to adapt them to treating COVID-19 patients.

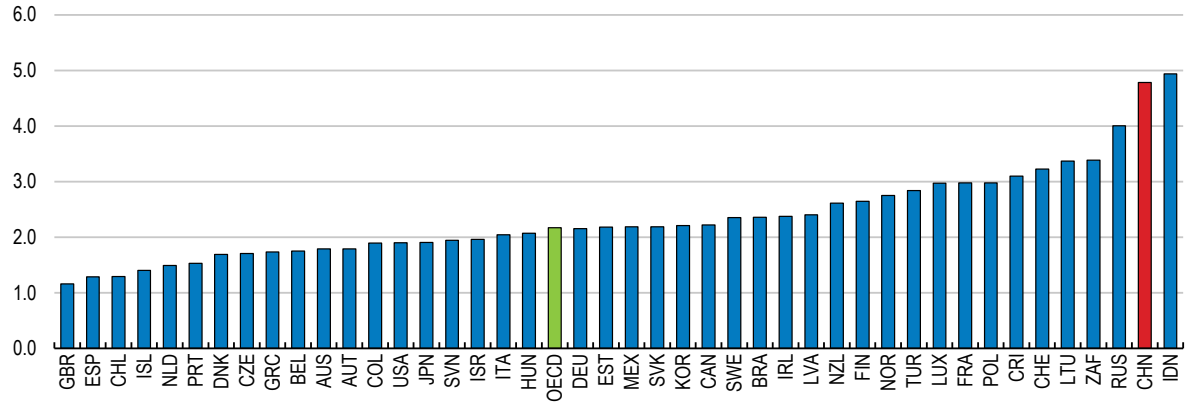
SOEs were crucial in meeting emergency needs, but the COVID-19 crisis contributed to cementing their privileged position in the economy. The devastating floods affecting a dozen of provinces in summer 2020, mainly in the south along the Yangtze River and its tributaries, further augmented the role of SOEs in providing emergency support to the government. While such help is indispensable to handle natural disasters and other emergencies effectively, the occurrence of such events and their size is highly unpredictable, hence imposing high degrees of uncertainty on SOEs. Profit is often not the major objective of SOEs, but instead meeting certain public policy goals, as a survey conducted for the 2017 OECD Economic Survey of China showed (OECD, 2017[8]) (Molnar and Lu, 2019[9]). To level the playing field between state-owned and private firms, especially to ensure transparency about government support, SOEs should, on the one hand, receive fair compensation for their services during emergency situations and on the other, should face a level playing field. There should be accounting separation between their provision of public and market-based services for greater transparency. "National service" has affected SOEs' revenues and profitability, but they are likely to emerge from the outbreak much stronger relative to the private sector. Both SOEs and private firms will be able to carry forward their outbreak-related losses for eight years, but many private firms may exit the market, while that risk is much smaller for SOEs even though they carry the bulk of non-financial corporate debt. Thus SOEs' market shares are likely to increase.

SOEs are important players and command most of corporate debt

Even though by now the private sector is the major producer and employer with SOEs making up a mere 0.4% of firms according to the 2018 Economic Census, the share of SOEs in terms of sales or assets is much larger. SOEs contributed 23.7% of taxes and charges in the national budget over 2017-19. SOEs are dominant in several industries, including network industries and not only in natural monopoly segments. Air transportation is dominated by SOEs and so are utilities, notwithstanding recent opening measures. According to the public ownership mid-level sub-component (which includes the scope and governance of SOEs, government involvement in network industries and direct control lower-level subcomponents) of the OECD PMR indicators, only Indonesia has more widespread public ownership than China (Figure 7) among the countries for which the indicator is available. In addition to legacy granting natural monopolies to SOEs, administrative monopolies created by regulations also boost their market shares.

Figure 7. Public ownership is widespread

Public ownership sub-indicator of the OECD PMR indicator, 2018



Note: Data for the United States refer to January 2021, for China and Indonesia refer to 2020 and for Costa Rica and Estonia to 2019. Values of the indicator vary between 0 and 6 with a higher value indicating greater restriction.
Source: OECD Product Market Regulation database.

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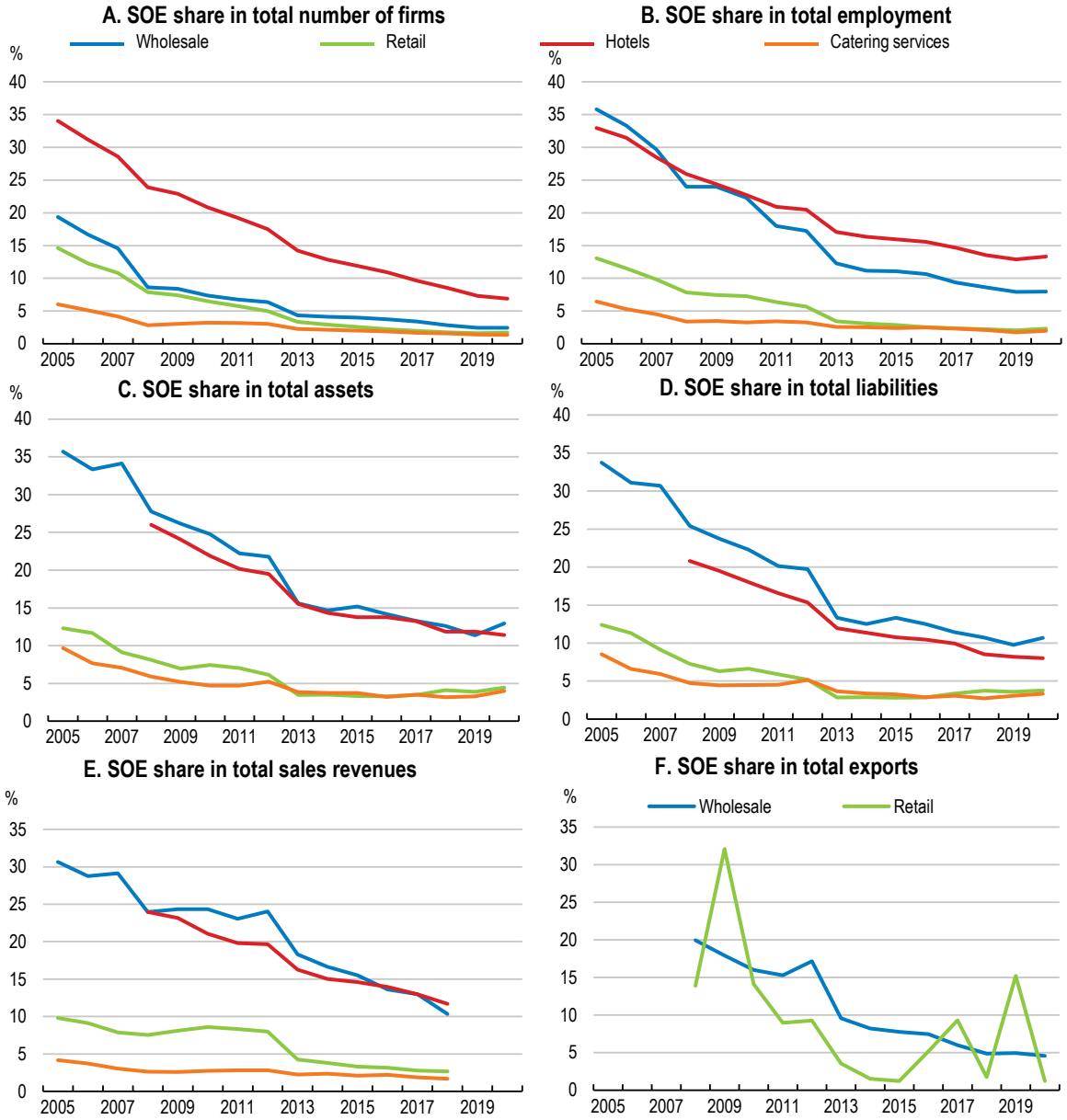
Moreover, SOEs command considerable shares even in some commercial activities, unlike in OECD countries (OECD, 2017[10]). For instance, in the accommodation business, they make up around 7% of all firms (above the CNY 20 million revenue threshold) and employ roughly a sixth of staff (Figure 8). Their share in total assets and revenues of the sector is around 11-12%. Here, the definition of SOEs includes only those firms where there are no other shareholders than the state or joint-operation enterprises between the state and other ownership types (such as private, foreign and collective). Including also firms where the state is not the only shareholder would result in higher shares (recent estimates are not available, but see Molnar and Wang (Molnar and Wang, 2015[11]) for an estimate in 2008 using the Economic Census). The 2019 OECD Economic Survey estimated that reducing state shares to minority level in the four commercially-oriented industries of accommodation, catering, wholesale and retail would boost long-term GDP per capita by 1.3%.

High levels of state ownership per se, do not give rise to an uneven playing field if SOEs are well governed (OECD, 2016[12]), as OECD experience shows. The OECD Principles on the Governance of State-Owned Enterprises spells out best practices for governing SOEs (OECD, 2015[13]). According to the Principles, the state should disclose the rationale for the ownership for all SOEs and review it regularly. Any public policy objective should be clear and disclosed. Owing to legacy and state ownership being enshrined in the Constitution as the major ownership form, the rationale for owning enterprises is not a matter of discussion in China, though, as mentioned above, in purely commercially-oriented industries such as catering or wholesale sales it would be hard to see the benefits of state ownership. In contrast, public policy goals are clearly stated and often appear as primary goals for SOEs, in particular at the holding company level (Molnar and Lu, 2019[9]).

Figure 8. SOEs command a significant share in several services



Note: Based on above-threshold enterprises. SOEs refer to enterprises wholly owned by the state, companies with the state as the sole shareholder and joint-operation enterprises.
Source: OECD calculations based on National Bureau of Statistics data.

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Reforms of SOEs, ongoing for decades already, focus on enhancing efficiency. A major way to improve efficiency is through mixed ownership reforms, where non-state owners become shareholders of formerly fully state-owned firms. Or it can be done the other way: cash-strapped private firms with intangible assets are acquired by technology-seeking SOEs. Alternatively, the target may not be technology, but upstream resources or downstream markets. Since the start of reforms in 2013, as of end-2019, nearly three quarters of subsidiaries of central SOEs have undergone mixed ownership transformation. The local equivalent would be 50%. Even though only a small portion of shares is typically involved in mixed ownership reforms, as the 2017 OECD Economic Survey pointed out, an important difference such reforms bring about is an additional monitor. A private investor may not prevent the expropriation of wealth from minority shareholders or tunnelling (i.e. taking funds away from listed firms by controlling shareholders or related companies without matching business transactions), but at a minimum can enhance transparency.

To improve performance of SOEs, stock option incentive schemes have been adopted by 119 listed central SOEs as of 2019. The combined benefits to top management cannot exceed 40% of their overall salary level and for mid-level managers and technical and operational staff the board of directors sets the level. Capping benefits for top managers is justified if a large gap between their and workers' salaries reduces workers' incentives. Indeed, recent OECD analysis shows that a larger salary gap between executives and workers is associated with lower productivity (Molnar, Wang and Chen, 2017[14]). In contrast, the salary gap appears to positively affect returns on assets or equity. Beyond the efficiency wage theory, the Chinese incentive-based salary system provides an explanation. ROA and ROE are often among the objectives of executives and thus the criteria by which their performance is assessed. This creates a mechanism where managers seek higher profits, which are reflected in their higher pay. Insofar as executives' salaries are not explicitly linked to productivity measures, they may seek to boost returns at the expense of productivity, for instance through mere volume expansion or through cutting corners in the pursuit of short-term profits.

In the case of most SOEs it is not the line ministry that exercises ownership rights as in several OECD countries such as Austria, the Czech Republic, Ireland and Mexico, but either a specialised agency or the Ministry of Finance on its own right or on behalf of the State Council (Box 1). A small share of SOEs belong to government agencies, which, as owners, exercise ownership rights. In this case the owner and regulator are not separated, though many of such SOEs are publishing companies or other service providers, whose activities are not necessarily regulated by their owner. Costs related to public policy objectives should be funded by the state and disclosed, which is currently not the case. As in many OECD countries such as Belgium, Canada, Hungary, Mexico, Portugal, Spain and Turkey, the state appoints the CEO of SOEs. Moreover, there is a transit path between government and SOEs, increasing the possibility of lobbying (which is currently not regulated as systematically as in OECD countries) and corruption. As of early 2022, 99.6% of subsidiaries of central SOEs under SASAC and 96.7% of local SOE subsidiaries had boards with external director majority. In the marketplace, the competitive neutrality principle should apply; the legal and regulatory framework for SOEs should ensure a level playing field and fair competition when SOEs undertake economic activities (OECD, 2009[15]). Unlike in some OECD countries such as Canada or Italy, where SOEs are exempt from the application of at least some specific laws and regulations that apply for the private sector, in China there are no such exemptions. Instead, the major privileges of SOEs are manifest in implicit guarantees and administrative monopolies.

Box 1. SOEs are a diverse group

Chinese SOEs vary widely in size, ownership structure, supervision and other characteristics. In total, there are around 217 000 SOEs (as of end-2019) but when referring to SOEs, observers often talk about the 97 central government-owned enterprise groups supervised by the State Asset Supervisory Administrative Commission (SASAC). These 97 conglomerates include most of the mammoth SOE groups in monopolistic and oligopolistic industries. Central SOE groups managed by SASAC are often large conglomerates consisting of hundreds or sometimes even over a thousand firms. Those slow in reforming have up to dozens of public service institutions within the conglomerate. Fortune 500 includes 119 Chinese firms (as of 2019), of which 70% are SOEs, 81 are in the non-financial sector and mostly supervised by SASAC at all levels (80, from which 48 at the central level).

However, not all SOEs are managed by SASAC. One specific group of central SOEs include around 100 culture-related enterprise groups such as publishing houses and press/media groups operating in oligopolistic markets and their assets are managed by the Ministry of Finance (MoF). There are also five very large firms, the China Tobacco, China Posts, China Railways, China Publishing Group Corporation and the China Foreign Culture Group Corporation, the first three each alone representing a whole industry. MoF exercises ownership control in the case of those five enterprise groups on behalf of the State Council.

The Huijin Corporation manages all centrally-owned stand-alone financial firms on behalf of the MoF (27 in total as of 2019). In addition there are finance companies in the SOE groups, which are managed by their respective groups.

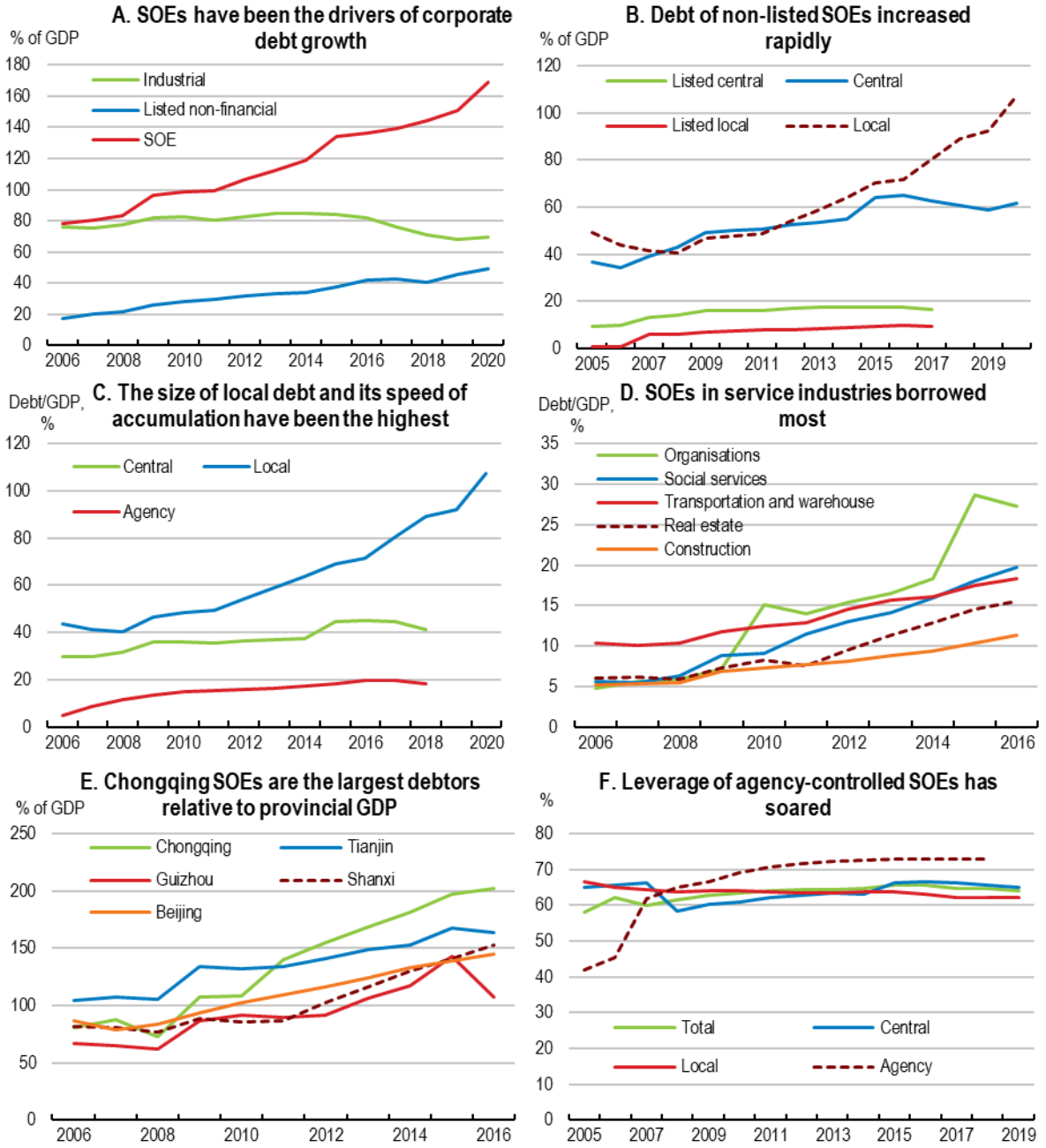
In addition to the SOEs managed by SASAC and MoF, several government agencies also operate enterprises, which comprise an additional type of SOEs. They are even more opaque than other SOEs as they are supervised by the government agencies that own them. According to the recent Implementing Regulations of the Budget Law, from this year, government agencies will have to consolidate their affiliates' activities into their accounts thereby increasing transparency.

Furthermore, local governments also own enterprises represented by local SASACs. Local financial institutions owned by local governments are sometimes supervised by local SASACs, sometimes by local finance bureaus.

Source: Ministry of Finance and SASAC websites.

SOEs owe most of China's corporate debt, given their easier access to borrowing compared to private firms. SOE debt is mainly in the form of bank borrowing or direct borrowing from the market, but also includes trade-related and other liabilities. Among OECD countries, according to the most recent vintage of the PMR indicators, only Chile's SOEs have better financing conditions than private firms in general, though in several other countries such as Japan, Korea, Mexico and Switzerland, the playing field is to some extent tilted towards SOEs. For instance, in Korea and Japan, SOEs in some sectors have better financing conditions than private firms and in Japan, if an SOE performs both competitive and non-competitive activities, it is not required to separate them. At end-2019, China's SOE debt reached around 151% of GDP (Figure 9). Most of the debt is owned by non-industrial, non-listed SOEs at the local level. The top five most heavily indebted sectors include organisations and others (organisations refer to the communist party, youth league, women's associations etc.), social services, transportation and warehouse, real estate and construction – all are services industries. SOE debt relative to provincial GDP is the highest in the municipalities of Beijing, Chongqing and Tianjin and two western provinces, Shanxi and Guizhou. Even though their debt is not particularly high, given their lower assets, SOEs under government agencies have the highest leverage (expressed as the debt-to-assets ratio), at over 70% vs. below 65% for all other types of SOEs. Deleveraging should accelerate and implicit subsidies to SOEs and other public entities should be phased out.

Figure 9. SOEs are heavily indebted



Note: SOEs refer to non-financial enterprises. Leverage is the debt-to-assets ratio. In Panel A, there is an overlap between industrial and listed non-financial firms as well as SOEs. In all panels, SOE debt refers to a comprehensive definition of debt based on financial statement data.
Source: Ministry of Finance and local finance bureaux.

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According to the OECD Principles, rules should be in place that ensure that all shareholders in SOEs are treated equitably. Due to the high concentration of ownership in China's companies (i.e. in the hands of the state), the conflict of interest between majority and minority shareholders is an issue (OECD, 2011[16]). Furthermore, state-owned enterprises should observe high standards of transparency and be subject to the same high quality accounting, disclosure, compliance and auditing standards as listed companies. In China, the corporate governance principles apply fully only to listed companies, even though many of the

principles are considered in the context of SOE reforms. For instance, many non-listed SOEs have external directors (equivalent to independent directors in listed firms). However, there is room to increase disclosure and transparency for non-listed SOEs. To ensure the preservation of state assets, SOE activities should be better disclosed and audited, in particular their overseas investment, which have not yet been audited. This increases the risk of loss of state assets.

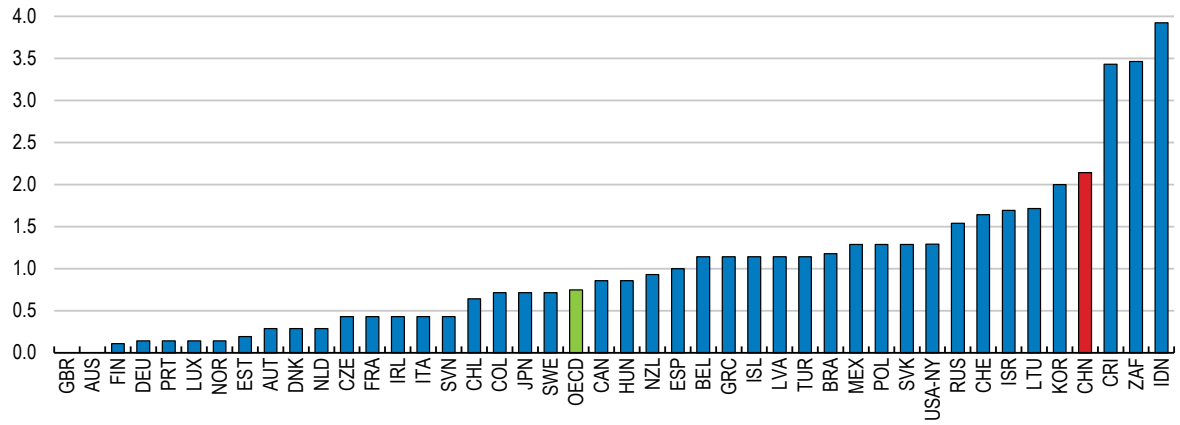
More competition in network industries

Most network industries in China are dominated by SOEs even though entry in most competitive segments has been liberalised. Some segments of network industries are natural monopolies characterised by high fixed and sunk costs and are therefore regulated. International experience shows that introducing competition where possible has led to higher productivity, better quality and, often, lower prices (OECD, 2007[17]; Høj et al., 2007[18]). A major challenge in injecting competition into traditional utility industries is the presence of vertically integrated firms that operate in both the non-competitive segment of the industry (i.e. fixed telephony network, transmission grid or rail tracks) and potentially competitive ones. In those cases securing third-party access to the non-competitive segment is essential for competition to develop. This is often achieved through some form of vertical separation (OECD, 2016[19]), either accounting, legal or ownership separation, and regulated access charges. In China, where vertical separation has been introduced, the largest players in all segments still remain SOEs.

Electricity supply is gradually more market based

Notwithstanding the series of reforms, in particular in the recent couple of years, the overall electricity regulation component of the PMR indicator shows that the sector is still more regulated than in OECD countries and most non-members, with the exception of Indonesia, South Africa and Costa Rica, among the countries for which the most recent vintage of the indicator is available (Figure 10). The higher score reflects widespread state ownership of not only the grid, but also at the generation and distribution levels. Also, state involvement through price regulation is more common than in most other countries.

Figure 10. The electricity sector is more regulated than in OECD countries and some non-members
Electricity sector regulation sub-component of the PMR indicator, 2018



Note: Data for the United States refer to January 2021, for China and Indonesia to 2020 and for Costa Rica and Estonia for 2019. Values of the indicator vary between 0 and 6 with a higher value indicating greater restriction. USA-NY is New York State of the United States.
Source: OECD Product Market Regulation database.

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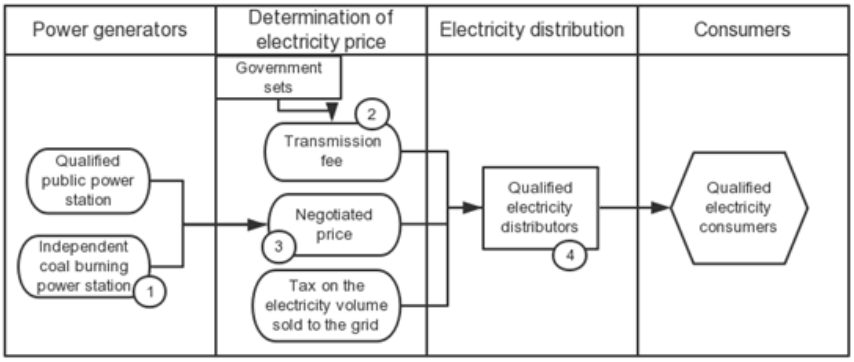
The electricity sector implemented its unbundling reform in 2002, separating power generation from transmission, then in 2012 the transmission and distribution functions were separated and in 2018, distribution companies were allowed to buy electricity from generators and to establish direct transactions with large consumers. In the generation segment, there have been fully foreign-owned firms for a couple of decades already.

A major initiative to enhance efficiency and introduce market forces in the electricity market is the pilot programme (Figure 11) across the country experimenting with various aspects of the reform since 2015. The pilot programme allows independent coal-burning power stations to enter the market and compete with public power stations selling electricity to the grid. At this point, however, independent renewable producers are not allowed to participate in the pilot programme. To raise efficiency further and also contribute to climate goals, renewable producers should be allowed to enter the market. A further important aspect of the pilot programme is making transmission fees more responsive to market forces. While in the past prices were controlled at all stages by the National Development and Reform Commission (NDRC), now a cost-plus pricing principle is experimented for the transmission segment. Furthermore, the price of electricity is negotiated between the power generators participating in the pilot scheme and the distributors. Distributors themselves are also a new aspect of the reforms as earlier the grid company was also in charge of distribution. Now distribution functions are assigned to separate firms and new entrants to the market are allowed. Furthermore, large-scale consumers can choose among distributors, which exerts competitive pressure in the distribution market. Government bodies, public service providers such as schools and hospitals and sectors such as finance will not be part of the reform even after it is extended to the whole country. Those consumers will retain access to electricity at subsidised rates and remain in the NDRC's electricity generation planning system. The 2020 notice on continuing the pilots emphasises timeshare-based contracts, registering of sales by transaction, technology neutrality and other principles.

Figure 11. Pilot programme for market-based pricing of electricity



Note: 1 refers to the reform measure to bring independent coal-burning generators into the regulatory system governed by the National Development and Reform Commission and the National Energy Administration. 2 is the reform measure to set electricity transmission prices according to the cost-plus principle, 3 is to establish an exchange platform where sellers (generators) and buyers (distributors) can negotiate the price and 4 is to establish electricity distributors.
Source: Guanyu jinyibu shenhua dianli tizhi gaigede ruogan yijian, Zhongfa 2015/9, in Chinese (Opinion on further deepening structural reforms of the electricity sector, 2015/9).

An increasing share of electricity is sold in market conditions: in the first half of 2020, 32.4% of overall and 58.3% of business electricity consumption. This surge of market-based electricity trade was the result of the reform making electricity trade market-based for business consumers (Fagai Yunxing No. 2019/1105). Households, agriculture, major public services are not part of this reform. As long as only business consumers can directly negotiate the price of electricity with power generators and other consumers have no such choice, efficiency gains cannot be fully reaped. In 2019, the transmission and distribution cost structure was also streamlined, making clear that only operating-maintenance and depreciation can be included in the costs and not any other type of cost unrelated to the transmission and distribution function (Fagai Jiagegui No. 2019/897). Currently two regional (Beijing and Guangzhou) and 33 province/city-level exchanges trade in electricity. Notwithstanding marked progress in reforms, there is room to make competition fairer and stiffer in electricity exchanges including by allowing renewables generators to participate and their operation to be more independent. The pricing for incremental power distribution is still to be explored. Furthermore, as of mid-2020, eight regions were piloting spot markets for electricity including in Sichuan, Gansu, Fujian, Shandong, Shanxi, Zhejiang, Nanwan and Mengxi and those markets will need time to develop and connect to medium- to long-term markets.

Shifting towards retail prices that reflect actual costs of generating, transmitting and distributing electricity, and incorporate the environmental costs of carbon-generated energy is key to enhancing efficiency. Electricity price reform is being piloted with cost-plus pricing or direct negotiation between the generator, the buyer and the grid company, which should result in lower energy prices. Indeed, in the pilot provinces of Guangdong and Zhejiang, the introduction of wholesale electricity markets led to a substantial drop in prices: market prices fell ca. 28% and 30%, respectively (Xie, Xu and Pollitt, 2020[20]). In most OECD countries retail prices are not regulated because reforms have been introduced that have made market effectively competitive.

Innovative schemes are being adopted, such as Demand Response, which is a mechanism that induces change in electricity consumption pattern by offering pricing signals and incentives, thereby reducing peak demand. 28 out of the 36 OECD countries for which the latest vintage of the PMR indicator is available, allow consumers to sell demand response to third parties, among which 17 allow all types of consumers to do so. China introduced the scheme in 2014 on a pilot basis with the aim of addressing summer peak load and the associated network security issue. Over the years, an increasing number of cities and provinces joined and implemented their own pilot schemes (Table 1). Various pilots use differing compensation mechanisms, for instance, Jiangsu charges a surcharge for large consumers in peak hours, while Henan subsumes the costs of demand response into the province-level price of electricity distribution. Notwithstanding the relatively early piloting among emerging economies, there is ample room to improve the demand response system. First of all, a mechanism for the operation, including funding and pricing need to be established. The notice on new demand-side management under supply-side structural reforms of September 2017 issued by NDRC and six agencies (Fagai Yunxinggui No. 2017/1690) clearly states that rational spending on demand response can be absorbed into electricity costs. However, it is not clear which existing scheme, if any, is considered best by independent evaluators so that it could be promoted countrywide. Participants should be better trained, including a more professional demand response load integrator, who could provide information and services supporting participation by consumers and consumers should be better informed about the incentives and should have stronger price-consciousness (Guo, Yang and Chen, 2020[21]).

Table 1. Demand response pilots continue

Demand response events and their impact by year

Year	Number of demand response events	Decreased load (in trillion W)	Decreased electricity (in trillion Wh)
2014	1	55	27.5
2015	18	2160.56	1214.81
2016	9	4191	2827
2017	1	26	26
2018	6	1734.48	1494.81
2019	17	7037.7	81187.3

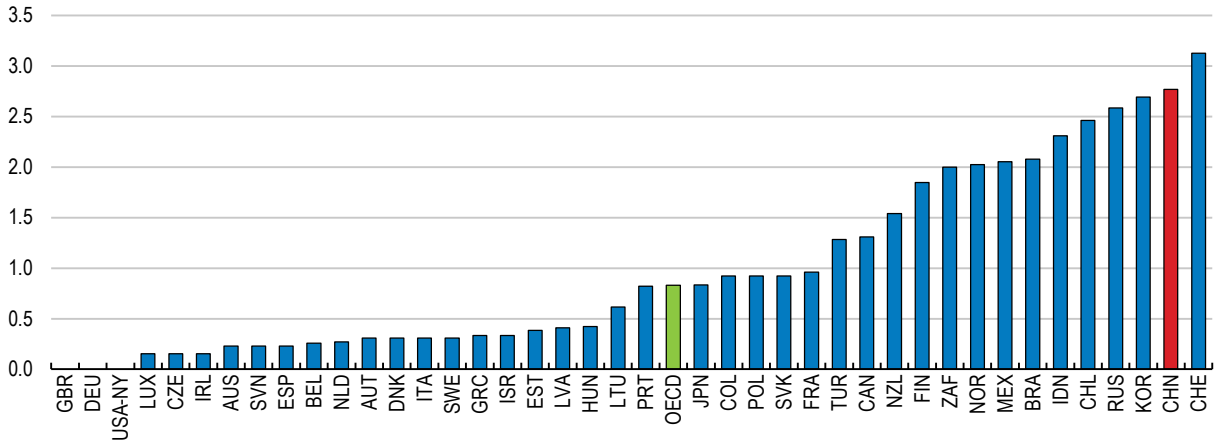
Note: Refers to all demand response events piloted across the country.
Source: Guo, P., D. Yang and C. Chen (2020), "Woguo dianli xuqiu xiangying xianzhuang fenxu yu fazhan jianyi", in Chinese, "Analysis of the state of demand response and proposals for reform in China", in *Dianli Juece Yu Yuqing Cankao*, (Electric power decision and public opinion reference) available at http://mm.chinapower.com.cn/zx/zxbg/20200811/27296.html accessed on 15 October 2020.

The gas sector has started to open up

Reforms in the natural gas sector are more recent than in electricity, manifesting in a high PMR score second only to Switzerland (Figure 12). Even though hundreds of private players have entered the market, state ownership is still dominant across all segments. In addition, price regulation also continues in most segments, including access to the pipeline, access to liquefied natural gas (LNG) terminals, gasification facilities and other related costs.

Figure 12. The gas market is among the most regulated

Natural gas regulation sub-component of the PMR indicator, 2018



Note: Data for the United States refer to January 2021, for China and Indonesia to 2020 and for Costa Rica and Estonia to 2019. Values of the indicator vary between 0 and 6 with a higher value indicating greater restriction. USA-NY is New York State of the United States.
Source: OECD Product Market Regulation database.

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The natural gas sector is in the midst of fundamental reforms. Although exploration and production by multiple players have been encouraged for a while already (in 2017 the national oil companies had to relinquish their exploration rights for blocks where investment did not reach the minimum requirements so that other players can enter the market), since end-July 2019 foreign companies can operate fully owned entities to explore oil & gas blocks. Before, they had to set up a product sharing joint venture with one of the four large state-owned oil companies. While being able to work without local partners is certainly an incentive to enter the market, the implementation details are still to be announced before foreign fully-owned explorers can consider entry. The obtaining of upstream industry data for investment decisions appears to be a particular challenge.

A key achievement of gas sector reforms is vertical separation. The main transmission network was delineated from the three large companies as recently as December 2019. A re-organised holding company, the National Oil & Gas Pipeline Group gained control of the pipeline assets. In May 2019, the oil and gas pipelines opened up to third party access and investment in pipelines is now encouraged by firms of all ownership types (Fagai Nengyuan Gui No. 2019/916). City gas and heating providers operate on a special license system and can purchase gas from LNG ports or through the pipeline. There are several hundreds of such companies, with over a hundred privately owned. These companies are granted monopoly positions through licenses in their jurisdictions and they compete with each other for LNG ports, where capacity constraints may be binding (and access charges are regulated). These companies could be the prospective entrants to the pipeline and storage business. Some large city gas companies are building their own LNG port to meet pent-up demand for gas and overcome capacity constraint in existing LNG ports. As the share of the sector increases in power generation (IEA, 2019[22]), creating a competitive market will be ever more important. Bringing down prices through further liberalisation by publishing the implementation details for foreign companies' entry to the exploration and production segment, by increased transparency with regard to data in that segment and by applying the principle of competitive neutrality in other competitive segments would create greater demand and contribute to energy transition to reach climate targets.

The first major price reform in the natural gas sector was allowing gas companies to sell production in excess of quotas at market prices in 1982 (O'Sullivan, 2018[23]). 2011 marked the switch from cost-plus pricing to formula-based pricing, where the price of gas was linked to that of substitutes. The gas market used to be very fragmented with multiple pricing depending on the origin of the gas and over the years the pricing schemes have been gradually streamlined. Interprovincial transmission prices are determined at the national level, while distribution and sales prices at the province and prefecture levels (with the exception of private pipelines). Lifting of price control in competitive segments of the natural gas industry would lead to a higher level of production and lower production costs, though only if it is done simultaneously with the introduction of market competition mechanisms (He and Lin, 2017[24]). Due to the presence of monopolies, the lifting of price controls alone would boost the profit margins of the incumbent, thus also vertical separation and introduction of competition is crucial, as discussed above. In more than half of OECD countries, gas prices are not regulated at all. Where they are, many countries follow the best practice of setting retail prices based on the costs of the most efficient supplier in order to provide suppliers appropriate incentives. With the ongoing deregulation drive, gas prices could be market determined where competition has sufficiently developed on the supply side, like in some provinces with multiple gas sources or with multiple LNG terminals as on the demand side, gas distribution companies are already competing for LNG terminal access.

There is room for more competition in transportation and telecom services

Competition in rail passenger transport may be hard to introduce, but in rail freight transport it could progress further. Only in 22 OECD countries is there competition in railway passenger services and in 12 there is not (in the rest, there are no railway passenger services). In the rail freight industry, there are a few competitors on non-essential lines point-to-point who need to obtain a license by route. Since 2018, foreign firms can enter the market, but so far there has not been much interest as traffic control is centralised and prices are regulated.

In sectors such as internet content services, oligopolistic market conditions hinder the formation of start-ups as the mega-platforms which are the basis for applications are owned by a few large players. As the 2017 OECD Economic Survey recommended, mandatory sharing of internet platforms would facilitate the commercialisation of computer applications and thus boost start-ups where entry costs are otherwise relatively low. In late December 2020, the State Administration for Market Regulation opened an antitrust investigation into Alibaba's alleged forcing of merchants to sell exclusively on its platform. Both merchants and rivals complained about the same behaviour and the major rival has even taken Alibaba to court.

Investigations for abuse of power by the antitrust authority are welcome and should be more widespread to curb anti-competitive behaviour. The consolidation of market supervision functions under the newly established State Administration for Market Regulation in 2018 paved the way for more effective implementation of antitrust laws. Furthermore, consumers often have no choice of provider for network services, as networks are not shared, in particular the last mile. Vertical separation in fixed line networks would enhance competition and hence consumer benefits. The digitalisation section of this paper discusses entry barriers for foreign firms in the markets of digital services.

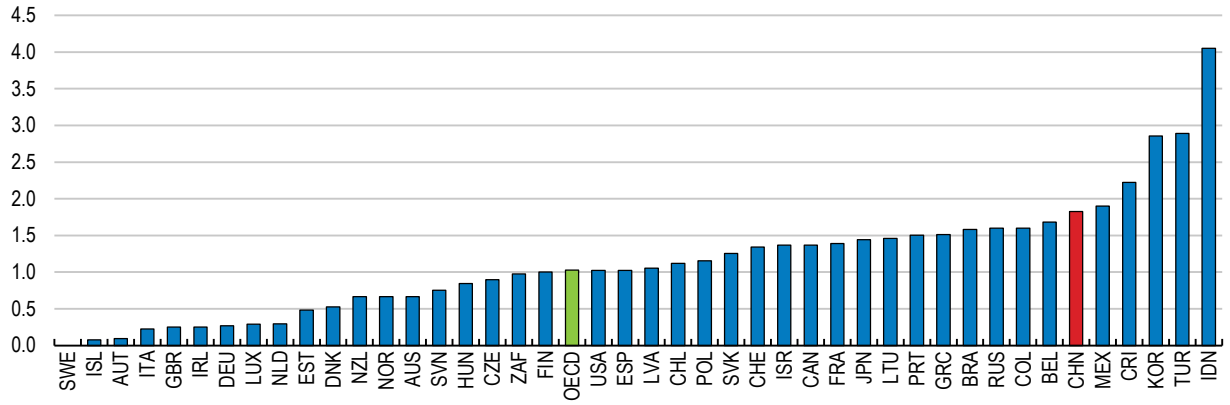
Removing remaining price controls where competition has developed

The move towards an increasingly market-based economy and the resulting stiffening of competition have brought about the elimination of a large number of price control measures. A large-scale price liberalisation took place in 2015, lifting controls on prices of 24 goods and services. Ceilings on drug prices were lifted (after imposing them in 2000) with the exception of selected categories such as psychotropic pharmaceuticals. The price of tobacco leaves, the last remaining agricultural product with price control, was partially liberalised. A minimum price, however, remains, with the aim to protect farmers. Transportation costs, including container loading fees, port service fees, and the price of bulk cargo and passenger rail transportation as well as domestic air cargo and air fares of some domestic airlines for passenger transportation have also been liberalised in the same round.

Nonetheless, China retains substantially more price controls than many OECD member and non-member countries for which data are available (Figure 13) as competition is developing slower in those areas. Price controls prevail not only in network services with a natural monopoly component such as gas or electricity, but also in inherently competitive industries such as mobile communications and transportation. Domestic airfares for routes without competition are set by the government, with the exception of business and first class tickets. The central government also sets the prices for rail cargo and passenger tickets for hard (i.e. second class) seat and berth for railways owned by central SOEs. Prices of domestic air tickets, for example, had also been controlled in almost all OECD countries until the early 2000s and as of 2013, they had remained controlled only in Israel and still in 2018. Non-member countries, such as Argentina and Indonesia, also implement price controls. Road freight tariffs are also regulated, while in almost all OECD countries they are determined by the market, except in Colombia and Turkey.

Figure 13. Price controls are more prevalent than in most OECD countries

Price controls sub-component of the PMR indicator, 2018



Note: Data for the United States refer to January 2021, for China and Indonesia to 2020, while data for Costa Rica and Estonia to 2019. Values of the indicator vary between 0 and 6 with a higher value indicating greater restriction.
Source: OECD Product Market Regulation database.

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The latest round of price deregulation became effective from 1 May 2020. This has cut the number of items subject to price controls by nearly 30% relative to the last 2015 price list. This latest price liberalisation drive includes some air and rail tickets and even more importantly, the offer and final sale prices for electricity and natural gas (for price reforms in the electricity and has sectors, see the respective sections above).

Price controls for professional services have been rapidly falling. Fees for seven professions and services were liberalised from 2015 (Fagai Jiage No. 2014/2755), including for legal services (with the exception of criminal, administrative and compensation-related cases, where guided prices remained), auditing, real estate agencies, building management (with the exception of social housing), residential area parking fees, tax-related verification service charges and asset valuation.

While the National Development and Reform Commission controls prices of major goods and services, the regulation of a large part of services belongs to the sub-national level and there are differences in the speed at which price regulations are lifted across regions. Beijing, for instance, liberalised prices for accounting and legal services from January 2016 and April 2018, respectively, and as of now, prices for most professional services, with the exception of notaries and some non-competitive services such as healthcare services in public hospitals, are determined by the market.

Free trade zones mushrooming around the country are the leading laboratories experimenting with services liberalisation, even though may be inefficient and may suffer from overinvestment as the 2019 OECD Economic Survey pointed out. For instance, Beijing has undertaken various measures to gauge liberalisation for services in the municipality. In sectors such as accounting and auditing, services trade in Beijing is as barrier-free as in OECD countries and in engineering services even more so, as measured by the OECD Services Trade Restrictiveness Index (STRI) (Box 2). In telecommunications, digitally-enabled services and commercial banking, in contrast, there is still ample room to reach the level of services trade liberalisation in OECD countries. In those three areas, liberalisation measures by sub-national authorities relative to the national level, have been limited.

Box 2. Beijing municipality is advancing on services liberalisation

In the past years, the Beijing Municipal Bureau of Commerce has been leading a series of pilot programmes to ease conditions for trade and investment in certain services sectors. In May 2015, the State Council approved the Comprehensive pilot programme for further opening up the service sector in Beijing, which envisaged reforms in key sectors such as cultural and educational services, financial services, and health services. In 2017, the State Council agreed to expand the initial pilot programme to transport services, enterprise management and professional services. In 2019, the Work Plan of Fully Promoting the Comprehensive Pilot Programme for Further Opening-up the Service Sector in Beijing set out an action plan to deepen liberalisation, including in sectors related to science and technology services and Internet information services. Most pilot measures have been extended to the whole country with the exception of tourism and telecommunications services, non-profit organisations and audio-visual materials.

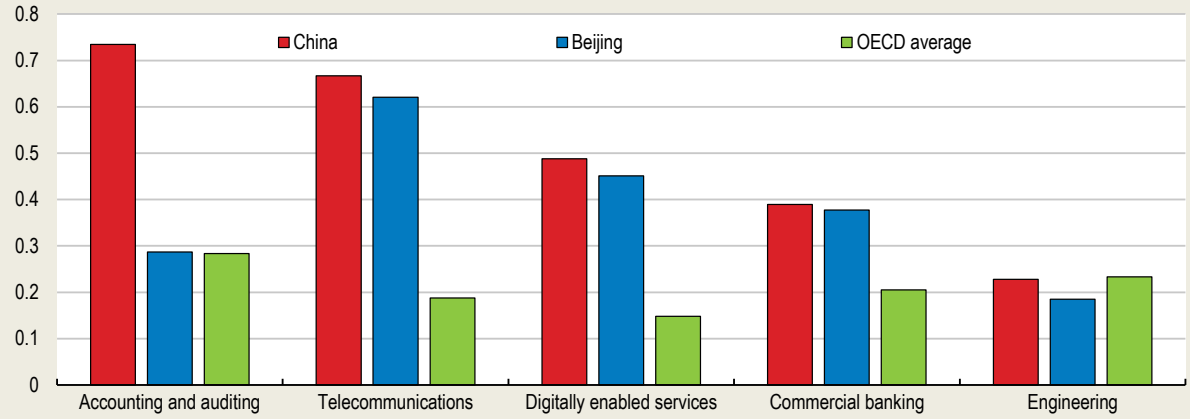
The measures implemented under these pilot programmes contributed to lowering barriers to services trade in Beijing, particularly in some professional services, financial services and services underpinning digital trade (Figure 14). The impact is highest in accounting and auditing services, where the level of restrictiveness in Beijing has decreased by 60% on the OECD STRI scale compared to the rest of China. This is due to reforms that lifted nationality requirement for accounting services, allowing foreign accountants to practice in Beijing, as well as measures easing the recognition of foreign qualifications and simplifying procedures for work permits and visas. In commercial banking, barriers related to branches of foreign banks were lifted. Measures affecting digitally-enabled trade include lifting foreign equity limits on Internet access services, easing conditions on the use of VPN services and on cross-

border digital payments made with foreign credit cards.

However, there is scope for further improvements, particularly in telecommunications services and the horizontal regulatory environment affecting digitally enabled services. In September 2020, the State Council approved another work plan to continue the liberalisation of services industries in Beijing through a pilot free trade zone for services, covering sectors such as technology and financial services, e-commerce services, tourism and healthcare.

Figure 14. Trade barriers in key services sectors are lower in Beijing relative to the national average

OECD Services Trade Restrictiveness Index in selected sectors, 2019



Note: The STRI indices take values between zero and one, one being the most restrictive. "Digitally enabled services" denotes services that can be supplied via electronic networks in the context of the OECD Digital STRI (Ferencz, 2019[25]).
Source: OECD STRI database, 2019.

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Less discrimination and more opportunities for the private sector

The outbreak unveiled the vulnerability of small and micro firms, most of which tend to be privately owned. Private firms are important players, they provide over 50% of enterprise taxes, over 60% of value added, over 70% of technological innovation outputs, over 80% of urban employment and constitute over 90% of firms. The size of the damage also highlighted the necessity to enact reforms in support of smaller firms and give them a greater chance to survive in the competitive arena. Private firms do not face a long list of sectors where entry is restricted, unlike foreign firms, but still do not enjoy a level playing field due to (i) administrative monopolies, mostly granted to SOEs, (ii) their small size, inhibiting their participation in larger project tenders, (iii) their more modest state of finances, making it hard to sell goods on commission, and (iv) other regulations potentially disadvantaging them. Private enterprises' concern is related to the security of their assets, burden of taxes and charges, access to financing and fair competition.

A major way of levelling the playing field for private (and foreign) firms is by dismantling administrative monopolies, which are granted by regulations and benefitting mostly SOEs. The Fair Competition Review Mechanism (FCRM) - brought into life in 2016 – in three years got adopted all around the country, but its effectiveness varies widely as it is not always enforced properly or according to regulations. Occasionally, low quality and ineffective implementation of the Review allows documents violating the Review standards to pass the process. The lack of clarity about to what targets the mechanism should be applied and a lack of awareness of what fair competition is as well as of capacity to handle complex cases at the local level are major factors hindering the effectiveness of the system. Equally importantly, violators are not held accountable for their action. There are also insufficient third party assessment institutions. To address some of those issues, a Notice was published by four ministry-level agencies (the State Administration for

Market Regulation, the National Development and Reform Commission, the Ministry of Finance and the Ministry of Commerce) in May 2020 (Guoshijian Fanlongduan 2020/73), which spells out the major areas of application of the review. Those include market entry, industrial development, investment promotion, tendering, code of business conduct, qualification standards and other regulations related to activities of market players. Any clause that potentially generates unequal conditions for market entry or exit, grants exclusive rights to deliver certain services, affects equal access to production factors, discriminates in the supervision process will now be targeted by the FCRM. The Notice also requires capacity building and regular training, where necessary.

The Notice is an important step in the right direction, but there is still room for improvement. The most powerful tools to address the issue of administrative monopolies are strengthening the rule of law and restricting the power of administrative departments to prevent the creation of administrative monopolies, as recommended by the 2019 OECD Economic Survey. There is also room for providing clear and detailed implementation rules to limit the discretionary power of implementing departments. Furthermore, to achieve tangible results, deadlines for administrative bodies to perform their duties should be specified and penalties imposed for delay. Currently, there is no specific mechanism through which existing administrative monopolies could be dismantled but the level above the given body in the administration is charged by doing that. Technology neutrality should be observed as technology requirements are often used to exclude competitors. Where there is doubt about potential anti-competitive clauses in tendering and other documents, the competition authority should be consulted. The FCRM deals with potential anti-competitive elements in new regulations while the existing stock of regulations is also being reviewed, as of end-2000, 1.89 million documents have been audited, among which nearly 30 000 have been amended. Since the institutional reforms in 2018, when the function of preserving competition neutrality was unified at the State Administration for Market Regulation, over 100 new administrative monopoly cases have been investigated. In June 2019, a new regulation limiting administrative power abuse and anti-competitive behaviour was issued, on the base of which from September that year investigation was carried out in specific sectors and areas prone to such behaviour including pharmeceuticals, transportation, construction, tendering and government procurement.

Furthermore, as the major strategy to drive the economy back to its original growth path is through investment in “new infrastructure”, such as 5G, smart cities and new energy development, where SOEs are key players, there is a risk that the divide with the private sector would further widen. Against this backdrop, it is crucial to find ways for private participation. The Opinion on supporting the private sector to participate in transport infrastructure development (Fagai Jichu No. 2020/1008) issued on 8 July 2020 specifies measures to support private entry to this dynamic area. Most importantly, the Opinion prohibits measures that hinder private entry, such as the requirement to establish a local subsidiary or setting the conditions so that private firms cannot qualify for public tenders. The 2019 OECD Economic Survey recommended the abolishment of those specific measures and it is a welcome step to explicitly mention them in the Opinion. A more rigorous application of the Fair Competition Review Mechanism to new regulations and the revision of non-complying measures in the existing stock of regulations are necessary to make the playing field more even. The Opinion proposes to split tendering by stage or by process for railways as long as it does not hinder consistent operation of the network. This opens up possibilities for more private firms as most tend to be of smaller size. The Opinion encourages timely settling of construction-related debt to private firms and prohibits irrational charges. Smart parking areas, intermodal transport, highway service areas are among those potentially attracting private interest. This recent Opinion follows the Opinion by the Central Committee and the State Council on creating a more conducive environment for private sector reform and development last year (Zhongfa No. 2019/49).

Some regulations, which originally aimed at helping SMEs, may end up discriminating against them. For instance, State Council Order No 728, effective from 1 September 2020, guarantees payments to small and medium enterprises. It specifies that government organisations must pay SMEs for services or goods within 30 days of delivery, or at the maximum within 60. Delays are publicised and may even weigh on

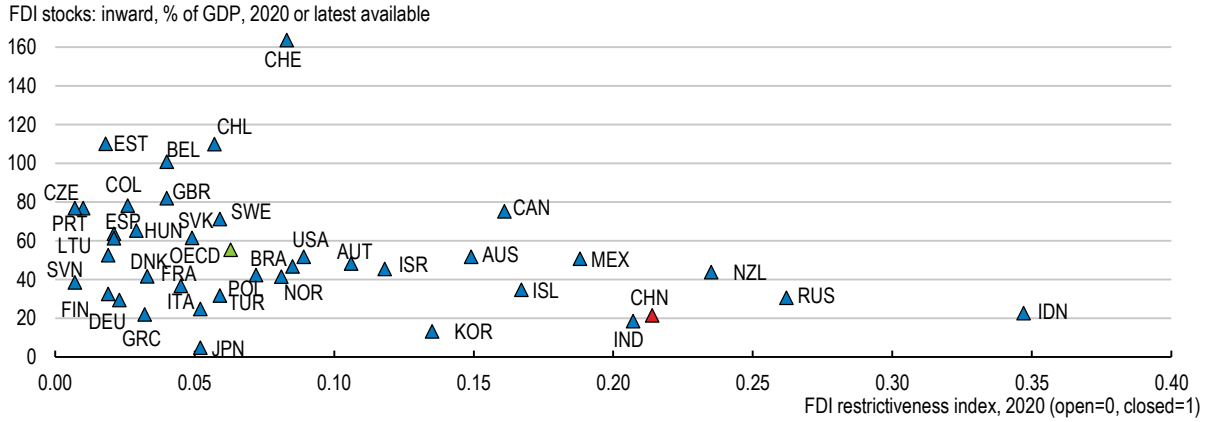
social credits (a national reputation system based on monitoring of agents' behaviour, discussed in the 2019 OECD Economic Survey). In addition, late payers incur interest either according to at least the ongoing 1-year lending rate or if not agreed explicitly, 5/10 000 per day. While such clauses certainly ensure that payments are made, or if not, the debtor bears the consequences, they may also discourage potential procurers to purchase from SMEs, which could exacerbate their vulnerable situation. To avoid providing an advantage to larger firms, payments should be guaranteed to all firms and non-payment should be penalised, regardless of the nature or size of the creditor.

In the retail sector, a major source of discrimination for smaller firms is the requirement to leave products at the retail outlet on commission. Once the goods are sold, the supplier is paid, if they are not sold, the supplier has to collect them. As smaller firms operate with tighter liquidity and need faster turnover of funds, they can hardly afford placing their goods on commission in department stores, therefore limiting their distribution channels. The practice of requiring suppliers to place goods on commission should be abolished.

Gradually more welcoming environment for foreign firms, but much more to do

China is a favoured destination for foreign direct investment (FDI) in general, but its accumulated stock relative to GDP is still small at around 20%, compared to the OECD average of 45% (Figure 15). Restrictions on foreign investment – measured by the OECD FDI Regulatory Restrictiveness Index - are higher than in any OECD country or some major BRIICS economies such as Brazil or India, though lower than in Indonesia or Russia. The majority of the restrictions is in the form of limiting the shares that foreign firms are allowed to hold in a Chinese company, but to a lesser extent, there are restrictions on foreigners' filling in key positions, thereby reducing potential knowledge spillovers. Due to the caps on ownership of foreigners in Chinese firms in a number of industries, foreign investors are obliged to establish joint ventures with local partners. Such obligations are being abolished in some sectors such as gas exploration (as discussed above) and some financial services, but they should be abolished altogether to fully reap the benefits of having foreign firms in the market. Stronger protection of intellectual property rights would likely make foreign firms to bring more advanced technology. The practice of forced technology transfers should be abolished and parties soliciting such transfers should face deterring fines. Although such transfers have not been allowed by any government document, they used to be widespread practice as reported by foreign investors. The 2019 Foreign Direct Investment Law and its implementing regulations explicitly prohibit forced technology transfers.

Figure 15. Countries less restrictive towards FDI tend to be more attractive



Note: Index values are between 0 and 1 with higher values associated with greater restrictions. The overall index covers equity, screening, employment of foreign personnel in key positions and other restrictions. Outliers with very high FDI-to-GDP shares such as Ireland, Luxembourg and the Netherlands are deleted for better legibility.
Source: OECD FDI Statistics and OECD FDI Regulatory Restrictiveness Index databases.

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China is a top FDI destination owing to its vast market, high growth and good quality of its infrastructure. It is among the most favoured destinations for many economies, including large investors as well as OECD and G20 members (Table 2). Among economies that invested abroad cumulatively over USD 10 billion, China is the No 1 destination for six, including Korea, for which China accounts for 32%. China is the second most important destination for Japan with 11% and Indonesia with 4%. For some non-OECD small island states, the high share for China in their overall outward direct investment may be related to round tripping (Chinese investors re-investing in their country).

Table 2. China is a favoured direct investment destination for many economies

FDI stock to China, its share and ranking (2019)

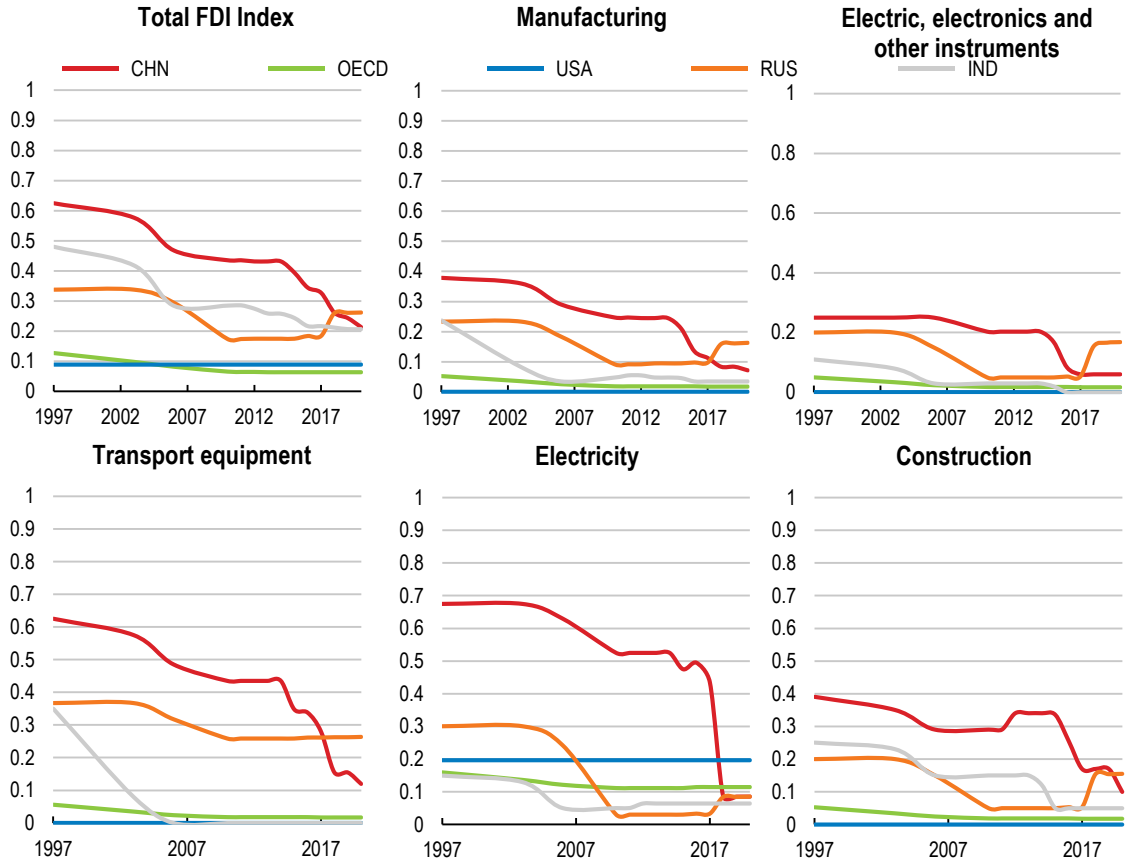
	Total FDI (USD billion)	FDI in China (USD billion)	China's share (%)	China's rank
Hong Kong, China	1,887.2	1,430.3	75.8	1
Singapore	641.7	102.5	16.0	1
Korea	243.9	64.0	26.2	1
Chinese Taipei	94.7	32.2	34.0	1
Samoa	28.8	27.2	94.4	1
Macao, China	18.5	12.0	65.2	1
British Virgin Islands	1,314.8	316.8	24.1	2
Japan	1,645.0	147.9	9.0	2
Mauritius	145.5	26.7	18.3	2
Indonesia	25.1	0.6	2.2	4

Note: The table is limited to economies that report to the IMF's Coordinated Direct Investment Survey and to FDI stock over USD 10 billion.
Source: IMF Coordinated Direct Investment Survey (CDIS).

Barriers to foreign investment have fallen significantly in particular following the enacting of the foreign direct investment law in January 2020 (China completed the negotiations with the European Union on an investment treaty in late December 2020). The Measures on Handling Complaints by Foreign-Invested Enterprises covers areas such as procurement, business secret protection, forced technology transfer and foreign capital transfer and its effective implementation is crucial for a greater opening up of the economy to foreign direct investment, which features as a target in the ongoing 14th Five Year Plan. In several industries, there is further room for removing the remaining ones. In manufacturing, as in most other countries, there are fewer restrictions than in services (Figure 16). Electronics and car manufacturing, industries tightly integrated into global value chains, saw a sharp removal of barriers in recent years. Easing of restrictions on foreign equity ownership in electricity (which comprises generation and transmission) has been impressive with the index value falling below the OECD average. In the construction industry, barriers were originally lower, but the extent of liberalisation is also more limited, hence leaving room for further reforms. Since 2018 restrictions on the share of foreign technical personnel in foreign construction firms located in free trade zones have been eased.

Figure 16. FDI restrictions in manufacturing, utilities and construction eased

OECD FDI Regulatory Restrictiveness Index, selected years 1997-2020



Note: Index values are between 0 and 1 with higher values associated with greater restrictions. The overall index covers equity, screening, employment of foreign personnel in key positions and other restrictions.
Source: OECD FDI Regulatory Restrictiveness Index database.

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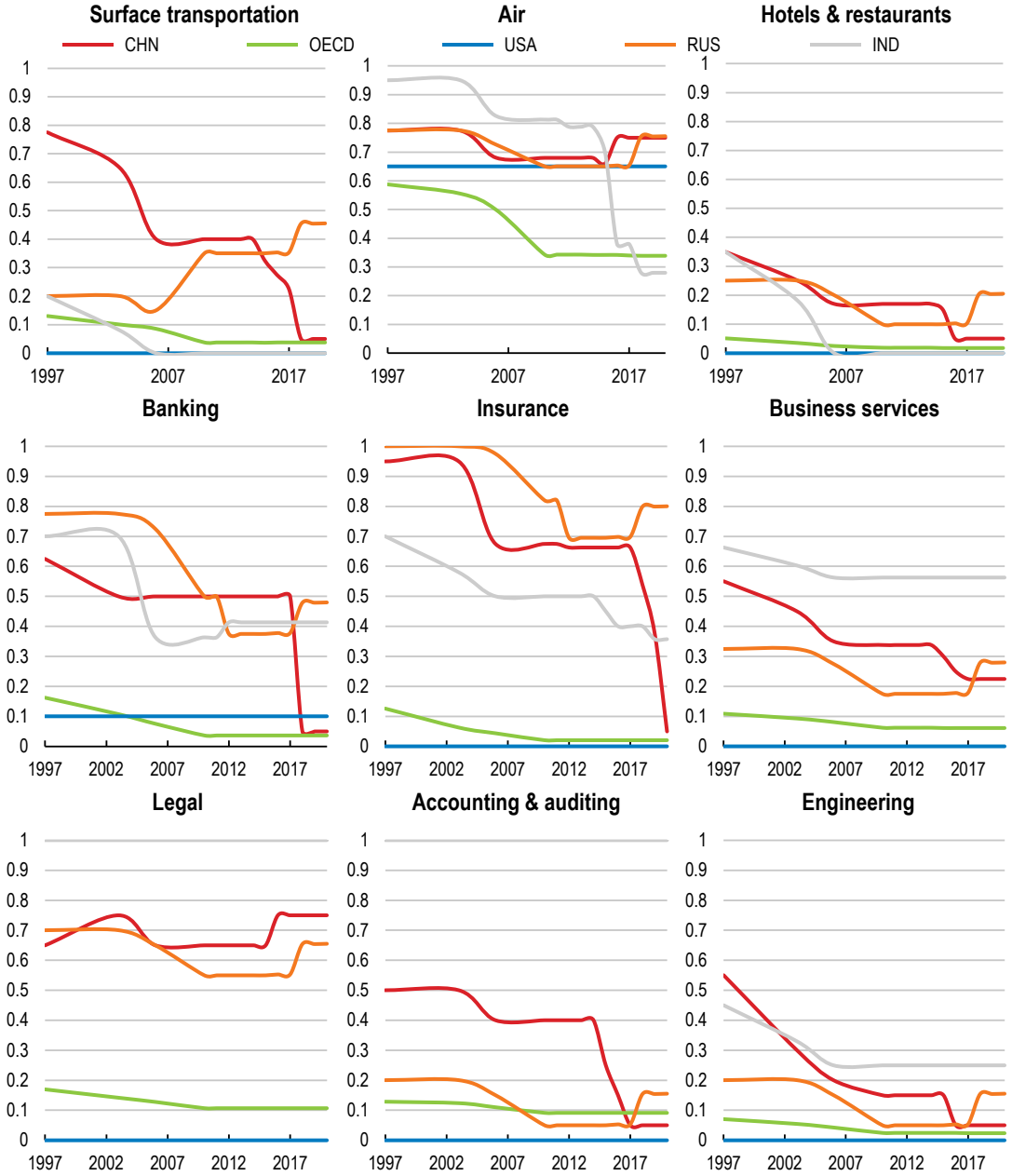
Barriers to foreign ownership tend to be much higher in services industries, as in OECD countries (Figure 17). It is now as easy for a foreign entity to own a road transport company as in an OECD country, but much more difficult to enter the airline business. Moreover, it became more difficult to enter air transport than it was five years ago owing to new screening regulations. The recent liberalisation wave in the financial sector made foreign entry to the banking sector easier than in the United States or major non-OECD economies, and since 2020 foreign firms are allowed 100% ownership in insurance companies. Reducing barriers to foreign entry to business services is particularly important as that industry produces inputs to many other sectors, thus has a large impact on overall productivity.

Figure 17. Room for easing FDI restrictions in several services industries

OECD FDI Regulatory Restrictiveness Index, selected years 1997-2020



Note: Index values are between 0 and 1 with higher values associated with greater restrictions. The overall index covers equity, screening, employment of foreign personnel in key positions and other restrictions.
Source: OECD FDI Regulatory Restrictiveness Index database.

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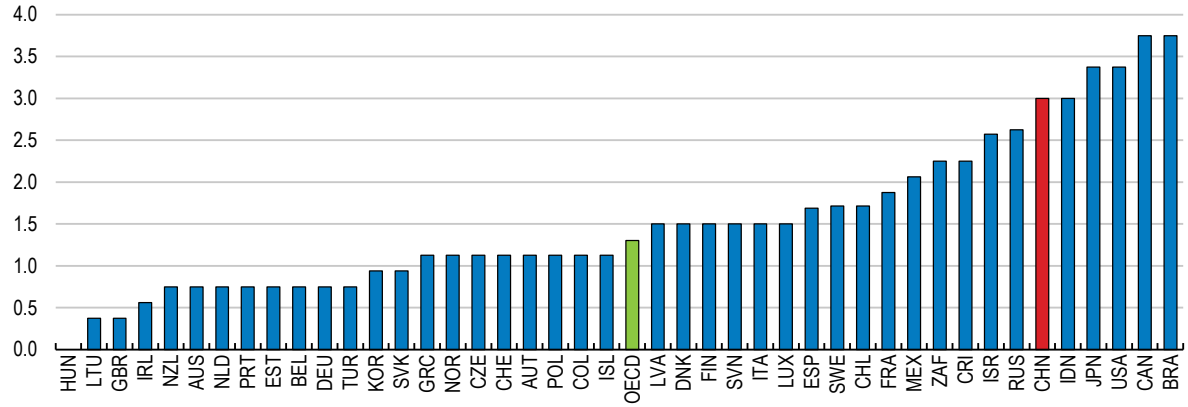
Professional service providers, including lawyers, accountants, architects and engineers also face unsurmountable barriers if they think of practicing in China. Lawyers and civil engineers must be Chinese nationals to be able to practice their profession. As China does not recognise multiple citizenship, effectively foreigners have no access to the market. Accountants do have the possibility to become Certified Public Accountants (CPAs), but they must have a couple of years' experience in China and be recommended by a Chinese accounting firm. Foreign lawyers, for instance, could bring a wealth of experience in areas where the domestic practice is nascent, such as intellectual property cases and could also contribute to strengthening the rule of law in general.

Restrictions on foreign firm conduct in China are not limited to equity participation (which have been lifted significantly in recent years), but especially in services industries, also cover the various aspects of service delivery. For instance, in the transport industry, cabotage is neither allowed for foreign road freight transport firms nor for long-distance passenger coaches. International evidence shows that airline liberalisation leads to lower fares not only due to the removal of monopoly rents but also to greater X-efficiency, (i.e. closer to optimal efficiency) (Button, 2019[26]). Open Sky Agreements (OSA) allowing airlines flying between any points of two economic areas are an important source of competitive pressure in passenger air transport. China has not signed such an agreement yet with the United States and the European Union. Further OSAs would bring about competitive pressure for domestic carriers and make them more efficient, including through the emergence of low-cost carriers, of which there are relatively few in China (Liu and Oum, 2018[27]). Freeing 8th and 9th freedoms (cabotage traffic between two points in a country when the carrier originates in a foreign country and cabotage between two domestic points by a foreign carrier, respectively) allows international carriers to operate between domestic locations, stiffening domestic competition. Further OSAs and cabotage rights would bring about similar benefits in the form of lower prices and better service, as they have in other countries.

Differential treatment of foreign suppliers is apparent in government procurement, where the PMR value is high (Figure 18). Procurement contracts are reserved to domestically registered firms and no matter whether it is delivering goods or services or undertaking public works, suppliers must at least partially use domestic content. As the 2019 OECD Economic Survey pointed out, in local jurisdictions this goes a step further: firms are required to locally register to be able to bid for local procurement contracts. Excluding foreign or non-local domestic providers from the public procurement process foregoes the opportunity of efficiency gains through enhanced competition and may lead to the waste of public funds. Joining the WTO's Government Procurement Agreement and following OECD best practices in the field would help enhancing efficiency in the public procurement market and reduce costs.

Figure 18. Government procurement is subject to stringent regulations, 2018



Note: Data for the United States refer to January 2021, for China and Indonesia to 2020 and for Costa Rica and Estonia to 2019. Values of the indicator vary between 0 and 6 with a higher value indicating greater restriction.
Source: OECD Product Market Regulation database.

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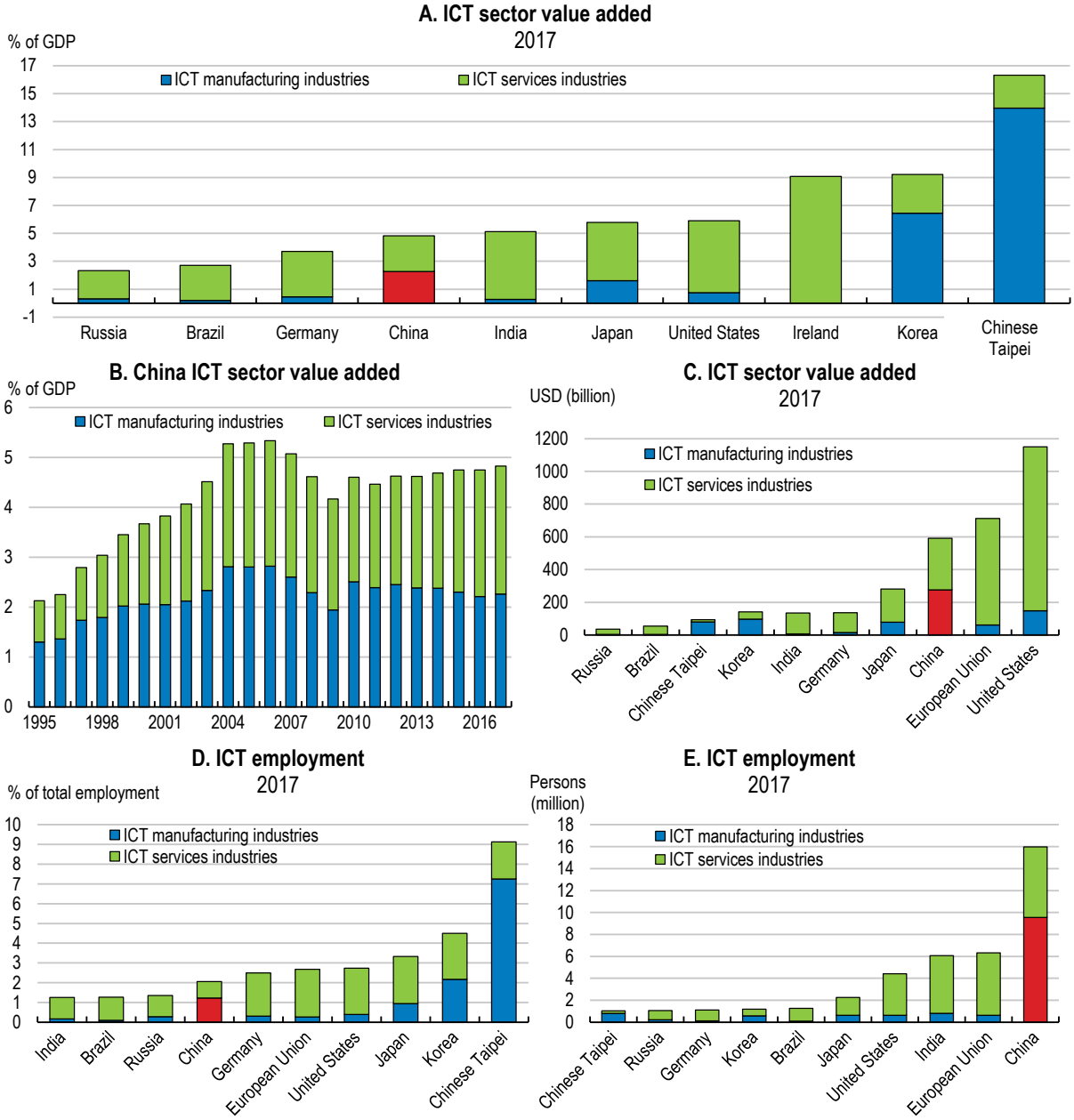
Foreign professional staff is subject to restrictions in practicing their activity, either as employees or independent service providers. Foreigners cannot fill key positions in nearly all industries, including in manufacturing, while in OECD countries, in manufacturing there are no restrictions at all. Limitations on foreign staff in transport services, in particular maritime transport, are more stringent than in other sectors (Transport Ministry Order No. 2018/28). Real estate is the most liberalised broader industry category, where no regulations govern the filling of key positions by foreign staff, as in OECD countries. Restrictions on the hiring of foreign staff for key positions reduce the opportunities to introduce new knowhow, in particular in management practices, and hence forego the chances to boost efficiency.

Innovation and digitalisation for a sustainable recovery

Digitalisation is a promising candidate to lift China's long-term growth potential. Digital technologies are shown to boost productivity (Gal et al., 2019[28]), which is the key to sustainable growth. At the current juncture, introducing digital technologies can help also jumpstarting the economy as it creates new jobs and meets new demand (OECD, 2018[29]). Indeed, in the first half of 2020, it was the IT and software sector growing at nearly 10% (in the first quarter over 13%) and the financial sector at over 9% (in the first quarter 6%, partly thanks to surging online payments), that held up services growth.

Figure 19. There is room for catching up with the ICT frontrunners



Note: The definition of the ICT sector used here takes into account the standard distinction between manufacturing and services, but does not include manufacture of magnetic and optical media and ICT trade industries. ICT services industries are grouped in two sub-sectors: telecommunications and computer and related activities.
Source: European Commission PREDICT 2020 database.

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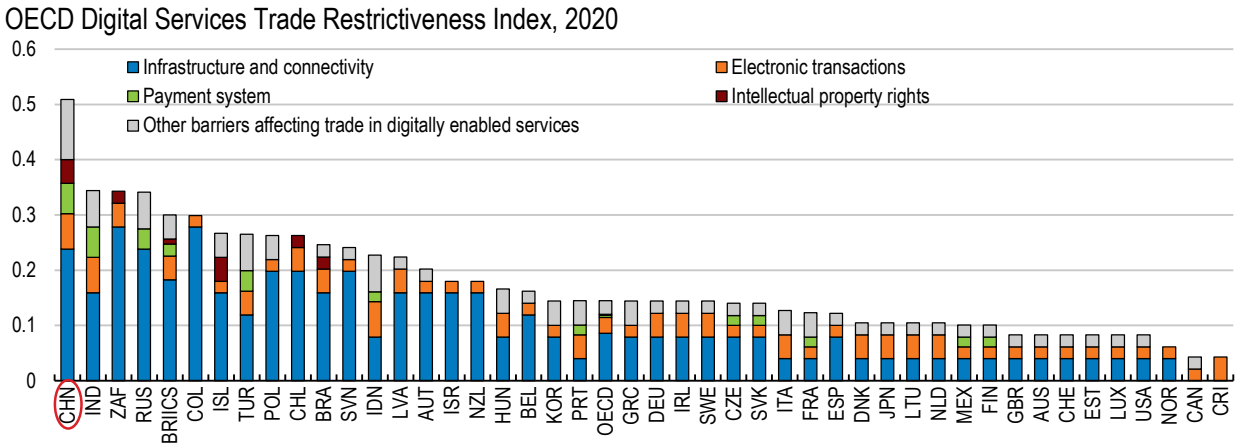
To capture the pace of digitalisation, an imperfect indicator, the size of the ICT sector is commonly used. China's ICT sector is only somewhat smaller in absolute size than that of the European Union, and relative to GDP is even greater, but still lags behind digital frontrunner economies such as the United States, Japan, Korea, Chinese Taipei or India (Figure 19, above). In terms of employment, it has the largest workforce engaged in digital industries and services, though they make up a small share of the total.

Barriers to digital trade

To fully reap the digital potential, in addition to channelling funds for transitioning to digital processes, also the framework conditions need to be established. Competition, in particular competitive pressure from foreign counterparts when there are few domestic players is an important source of efficiency gains. Restrictions on trade in digital services, which - measured by the OECD Digital Services Trade Restrictiveness Index (Digital STRI) (Ferencz, 2019[25]) - are higher than in OECD and G20 countries (Figure 20), act in the opposite direction. Digitalisation itself could boost trade as it enables formally non-tradeable services to be traded and by reducing entry costs, it also facilitates trade by small-scale producers, but to fully reap the benefits, no barriers should be erected.

Figure 20. Infrastructure, connectivity and other barriers restrict digital trade



Note: STRI indices take the value from 0 to 1. Complete openness to trade and investment gives a score of zero, while being completely closed to foreign services providers yields a score of one.
Source: OECD Digital Services Trade Restrictiveness Index database.

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The details of the Digital STRI reveal that regulations limiting digital infrastructure and connectivity are more stringent in China than in OECD countries, with the exception of Colombia and about the same as in Indonesia, Russia or South Africa. Non-discriminatory internet traffic management is not mandated, while it is in 32 out of the 37 OECD countries and half of the BRIICS countries (Brazil, Indonesia and Russia). Cross-border personal data transfers are subject to cumbersome requirements, including case-by-case approvals for certain types of data such as personal information or important data. Moreover, other types of data, such as financial data, must be stored and processed locally. Cross-border transfers of data elsewhere are subjected to lighter conditions, such as pre-approval of transfers to countries that have an adequate data protection or authorising transfers subject to the implementation of private sector safeguards such as standard contractual clauses or binding corporate rules. The stringency of controls on data transfers in China are of a similar degree as those in Indonesia and Russia. The possibility to transfer digital information across borders is needed to fully reap the benefits of digitalisation that is evolving globally (OECD, 2019[30]). However, policy makers across the globe face the challenge of striking a balance between ensuring seamless cross-border data flows and pursuing other important policy objectives such as preserving privacy and protecting individual and public safety. Computable general equilibrium model

estimates show that in the medium-to-long term the restrictions on data flows China imposes cost it 0.55% of GDP (Bauer, Ferracane and Van Der Marel, 2016[31]). As the Chinese economy is becoming more data-intensive, the losses grow.

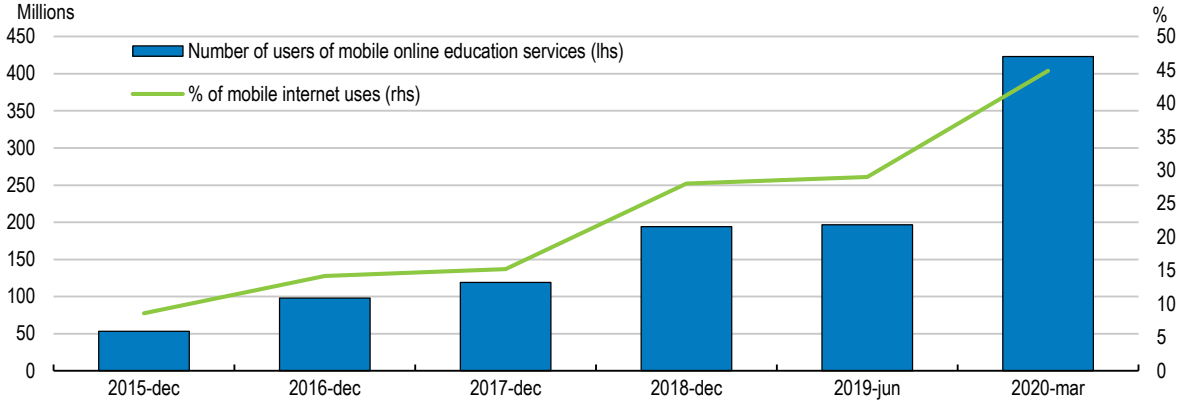
Electronic transactions are also more regulated than in any OECD country, and to the same extent as in Brazil, India or Indonesia. An additional license, on the top of a business license, is required to engage in e-commerce, which is not necessary in other countries, with the exception of Italy, India and Indonesia. Moreover, an Internet Content Provider (ICP) license is required for anyone wishing to set up a website located on a Chinese server and for commercial activities, it needs to be a Commercial Internet Content Provider license. This latter type can be obtained by joint ventures only, with non-majority foreign participation and a Chinese CEO. A fully foreign-owned firm could obtain such a license if it is registered in a free-trade zone, from where it can serve the whole country. The payment system is also most restricted among G20 countries alongside India's. In particular, third party payment providers must hold a payment services operator (PSO) license issued by the People's Bank of China. So far, only one foreign entity, a US firm, has obtained such a license for online payment purposes. The intellectual property right component of the Digital STRI indicator is not specific to digital transactions, it refers to the 'first-to-file' system, i.e. the first person filing for a trademark will be the one protected. In addition to the 2016 online publishing regulations, foreign firms cannot publish online content, including text, pictures, maps, games, animations, audios and videos, with the exception of cooperative projects on a case-by-case basis and subject to the initial approval of the State Administration of Press, Publication, Radio, Film and Television (SARFT).

Business sector in the leader seat of digitalisation

The outbreak gave a new impetus to digitalisation as there emerged insatiable demand for contactless solutions to reduce the risk of infection. The government called for the use of mobile payments to avoid spreading the disease through cash circulation as the virus was identified on banknotes and coins. To avoid the spread of virus through banknotes and coins, all those received by hospitals were not put back in circulation and the rest underwent thorough disinfection before returning to circulation. Mobile payment had been common even before, but the outbreak pushed up its growth into double digits. In addition, a large number of new apps has been launched to meet new demand. The number of mini-programs (which are embedded in mega platforms such as WeChat and AliPay), a useful yardstick to gauge the emergence of new apps, jumped by 700 000, while the number of daily average users rose by 120 million, over a third, in a matter of two months. The content of the programs was affected by COVID-19, those related to education and health increased significantly (Figure 21).

Figure 21. Online education has soared

Number of online education users and their share in mobile subscribers



Source: China Academy of Information and Telecommunications.

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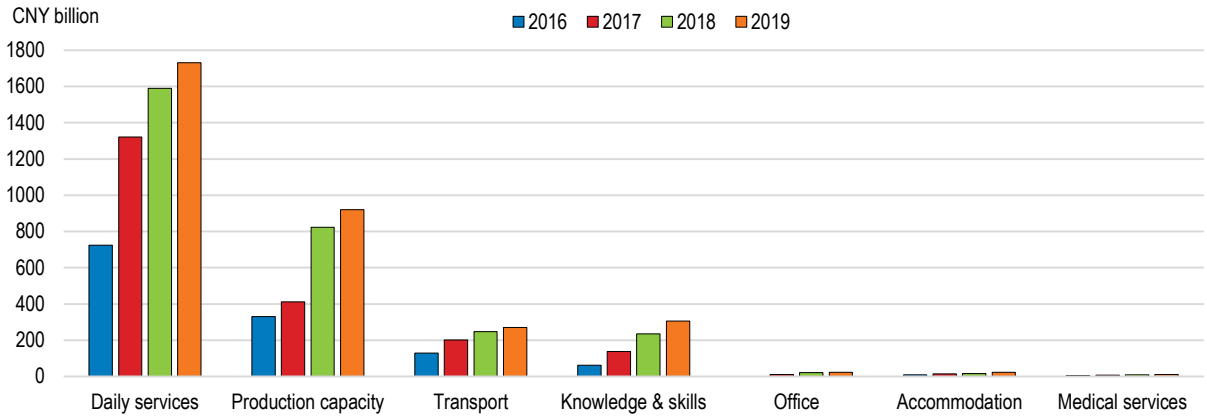
A main feature of this innovation boom is that it meets demand for solutions, therefore it will likely have a marked impact on productivity. This is different from the past when the high number of innovation outputs was not matched by productivity increases. The quality and relevance of innovation outputs was a major factor behind the limited link between innovation output and productivity growth (Molnar and Xu, 2019[32]). As the 2015 and the 2017 OECD Economic Surveys highlighted, commercialisation of innovation outputs is particularly low for universities and research institutions, where the major motivation may be promotion, tenure or other performance evaluation-related objectives. COVID-19 triggered a new wave of innovation throughout the economy, medicine is a focal area where the government pledged to invest more in R&D, but this time innovation is more inclusive as it meets demand by hundreds of millions. E-commerce is already more developed in China than elsewhere, but the fear of contact with other people further increased its share. E-commerce further thrived, as even deliveries became contactless thanks to delivering and picking up at unmanned neighbourhood collection points.

Not all digital-based services benefit from the COVID-19 outbreak. Parts of the sharing economy, which made up 3.2% of GDP in 2019 (State Information Centre, 2020[33]) and has been dynamic in recent years (Figure 22), will likely shrink due to increased wariness of physically sharing housing, cars, household machines and other objects.

Figure 22. The sharing economy has been growing at high rates

Sales by selected services



Note: Daily services include catering, housekeeping, cosmetics services, delivery and the automotive aftermarket.
Source: State Information Centre Sharing Economy Research Centre (2018, 2019 and 2020), Gongxiang Jingji Fazhan Niandu Baogao, in Chinese, Annual Report on the Development of the Sharing Economy.

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E-government to jumpstart

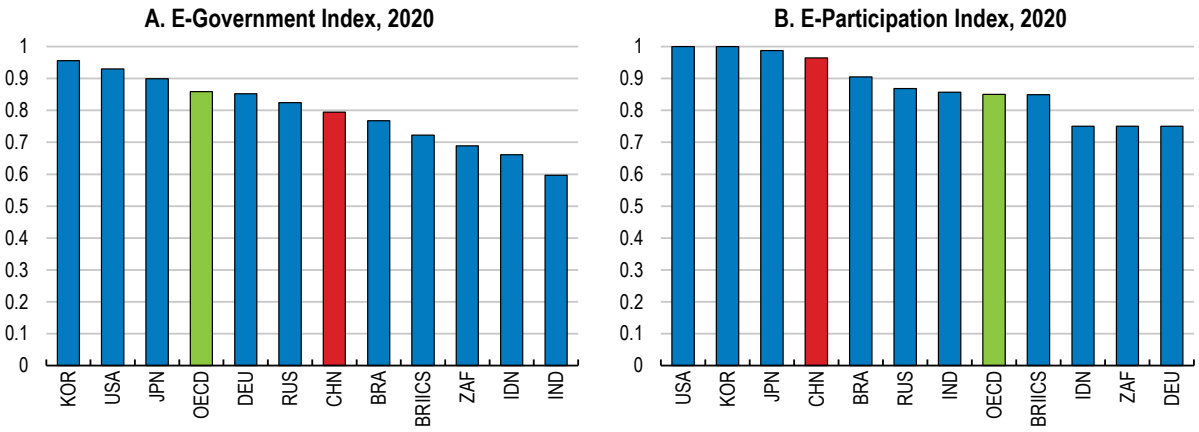
China has been a frontrunner in business digitalisation for a while already, but the outbreak accelerated also the provision of e-government services. Indeed, the health QR code (assessing one's degree of potential contagiousness) is instrumental in tracking the health status of individuals and determining their permitted scope of activities, for instance to use public transport, purchase a rail ticket, one needs a green code. However, as such codes are issued by provincial and municipal governments, for frequent travellers it is an extra burden to download the app in each place they go. Health QR codes should be mutually recognised all over the country, as is the case in the Yangtze River Delta region.

A major breakthrough in tax administration is the online payment of taxes in an effort to contain the spread of the virus. Pilot projects for e-taxation were introduced in four provinces and Qingdao city starting from the beginning of last year. In the very near future, it will be available in the whole country. The State

Administration of Taxation has called for reducing person-to-person contact in tax administration to the minimum level. As of end-August 2020, corporate taxpayers can handle more than 90% of tax-related businesses online. Furthermore, from 11 September 2020, customs inspection and quarantine declaration has gone online, it is now being done through the one-stop-shop platform. Tendering procedures in construction will also increasingly go online and so will healthcare services. Furthermore, in some hospitals in Wuhan, the epicentre of the COVID-19 outbreak, robots were not only delivering medical supplies, but also helped tracking patients' critical readings while avoiding physical contact (Lim, 2020). Shanghai and Wuhan introduced online medical counselling and follow up services online for insured patients with common and chronic illnesses.

China is a frontrunner in e-participation, only behind the United States, Korea and Japan among OECD and BRIICS countries according to the UN E-Government Knowledgebase (Figure 23), meaning that citizens are highly engaged in decision making and public services. According to the e-government index, of which e-participation is a subset, many more OECD countries as well as Russia are ahead of China. This composite index also includes transparency and inclusion, where China fares less favourably. Computer skills need to be upgraded and provided to a wider population to narrow the digital divide as computer skills is the area where the skill deficit is the greatest (Molnar, Wang and Gao, 2015[34]).

Figure 23. China lags somewhat in e-government but is ahead in e-participation



Note: The E-Participation Index is a subset of the E-Government index.
Source: UN E-Government Knowledgebase 2020.

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There is considerable variation across provinces in terms of the adoption of e-government services, with larger provinces and municipalities being the frontrunners. There are exceptions, however, Guizhou and Fujian perform better and Hubei and Hunan worse than what their ranking in GDP would suggest. In Beijing, for instance, residents can apply online for 90% of e-government services and 895 municipality-level processes can fully be completed online. Greater access to government services online would further enhance efficiency and reduce costs.

Industry support not just for survival but upgrading

Industry support was stepped up following the COVID-19 outbreak, not only to provide a lifeline to struggling firms, but also to upgrade key strategic industries, including semiconductors. The global semiconductor value chain is unbalanced across regions with a few developed economies such as the United States, Korea and Chinese Taipei controlling most of the intellectual property and higher value added functions, and China accommodating lower value-added functions such as assembly and testing (Box 3). Due to the specificities of the industry such as a high degree of specialisation by segment, oligopolistic markets, a highly cumulative nature of technological and organisational knowledge and very high capital investment requirements, latecomers find it hard to catch up (Grimes and Du, 2020[35]). Attempting to narrow the gap, the Chinese government issued a series of policies and set up funds to support the industry over the past two decades. As a result of the semiconductor industrial policy drive, including the adoption of the National Semiconductor Industry Guidelines in June 2014 and with the industry also featuring in Made in China 2025 published in May 2015, Chinese companies have gained a strong foothold in back-end manufacturing and assembly and testing (Ernst, 2016[36]). The United States and China represent a symbiotic relationship in the global market, with the former being the biggest supplier and the latter the largest market for semiconductors. Moreover, semiconductors are the fifth most important export product for the United States (behind only airplanes, refined oil, crude oil, and cars) and the single most important import item for China is integrated circuits.

Box 3. Market structure of the semiconductor industry

The production of semiconductors involves four main stages: design, manufacturing, assembly, and testing and packaging. Depending on whether a maker integrates all those four processes or all processes but manufacturing, they are integrated device manufacturers (IDM) or fabless-foundry companies. Globally the two largest IDM are Intel and Samsung Electronics. Top designers - that contract out the fabrication part - include Broadcom, Qualcomm, Nvidia and MediaTek. Design companies (which include both IDMs and fabless) command a three-quarter share of revenues of the whole industry, followed by foundries (in charge of manufacturing) at 11% (Grimes and Du, 2020[35]). Assembly and testing's share is just 6%.

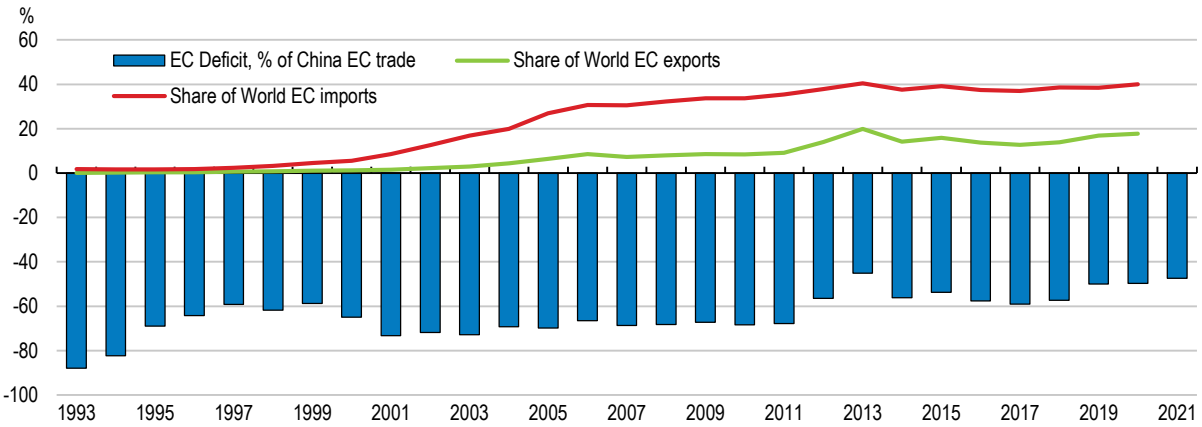
US companies dominate the design segment, while Korean ones the memory chip production. Taiwan Semiconductor Manufacturing Corporation (TSMC) from Chinese Taipei is the world's largest foundry with over a half of global market share. Chinese Taipei also commands over half of global assembly and testing market, followed by the United States, China and Singapore.

The market is characterised by oligopolistic competition in most segments, though in some product segments there is sometime a single dominant firm. For instance, Intel is the dominant chip producer for PCs and servers, Qualcomm for Wi-Fi chips and Broadcom for Ethernet switch chips for smartphones. In the NAND (flash memory) segment, competition between Samsung, Toshiba, Micron, WDC and SK Hynix is stiff with each commanding over 10% of the market (Grimes and Du, 2020[35]).

Source: Grimes and Du (2020) and industry reports.

China's is the world's largest market for integrated circuits, accounting for over 58% of global consumption, 40% of imports and 18-20% of exports (Figure 24). Imports are about three times of domestic production (as of the second quarter of 2020), indicating limited domestic production capacity. Moreover, foreign-invested companies deliver most of its domestic production. China spends roughly the same on R&D relative to sales as Korea, but only slightly more than half of what the United States spends (Semiconductor Industry Association, 2020[37]).

Figure 24. Electronic integrated circuits are intensely traded



Note: Electronic integrated circuits include processors, controllers, and amplifiers under category code 8542 in the HS2017 classification. The deficit is the difference between exports and imports and is expressed as the percentage of electronic integrated circuit trade.
Source: OECD calculations based on the UN Comtrade and CEIC databases.

StatLink https://stat.link/a74xir

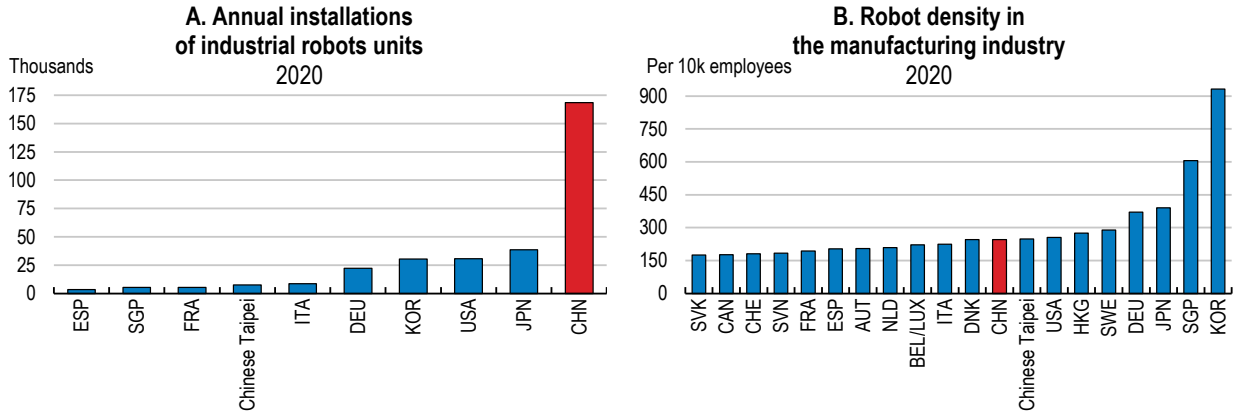
The recently issued Notice on policies to support the high-quality development of the integrated circuit and software industries by the State Council (Guofa 2020/8) puts forward policies in eight areas on an equal footing regardless of firm ownership. It specifies measures in the areas of tax, financing, R&D, trade, staffing, intellectual property (IP), market use and international cooperation. Potential beneficiaries of full corporate income tax exemption must be producing integrated circuits of the size of at most 28 nm and the firm or the project must be operating for at least 15 years, reflecting that experience matters more in the semiconductors industry than in most others. Somewhat less generous income tax exemption policies apply for producers of larger integrated circuits up to 130 nm and all those can also benefit from carryover of loss for 10 years. Key integrated circuit designers and software companies pay corporate taxes at a 10% rate once the ten-year exemption is over. VAT reductions also apply and equipment and inputs are exempt from import duties. To alleviate funding difficulties, the Notice stresses the use of government funds, encourages local governments to establish a lending risk compensation mechanism and collateralising of intellectual property rights (IPRs), shares and receivables to obtain loans from commercial banks. The Notice also calls for establishing a major at the tertiary education level for integrated circuits and software and creating model microelectronics institutes. Pilot enterprises that invest in specialised education in the field can benefit from reduced education and local education surcharges. An important measure foreshadowed by the Notice is the strengthening of IPR protection and more deterring fines for violation. Pre-installed software in all computers in the Chinese market must be legal copies and so must be software installed on government computers countrywide.

While strengthening of IPR protection and promoting innovative ways of financing are welcome steps, generous tax exemptions – which by OECD standards do not constitute good tax policy - reduce the availability of public funds for other priority areas such as education, health and social security. Moreover, open-ended tax holidays for circuit makers of the size of 28 nm or below will result in large foregone tax revenues as the industry trend is to produce smaller and smaller circuits. Cost-based instead of profit-based tax incentives would be a more efficient way of subsidising investment as cost-based incentives are less biased toward firms that are already profitable compared to profit-based incentives. Furthermore, cost-based are linked to the size of the investment or its use toward certain activities, therefore are more likely to encourage new business and specific policy objectives. The use of public funds for either tax expenditure or investing in firms should be subject to the Fair Competition Review Mechanism as well as rigorous cost-benefit analysis and third-party evaluation. Subsidies should be more transparent and related data published. The Notice clearly states that low-level and repetitive investment should be avoided, but recent

project failures in the industry call for caution when using government funds. Indeed, as the previous couple of Economic Surveys discussed through the example of renewable energy projects, when localities across the country are vying with each other to undertake projects in designated priority areas, they outcome can often be indeed repetitious low-level investment wasting public funds. Recent regulations to improve budgetary transparency require industrial parks to embed their budgets in the corresponding government level's budget, instead of compiling a separate budget, which will help gauging the costs of government investment projects and the risk they represent to the budget.

In contrast to semiconductors, another beneficiary of generous industrial policies, the robotics industry has been hard hit by COVID-19. In fact, the slowing of installations already started before, owing mainly to weaknesses in major user industries. As 30% of robots manufacture automobiles and another 25% electrical machinery and electronics, demand is likely to remain weak in the short term. China accounted for 72.3% of worldwide installations in 2020 (International Federation of Robotics). Domestically-made devices made up 10% of worldwide and 27% of domestic installations, implying heavy reliance on imports. China also exports robots and in the lower categories, where there appears to be overcapacity (the Ministry of Industry and Information Technology issued warnings of the risk of overproduction of low-quality robots and substitution of high-quality ones with them as early as in 2017), created by policies, including generous subsidies, to develop the industry. The Robotics Industry Development Plan 2016-20 charted the directions and several related regulations were adopted thereafter, both at the national and local levels. Even though China has been the largest market for industrial robots, there is still room for robot use intensity to catch up with the frontrunners (Figure 25). As in the case of semiconductors, a better screening of subsidies would use public funds more efficiently and would help avoiding overcapacity. In addition, the allocation of subsidies across industries should be more even to reward genuine inventions and avoid wasting funds for repetitive low quality projects.

Figure 25. China is the largest market for robots and density is still low



Source: International Robotics Federation.

StatLink https://stat.link/wdh3so

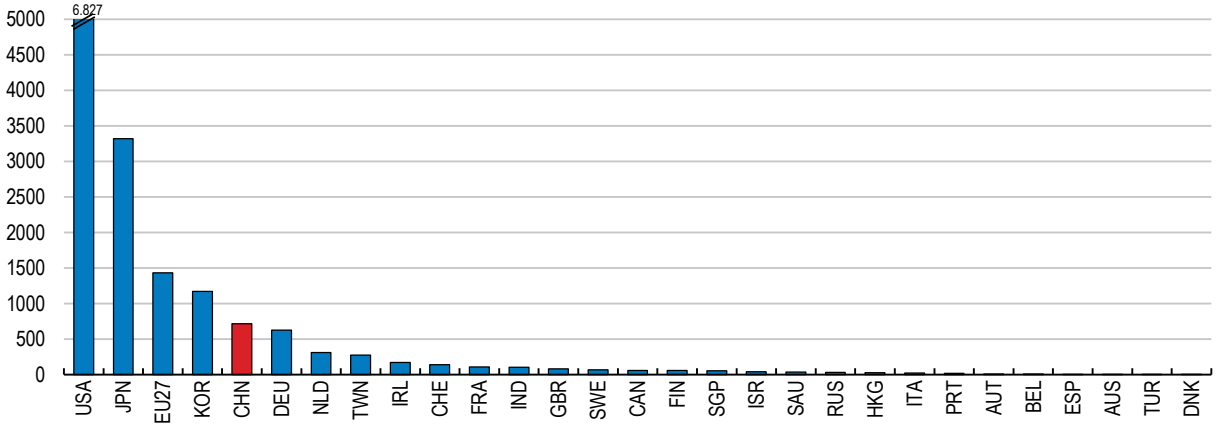
Due its large-scale industry support and its large size, China is among the countries, whose support of firms, in particular of SOEs, is considered to be market distorting by competitors in global markets. Global players in steel, aluminium, shipbuilding and more recently also in semiconductor markets have reported market-distorting subsidies ((OECD, 2021[38])). The 21 largest semiconductor firms are reported to have received government support exceeding USD 50 billion over 2014-28 (OECD, 2021[38]).

Leapfrogging in emerging fields

China has successfully leapfrogged in newly emerging fields where newcomers are not disadvantaged by not having decades of accumulated experience. It has excelled in digitalisation and shared services (both discussed above), as well as AI and is rapidly adopting blockchain technologies. Massive investment in R&D is manifest in leading places among patenters in both AI and blockchain. China is the fifth largest economic entity after only the United States, Japan, the European Union and Korea in terms of the number of AI-related patents (Figure 26). China is the largest producer of AI-related scientific publications (OECD, 2020) exploiting the abundant data available, which put Chinese developers in an advantageous position when training AI algorithms.

Figure 26. China is a frontrunner in AI-related patents

Number of AI-related patents, 2019



Note: Patents resulting from international collaboration are accounted for in all participating countries as a fraction, evenly split across them, that is how the patent counts are not integers.
Source: OECD.AI (2020), visualisations powered by JSI using data from MAG, version of 29/05/2020, accessed on 31/8/2020, www.oecd.ai.

StatLink https://stat.link/ton9z7

Blockchain technologies have a great potential to enhance efficiency. The first blockchain-based letter of credit transaction using CNY in September 2019 showed that the exchange of documents can be reduced from the usual 5-10 days to a single day. The first central government agency to establish a block-chain based platform was the State Administration of Foreign Exchange in March 2019 to help SMEs to collateralise overseas receivables. The Smart City Development Research Centre under the State Information Centre is working with China Mobile and China UnionPay to launch a reliable and controllable blockchain-based network. China ranks second in the world in blockchain-related patents, behind only the United States. Regulations are also catching up. In July 2020, the People's Bank of China issued the Notice on financial industry standards to promote the application of blockchain technology specifications requiring financial institutions that use blockchain technologies to systematically apply an evaluation ruleset (the Rules on evaluation of using blockchain technologies in finance). In the same month, the Beijing Certificate Authority, the only one so far to work in the financial sector, launched a blockchain security assessment service, auditing the nodes, ledgers and encryption mechanisms used. Encryption technologies must be domestically developed and registered, which slows the application of foreign technologies and thus limits efficiency gains.

China has also become a frontrunner in some emerging manufacturing industries such as commercial drone manufacturing. A Chinese firm currently commands 70% of the global drone market, which is forecasted to grow 30-fold by 2023 vs. 2018 (Frost & Sullivan). The summer locust invasion in Southern China in 2020 provided a boost to the spread of the use of drones in controlling pests. Drones can cover

50-60 times more ground than humans can in a given time. However, a common point of the drone, industrial robot and semiconductor industries is that they rely on imported components, partly from the United States. Thus, a swift resolution of trade disputes is a precondition to fostering industries in those sectors. Moreover, economic sanctions may well have the impact of accelerated development of indigenous industries as well as the undesired decoupling in multiple areas, which may be hard to reverse.

Policy recommendations

MAIN FINDINGS	RECOMMENDATIONS (key recommendations are bolded)
Cutting red tape	
The administrative burden on start-ups have fallen significantly in the past decade, but still only part of the procedures can be done online.	Reduce further the administrative burden on start-ups and **implement a one-stop shop all over the country. Move more procedures online.**
Administrative simplification is ongoing but there is still no one-stop shop everywhere, moreover, requirements vary across the country.	**Unify market regulations across the country to create a single market.**
There are still some irrelevant licensing requirements and there is no database of the entire list of licenses and permits.	Further reduce licensing requirements and publish the list of all licenses and permits.
SOE reforms	
Natural disasters and emergency situations oblige SOEs to provide support without adequate remuneration.	**Implement accounting separation and pay fair compensation for SOEs for their services in emergency situations and make them face a level playing field. Adopt the OECD guidelines on SOE governance.**
It is unknown how large burden emergency calls impose and in general disclosure of SOE-related data is more limited than in the case of listed firms.	Fund the costs related to public policy objectives from the government budget and disclose such costs.
Many SOEs provide public services and goods and services in competitive markets, but those two types of services are not in separate accounts.	Accounting separation should be implemented whenever SOEs provide both public services and other services/ goods in competition with other firms.
State ownership is significant even in commercially-oriented industries.	Reduce state ownership in commercially-oriented industries such as accommodation, catering, wholesale and retail.
State-owned enterprises and other public entities enjoy implicit guarantees and other preferential treatment. They accumulated large amounts of debt.	**Gradually phase out implicit guarantees to SOEs and other public entities by not bailing them out upon their default.**
Limited SOE-related data are disclosed for non-listed firms, in particular for firms belonging to government agencies.	Enhance disclosure and transparency of SOE data regardless of the government agency that controls them. SOEs' overseas activities should be disclosed and audited to prevent loss of state assets.
Network industries	
Potentially competitive segments of the electricity market are being liberalised, but incumbents still dominate. Renewables producers have no guarantee that they can sell their surplus electricity.	Ensure fair competition in all segments of the electricity market and allow renewables producers to sell the electricity they produce through the grid.
Demand response has been introduced a while ago as a pilot programme, but it is unclear which pilot scheme is the most efficient.	Establish a mechanism for the operation of demand response, including for its funding and pricing, to reduce peak load demand and enhance network security.
Oil and gas exploration is no longer subject to joint venture requirements, but potential foreign entrants have no sufficient access to data needed for feasibility studies.	Implement open tenders for oil and gas blocks and disclose sufficient data for feasibility studies by prospective entrants.
Prices and user charges in most segments of the natural gas sector are regulated.	Gradually allow the user charges for liquefied natural gas terminal and gasification facilities to be set by the market.
Single domestic market	
Administrative monopolies inhibit fair competition across sectors and across regions protecting local incumbents.	**Strengthen the rule of law and restrict the power of administrative departments to prevent the creation of administrative monopolies.**
Laws and regulations are often vague, allowing for discretion in interpretation.	Provide clear and detailed implementation rules to limit the discretionary power of administrative departments.
The Fair Competition Review Mechanism was introduced in 2016, but its implementation varies across the country. Moreover, there is no mechanism for the dismantling of administrative monopolies.	**Dismantle existing administrative monopolies and apply the Fair Competition Review Mechanism rigorously**. Establish a mechanism for dismantling administrative monopolies.
Local governments often require firms to register in their locality to be able to participate in local tenders.	Enforce the prohibition of the requirement to establish a local subsidiary to be able to participate in local public tenders.

Tender documents are often written in a way so that only the favoured firm meets the requirements.	Subject tender documents to the review of competition authorities to avoid any potential competition-hindering clause.
Private sector	
New regulations intend to protect private suppliers by imposing fines for non-payment. This could turn away potential buyers of private sector goods and services.	Guarantees of payment and fines for non-payment should protect all creditors, regardless of the size of the firm.
Retail stores have a practice of requiring producers to place their goods on commission.	The practice of requiring suppliers to place goods on commission in retail stores should be abolished.
Recent regulations require exploring ways of splitting infrastructure contracts so that smaller bidders can participate.	Extend the practice of splitting up project contracts into lots so that smaller-scale private firms can also participate in the bid.
Foreign firms	
Market access for foreign companies improved, though joint-venture requirements still exist in some sectors and intellectual property rights are not well protected.	**Open up further sectors to foreign investment and abolish the requirement for joint ventures.**
Many firms do nothing when their intellectual property rights are violated as the costs of going to court are high and the procedure is long.	**Strengthen further intellectual property right protection** to attract more foreign investors with advanced technologies.
Only firms registered in China can participate in public procurement tenders.	Accelerate the process of joining the WTO's Government Procurement Agreement and allow foreign firms access to the domestic procurement market for goods and services.
Paving the path for long-term growth by innovating and digitalising	
Local governments blindly compete in directing public funds to favoured industries by taking advantage of industrial policy priorities, often leading to low-quality, repetitious investment, overcapacity or project failure.	**Apply the competitive neutrality principle in the allocation of subsidies and subject the use of public funds to rigorous cost-benefit analysis and third-party evaluation**.
Profit-based incentives such as tax exemptions and reductions are biased towards firms that are already profitable and are not linked to the size of the investment.	Instead of profit-based, use cost-based tax incentives to subsidise investment.
Large amounts of public money, especially at the local level, are spent on priority projects, which led to excess capacity and waste of public money.	Avoid low-quality, repetitive investment by greater transparency of public spending, including at the project and the local level.
Competitors are often not aware of subsidies benefitting some firms and such information is hard to come by.	Make subsidies more transparent and publish related data.
Firms belonging to priority sectors can easily get subsidies than others.	Spread innovation-related subsidies across industries more evenly so that they reward innovation outputs for their quality and not by the priority of the sector.

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