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CONTENTS

ADEQUATE SOCIAL PROTECTION FOR ALL[1]

China's economy is evolving and its population aging. Its social protection system needs to keep up. A reformed system would contribute to economic equality, dynamism, and rebalancing. Steps should be taken to expand social assistance and increase resident pension, medical, and unemployment insurance benefits along with the share of the population covered. Faster implementation of reforms to unify the system would support these objectives and help address financial stability concerns. A Third Pension Pillar would provide an avenue for "gig" workers to save for retirement.

A. Introduction

1. China has experienced remarkable economic growth. Rapid economic growth has lifted hundreds of millions out of poverty. Economic well-being and medical advances have translated into longer lives. The authorities aim of reaching high income status in the next decade appears to be within reach. A financially and socially sustainable social protection system that reduces economic uncertainty for workers and households and provides diversified savings opportunities can play an important role in achieving this goal, while protecting the vulnerable.

2. Growth has brought challenges. While worker and regional incomes have risen on average, some workers and provinces have prospered more than others. Also, the multigeneration family support system has shrunk with rapid urbanization and below replacement level birth rates. The latter is a major factor behind the current and projected rapid aging of the population.

3. The social protection system has scrambled to keep up. Social protection spending has doubled during the 2010s to 8 percent of GDP. In the last decade, rural and non-salaried residents have gained access to pension and medical insurance. China's public pension insurance program is now the biggest in the world (Yang 2021). Despite this rapid evolution, the social protection system remains incomplete. To compensate, households save massively for "rainy days" and retirement, generating one of the highest household savings rates in the world (Zhang and others 2018).

4. Fragmentation undermines social protection coverage, adequacy, and service delivery. Local governments have primary responsibility for setting contribution and benefit amounts and the administration and provision of social protection benefits. Risk pooling is very limited. A mismatch between national policy objectives and local capacities and incentives hamper efforts to secure the adequate protection of workers (ILO November 2020). Moreover, slow implementation of the Social Insurance (Security) Law has contributed to underpayment of contributions and workers being denied social benefits (Wong and Yuan 2020: China Labour Bulletin 2019).

5. A more unified social protection system with broader coverage and greater benefit adequacy would provide households more economic security. Greater centralization would improve risk pooling and access to benefits. At the same time, the coverage of unemployment

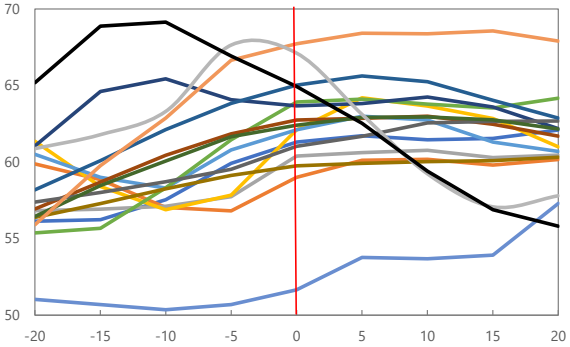
[1] Prepared by John Ralyea (FAD)

insurance and the adequacy of resident pension, medical, and unemployment insurance should be enhanced. A voluntary personal retirement account (Third Pillar) could relieve spending pressure on urban employee pension plan, provide a pension savings opportunity for non-traditional employees ('gig" economy workers) and allow individuals to diversify their retirement savings. Loosening household registration requirements further would allow greater access to and portability of social protection benefits, particularly for migrant workers. With more adequate and equitable social benefits, individuals and households may reduce precautionary savings, spurring economic activity.

B. Demographic Trends

6. China's population has urbanized and aged considerably over the last 30 years. In 1990, the rural share of the population was greater than 70 percent. Today, the urban population has grown to about 63 percent of the population. China's population is also aging at an earlier stage in its development relative to other G20 countries (Figure). Falling birth rates and rising life expectancy drive the trend. Also, traditional multigenerational family support systems have been weakened. The average size of households has a third fewer people than in 1990.

China Is Aging Faster Than G-20 Peers
(Working age population as a percent of total population)

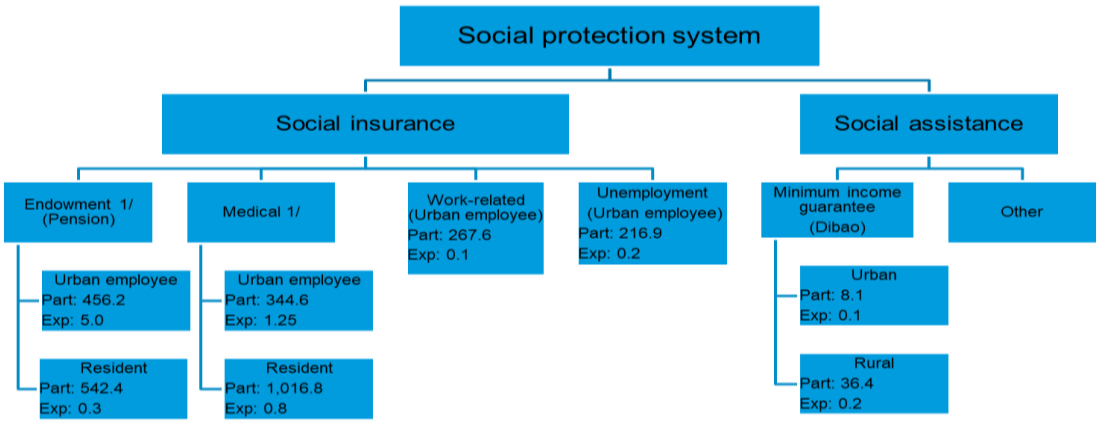


Sources: UN Population Revisions 2019; IMF WEO; and IMF staff calculations.
Notes: Black line represents China's actual and projected working age population relative to total population. The other lines repesent the other G20 members. Year 0 is defined as the year when the per capita gross national income of China's G20 peers is equivalent to China's in 2019. Working age population for all countries defined as those individuals between 15-59 year of age.

C. Social Protection System: Structure, Developments, and Challenges

7. Social protection encompasses the public social security (insurance) system and social assistance (Figure)**.** Social insurance protects workers and residents from income (economic) insecurity caused by old-age, sickness, maternity, employment injury, unemployment, and other social risks (e.g., disability and survivorship). China's social insurance system consists of four funds:

Text Figure. Social Protection System, December 2020

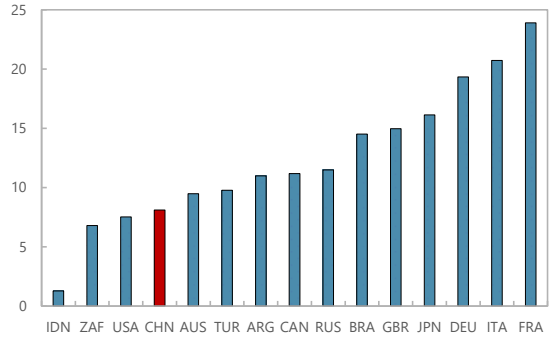


Sources: Authorities; IMF staff. Note: Part. = participants (millions); Exp. = Expenditure (Percent of GDP)
1/ Expenditures includes expenses for maternity benefits.

Endowment (Pension) Insurance, Medical Insurance, Unemployment Insurance, and Worker Injury Insurance.[2] The pension and medical insurance fund each have separate plans for urban employees and rural and non-salaried urban residents. The Social Insurance Law (2011) provides the legal framework for the social insurance system. Social assistance consists primarily of a minimum income guarantee program (*dibao*), which also has separate urban and rural resident components.

8. Social protection coverage expanded rapidly over the last two decades. Prior to 2009, most people living in rural areas, those in urban areas working in the informal sector, and many rural migrant workers remained outside the social protection mechanisms (Shen and others 2020). Since then, the authorities have aggressively extended coverage of basic pension and medical insurance rural and non-salaried urban residents. The number of participants in the urban employee pension program more than tripled over the last two decades. Coverage of basic medical insurance expanded from less than 3 percent of the population in 2000 to more than 96 percent in 2020. This growth far outweighs a decline in participants in social assistance programs over the same period. However, despite a doubling of expenditures, China's social protection spending is low relative to G20 peers**.** In 2018, most other large emerging market economies (Brazil, Russia, Argentina, Turkey) spent more to protect their workers and most vulnerable citizens. (Figure).

G20 Social Protection Expense, 2018
(In percent of GDP)



Sources: Government Financial Statistics (GFS); and IMF staff calculations.
Notes: General Government, except Argentina and Brazil, which are central government including social security funds. 2. Health spending is excluded. 3. Data not available in GFS for India, Korea, Mexico, and Saudi Arabia.

9. A defining feature of China's social protection system is its operational decentralization. The central government establishes nationwide policies and regulations and provides guidelines and opinions on their implementation. Municipalities or counties are largely responsible for public service delivery and managing social security finances. They also set contribution rates and benefits based on local conditions. The fiscal condition of local governments is also crucial for handling caseloads and enforcing social insurance regulation (Qian 2017). No fiscal transfers from the central to local governments are earmarked social security administration costs, which local governments finance from their own budgets.

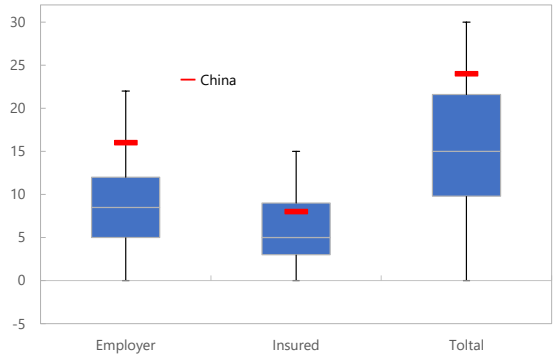
Financing Social Protection

10. Employer and employee contributions and government transfers (subsidies) are the main sources of funding for social insurance. Both employers and employees contribute to the pension, medical, and unemployment insurance funds. Employers also contribute to the work-related injury and maternity insurance. Since 2015, the central authorities have lowered the

[2] Maternity insurance merged with medical insurance in 2020. At end-2020, 236 million woman with maternity insurance.

guidelines on employer contribution rates, which the government estimates has reduced contributions from enterprises by nearly 1 percent of GDP) (ILO 2021). However, compared to other emerging market countries, China's contribution rate for the urban employee pension plan remains high (Figure).

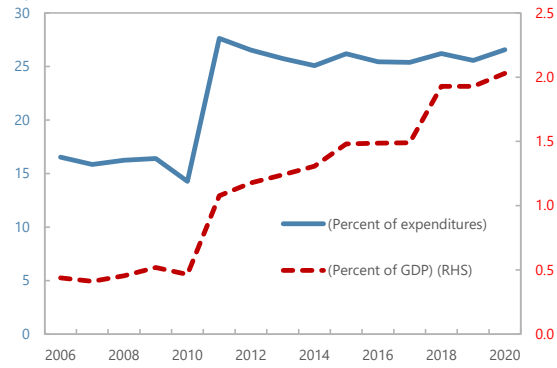
China's Statutory Contribution Rate for the Urban Employee Pensions Is Relatively High (In percent)



Sources: International Social Security Administration (ISSA); and IMF staff calculations.
Notes: Contribution rates are as of July 2018 or 2019 except China. China's employer rate of 16 percent is the target rate set by the central government.

11. Weak compliance with contribution requirements has contributed to a funding gap. Many enterprises fail to fully pay social insurance premiums for employees. Also, employers and employees may mutually agree to make social insurance contributions on the basis of wages that are lower than those actually being paid (Cousins 2021; Zhou 2021). In many areas the real contribution rate (contributions as a percentage of earnings) has been much lower than the statutory rate (Zhao and Mi, 2019). Compliance issues have contributed to financing gaps in many provincial-level jurisdictions. To cover the gap and meet growing expenses, government subsidies for social insurance have grown to about 2 percent of GDP and cover ¼ of social insurance spending (Figure).

Subsidies as a Share of Revenue and Expenditure
(In percent)



Sources: CEIC; and IMF staff calculations.

Toward a National Social Protection System

12. The authorities seek to build a unified and sustainable social protection system. Greater visibility of overall social security system financial situation and the introduction of risk pooling are important reforms in this direction. The Social Security Fund Budget became part of the annual budget report to the National People's Congress in 2013. Moreover, the authorities have introduced a pension risk pooling facility at the central government level (Box 1).

13. The authorities have also taken steps to make urban social insurance benefits available to migrants with rural hukou. In 2020, China had about 286 million migrant workers, of which 170 million worked outside their home county and 116 million worked locally. For the latter group, household registration restrictions on participating in the social insurance system within the province have been basically removed (ILO 2021).[3] For the former group, the authorities launched a nationwide residency permit program. Migrants workers with a residency permit have access to basic (rather than all) urban public services. However, some megacities still require urban hukou to be insured (ILO 2021). Abolishing hukou will require urban governments to spend considerably

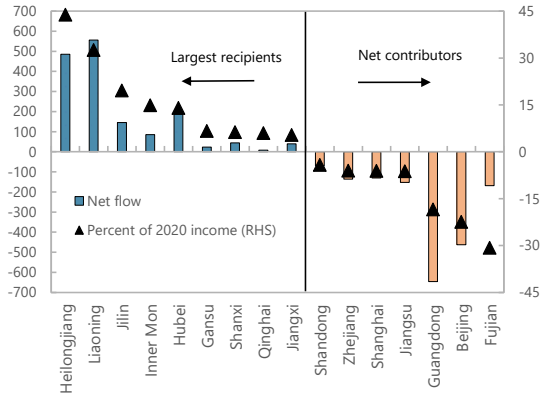
[3] China relaxed the household registration system for cities with fewer than three million residents in April 2019, and for cities with three to five million residents in December 2019.

more on basic public services, including social protection, for their migrant populations (Bikales, 2021).

Box 1. Urban Employee Pension Risk Pooling[1]

The State Council established in 2018 the Central Adjustment Fund (CAF), which pools risk among the provincial level urban employee basic pension insurance pools. Provinces contribute to the fund by transferring money from their own pension reserves, based on the number of employees in the region and their average salaries. The MOHRSS and the Ministry of Finance then redistributes the money to provincial pension funds based on the number of retirees in their areas. In 2020, provinces transferred about 4 percent of the total income from local urban employee pension reserves to the CAF.[2] The seven provinces were net contributors, while three others had net transfer balances of zero (Guizhou, Tibet, Yunnan,). The remaining 22 provinces in central and western regions were net recipients, with the CAF topping up the income of nine provinces by 5 percent or more (Figure).

Central Adjustment Fund Net Flows to/from Provinces, 2020
(LHS: Billions of RMB; RHS: in percent of 2020 income)



Sources: Ministry of Finance; and IMF staff calculations.

[1]Prepared by John Ralyea.

[2]The rate was 3 percent in 2018.

14. However, unification is generally proceeding haltingly. A first step toward national basic pension planning is the implementation of provincial-level overall planning, which the central government has sought since at least 2007. Thirteen years later, only seven out of 31 provincial-level governments have actually unified the urban employee basic pension plans within their jurisdictions. In March 2018, the Central government announced that the State Tax Administration (STA) should be the sole authority for collecting social insurance contributions,a target that has since been achieved. Provided local social insurance departments share payroll data with these offices, the transfer of the collections is expected to improve contribution compliance.[4]

15. Obstacles toward a unified social protection system remain significant. The highly decentralized framework, weak information systems, and differing local economic conditions create uneven delivery of benefits and large variations in the financial health of local social insurance systems. County and municipal insurance pools with surplus funds resist unification. When threatened with pooling their reserves in the past, local governments reduced collection efforts, down-sized surpluses, and created deficits (Wong and Yuan 2020). Getting different jurisdictions to share contribution and benefit information is fraught with bureaucratic and technical difficulties

[4] Some countries improved their levels of compliance and efficiency in the collection of social security contributions by merging the services in charge of social security collection with tax administration (Bakirtzi 2011).

(China Labour Bulletin 2019). Also, some provinces that host many migrant workers, resist exporting portions of contributions paid by local employers to other provinces (ILO 2020).

D. Social Insurance: Reforms to Enhance Household Economic Security

16. Pension, medical, and unemployment insurance programs offer the most promise for increasing the coverage and adequacy of the social protection system. Reforms could also address the inequities in social insurance that exist between rural residents and urban workers and expenditure pressures in the pension system.

Creating Sustainable and Adequate Pension Programs

17. China has a multi-tiered (Pillar) pension system. Pillar I dominates the pension system, with three public plans, which provide near universal coverage of those 16 years of age and older. The second pillar is made of many very small occupational pensions.

18. Urban employee pension plan is the largest social insurance program. The Pillar I pension plan for urban employees and self-employed individuals (urban employee pension) has two components: a contributory basic pension and mandatory defined-contribution individual accounts. The basic pension operates on a Pay-as-You-Go basis. A participant in the urban employee pension plan receives a basic pension and an annuity payment from the balance in the individual account at retirement. The government covers the longevity risk. Through the two sources of income, the authorities aim to achieve a replacement rate for an individual with 35 years of contributions of 50 – 60 percent. In 2019, the benefit ratio (pensions in payment/ average wage) was 53 percent.[5]

19. The voluntary rural and non-salaried urban residents pension program is popular. The program was created out of the merger in 2014 of separate plans for rural residents and non-salaried urban residents.[6] The program makes social pensions available to the non-employed and the labor force outside the formal sector (e.g., rural famers and migrant workers not covered under the urban employee scheme). It is a residual scheme in that eligibility is restricted to those not covered under the urban employee pension or civil service pension plans. The program includes a non-contributory basic social pension funded by the central government for the central and western provinces and jointly with local governments for the eastern provinces. The government aims for a target replacement rate of 15-30 percent (Wong and Yuan 2020).

20. The separate civil service plan is being merged with the urban employee pension scheme. The plan is available to civil servants and employees in public institutions such as teachers and public health care workers. The plan is relatively generous. Based on 2015 data, Shen and others

[5] The ILO has suggested that an "adequate" replacement rate should be at least 40 percent (Heinz 2019).

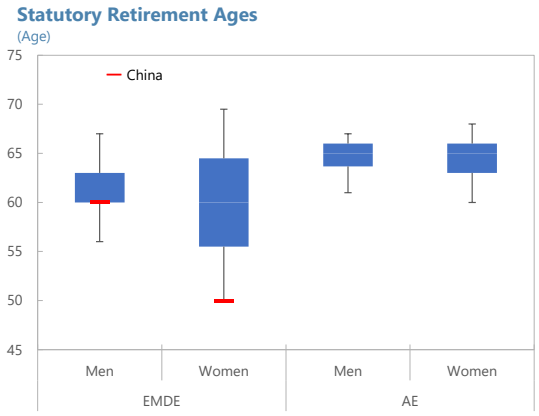
[6] Shen and others (2018) view the merger as a positive reform as it will help to realize the gradual equalization of rural and urban benefits.

calculated that 62 percent of the Chinese pensioner population (rural residents) gets the same share of all pension benefits paid as civil servants, who compose 2 percent of pensioners.

(i) Reinforce Sustainability of Urban Employee Pension Plan

21. A package of policy measures could build greater confidence in the sustainability of the urban employee pension plan. Absent reform, urban employee pension expense would almost triple over the next three decades from 5 percent of GDP in 2019 to 14 percent of GDP in 2050.[7] While refinements to retirement age or the benefit calculation are the most direct way to address pension spending pressures, the pension system does not exist in a vacuum. It is important to consider reform complementarities. For example, improved contribution collections would boost social insurance revenue to pay for some of the anticipated higher spending. Long-term savings options through a "Third Pillar" could make parametric changes more palatable to future retirees.

22. The urban employee pension retirement age dates back to the 1950s. The regular retirement age is 60 for men and professional women. The retirement age of 50 for non-professional women is particularly low by international standards (Figure). Based-on UN population projections, the life expectancy for a 60-year-old male will be more than double in 2050 than it was in 1955. A similar story holds for females, who in 2050, under current retirement rules will be able to draw a full pension for more than a third of their lives.



Sources: ISSA; and IMF staff calculations.

- **Increase and unify gradually the retirement age at 65 and link future adjustments to changes in life expectancy**.[8] China would not be alone if it did so. Several of China's peers have raised or announced specific plans to raise the statutory retirement age. Others have implemented an automatic link between changes in life expectancy and changes in the statutory retirement age. Critically, an automatic link removes the difficult political decision to make needed ad hoc changes in the statutory retirement age over time as the population ages.

- **Publish the benefit indexation formula.** The current system is roughly indexed to a mix of wages and prices. To allow for better financial planning for retirement, the indexing methodology should be published. Also, the purchasing power of pensioners that have received the average pension has increased by 60 percent over the last seven years. A formula that indexes benefits to changes in consumer prices and a portion of the change in real wages, say

[7] Earlier studies also projected significant increases in pension spending (CASS 2019; Soto and Gupta 2017)

[8] The factor for calculating the annuity payment from individual pension savings accounts would also have to increase to reflect expectations of longer lives.

2/3, would still allow for increases in purchasing power, but would also yield considerable pension expense savings.

- **Prohibit the "buy in" option**.[9] A person who has not made 15 years of pension contributions – the minimum vesting period required– to the urban employee pension is allowed to "buy in" to the plan by paying a lump sum fee to earn the right to a full pension. This creates immediate revenue for the local pension administrator and a long-term liability that can be substantially larger (Wong and Yuan 2020). It also opens the door to abuse. For example, in richer counties, the "buy-in" is a way to move non-working residents out of the resident pension system and into the urban employee pension system and absorb surplus balances that are at risk of be transferred elsewhere through provincial or national pooling schemes (Wong and Yuan 2020).

(ii) Improve Adequacy and Fairness of the Resident Pension Plan

23. A higher resident social pension would reduce poverty and inequality. A UN and ILO report (2021) notes the basic resident pension plan is not playing a substantially effective role in protecting the rural older residents. Others have noted the unusually low benefit levels under the residents' pension (Shen and others 2020; Jain-Chandra et al., 2018). In 2020, the monthly *average* pension benefit payment was 170 yuan. This is below the absolute rural poverty line of RMB 192 per month set by the central government. Many pensioners in rural areas receive less than the average, while those in urban areas can receive substantially more – a source of inequality in the social insurance system. For example, the average monthly benefits for pensioners in Shanghai was 7.4 times as high as the national average in 2018 (Yuan 2020).

24. Some of the savings from reform of the basic urban pension could easily finance an increase in the basic resident pension. The fiscal cost of raising the monthly social pension to the poverty line would be low. If the average resident monthly social pension had been set at the poverty line in 2020, it would have cost an extra RMB 45 billion (0.05 percent of GDP). From a budget standpoint, this is small but could represent an almost 14 percent increase in the social pension income of the average resident pensioner. Moreover, if increase were distributed to pensioners with pensions below the poverty line rather than all resident pensioners, it would put a small dent in the social pension inequality present between urban and rural residents.

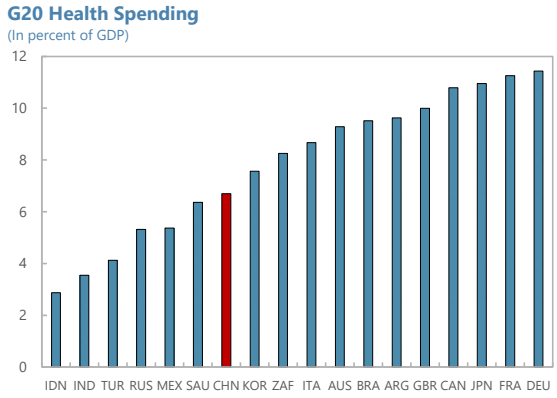
Boost Medical Insurance Benefits

25. China's health spending is broadly commensurate with its level of development. China spent about 6.7 percent of GDP on healthcare in 2019, slightly more than the median health spending of G-20 emerging market members (Figure). Also of note is that over the last two decades the burden of paying for healthcare has shifted away from individuals. The share out-of-pocket

[9] If the central government's policy were strictly followed by local governments, the buy-in option should have been a one-off phenomenon in 2010 (Yuan 2020).

payments by individuals, in aggregate, has been halved from 60 percent of health costs to about 30 percent.

26. Basic medical insurance has the most participants and the second largest financial footprint within China's social insurance system. The government has almost tripled the subsidy per person to RMB 580 in 2021 from RMB 200 in 2011. In 2019, government subsidies (RMB 0.6 trillion) were about a third of total government health expenditures.[10] The medical insurance system's structure is similar to that of basic pension insurance. A contributory plan for urban employees consists of social medical insurance and mandatory individual accounts for employees. Most provinces also allow voluntary participation for self-employed persons. A separate rural and urban residents medical plan provides basic medical insurance coverage to rural and non-salaried urban residents not covered by basic medical insurance for employees.[11] For both plans there is no minimum qualifying period for benefit eligibility.[12]



Sources: World Development Indicators (WDI); and China National Statistics Bureau (NBS).
Notes: Data is from WDI for 2018, except for China. China data is from NBS for 2019.

27. Recent reforms aim to lower drug costs for households and enhance the flexibility of personal medical insurance accounts. The central government has reduced the average price of drugs for participants in basic medical insurance by more than 50 percent through bulk purchases.[13] The use of individual accounts will be widened to cover basic medical expenses of other household family members in addition to the insured individual.[14] The authorities also have announced plans to explore use of individual accounts for paying for family members' contributions to basic medical insurance for rural and urban non-working residents.

28. More generous medical insurance plans would foster greater household economic security. Basic medical insurance benefits are capped at 600 percent local average wages**.** State insurance plans mainly cover services in public hospitals and common diseases rather than provide universal coverage of all healthcare costs. Also, basic medical insurance leaves workers and residents exposed to medical costs that exceed covered services and costs from uncovered emergency healthcare or chronic illnesses. The uncertainty is exacerbated for those that live in poorer provinces, which have limited resources to finance health spending. The authorities should consider

[10] Government subsidies to basic medical insurance for urban employees are immaterial.

[11] In 2016, the government unified the basic health insurance system for both rural and non-salaried urban residents.

[12] In 2020, the reimbursement rate for hospital expenses under the urban employee medical insurance and the rural and non-salaried urban residents medical insurance was about 70 percent and more than 85 percent, respectively.

[13] Beginning in 2018, the NHSA has carried out four batches of centralized drug procurement covering 533 selected products. Centralized procurement drugs are all generic drugs.

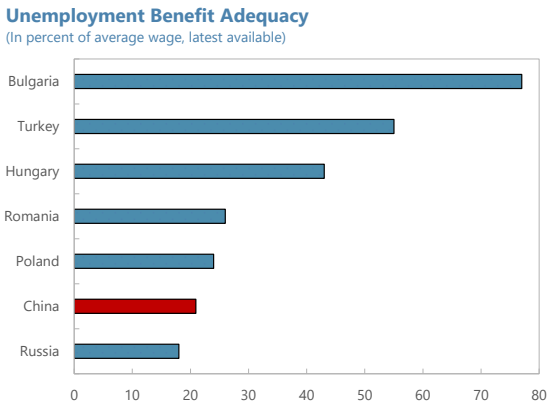
[14] http://english.www.gov.cn/premier/news/202104/07/content_WS606dc988c6d0719374afc2b4.html

establishing a national supplementary medical insurance plan that allows individuals to purchase coverage for uncovered medical expenses at reasonable rates. This would lead to a more efficient distribution of medical risks rather than having individuals bear their own idiosyncratic medical risks.

Overhaul Coverage and Benefit Adequacy of Unemployment Insurance

29. Unemployment insurance is a weak link the social insurance system. [15] The coverage and adequacy of and participation in the unemployment insurance system is low. Coverage is restricted to workers in urban firms and urban public institutes.[16] Several hundred million farm workers and nonagricultural workers living in rural areas are not covered. Less than half of urban employees participate. While most cities have relaxed rules so migrant workers are now treated the same as urban-hukou workers, only a fifth of migrant workers are part of the system. Moreover, unemployment benefits only reached [20] percent of the registered unemployed urban population.[17]

30. Many employees lack an economic incentive to participate. Benefits are tied to local minimum or subsistence wages rather than the typically much higher local average wage on which employee (and employer) contributions are based. This leads to low unemployment benefit adequacy both relative to benefits in other emerging market countries and in absolute terms, reducing incentives to participate (Figure). Also, although the Social Insurance Law of 2011 stresses that unemployment benefits are transferable and can be claimed in any location, structural reforms will be necessary for such a policy to become a reality. Many rural areas do not have adequate systems for disbursing urban unemployment benefits.



Sources: OECD; CEIC; and IMF staff calculations.
Notes: for China, bar is gross replacement rate; all others are net replacement rates.

31. Unemployment insurance system parameters that can influence participation rates are:

- **Contributions**: Employers and employees contribute to unemployment insurance. The base is the average local salary subject to a floor (60 percent) and ceiling (300 percent).[18]
- **Eligibility:** The minimum contribution period for unemployment benefits is 12 months. Depending on the length of the contributions, individuals can receive benefits from 12 months

[15] The 1999 Unemployment Insurance Regulations (No. 2410) regulates matters related to unemployment benefits, administration of funds, and sanctions in cases of fraud.

[16] Non-contributory unemployment assistance is discussed briefly with other the social assistance programs in the next section.

[17] Perhaps reflecting the difficulty in obtaining benefits, "surplus" unemployment reserves are used to finance vocational training.

[18] For migrant workers, only their employers contribute, not the worker.

to 24 months. In addition, to receive benefits, the participant must be involuntarily unemployed; not be receiving old-age benefits; be registered at, and regularly reporting to, a local employment-service agency; and be actively seeking employment.[19]

- **Benefit rate and base.** The benefit rate is based on the length of the contribution period. Generally, the benefit base is between the minimum living allowance (see social assistance section below) and the local minimum wage.[20] The unemployment insurance fund pays medical insurance contributions for the insured during the benefit period.

- **Reserves**. Provincial governments maintain their own fund balances (no national pooling).

32. Unemployment benefits can be well below average wages and differ between urban and migrant workers. Differences between local minimum wages[21] and local average wages result in unemployment benefits well below a typical worker's pay. For example, in Beijing the benefit rate ranges from 70 to 90 percent of the minimum wage for those that contributed for less than 5 years or more than 20 years, respectively.[22] The rate is applied to Beijing's minimum wage of RMB 2,200/month. Assuming the benefit rate is 70 percent, the typical benefits will be RMB 1,540/month or a fifth the average private wage. Migrant workers receive an even lower lump sum benefit.

33. Reforms are headed in the right direction. In line with the 2011 Social Insurance Law, the authorities plan to achieve greater coordination between the central and provincial authorities, promote the transfer of unemployment insurance between urban and rural localities, and simplify benefit application procedures. In 2020, the Ministry of Human Resources and Social Security (MoHRSS) opened a national platform for applying for unemployment insurance benefits, which serves as a hub for subnational platforms. Benefit application procedures have been streamlined. Applicants can apply in person, online, or via mobile phone and only have to present personal identification. Review of eligibility is based on local government internal data (e.g., work and benefit payment history).

34. More accelerated reforms, greater coverage, and higher benefits would enhance worker economic security. The long delay in integrating local unemployment insurance funds and developing adequate information sharing systems limits insurance and benefit portability. To improve portability, the authorities could move contribution collection to STA (as with basic pension contributions) and mandate requisite information sharing to improve compliance, develop a centralized risk pooling system from which benefits could be paid, and provide subsidies to poorer provinces to improve their information technology. Also, extending coverage, for example to contractors and other self-employed individuals, may induce greater risk taking on the part of

[19] Several of the eligibility criteria were waived during Covid. The waivers were extended to end-2021.

[20] The 1999 Regulations state that unemployment benefits must be lower than the local minimum wage.

[21] Local minimum wages are set annually with reference to per capita expenditures for food, Engel coefficient, consumer price index, local average wage and other factors.

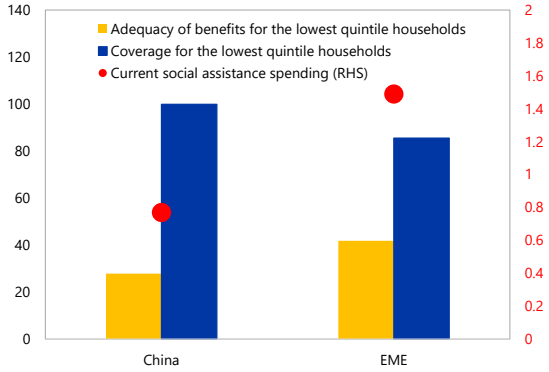
[22] From the 13-month of receiving benefits onwards, the benefit ratio reverts to 70 percent for all eligible recipients.

individuals to create new enterprises. Above all, align the bases for calculation of contributions and benefits. The resulting increase in benefits could incentivize many urban employees and migrants, who are technically eligible to participate in the unemployment insurance system, to do so.

E. Social Assistance: Offering Better Support to Vulnerable Households

35. China's social assistance programs generally have good coverage, but adequacy could be better. Social assistance programs cover almost all households in the lowest quintile of the income distribution. The broad coverage, however, combined with spending of less than 1 percent of GDP, translates into questionable adequacy. Total transfers to households in the lowest quintile amount to less than 30 percent of their pre-transfer income. This is less than the average "adequacy" found in emerging market countries (Figure). What is missing is a program to provide direct support to households with children. As with other social protection spending, local governments determine benefits, subject to central government guidance, and are responsible for service delivery.

Social Assistance Remains Inadequate
(LHS: in percent; RHS: in percent of GDP)



Sources: World Bank ASPIRE; PovcalNet databases; and IMF staff estimates.
Notes: Adequacy of benefits is the total transfers received by beneficiaries as a share of the pre-transfer total income in the lowest income quintile of individuals. Coverage is the share of the lowest quintile individuals that receive a social protection benefits. EME: Emerging market economies.

36. The minimum income program (*dibao*) is the largest social assistance program. The Ministry of Civil Affairs establishes general guidelines for the *dibao* program, which is implemented primarily by county level governments. It serves as a gateway to eligibility for other smaller assistance programs (Bikales 2021). The program pays a monthly allowance to families whose per capita income of family members living together is below the local minimum living guarantee standard and meets the local minimum living guarantee family property status. Each local government sets local living standards according to local conditions. The calculation method differs across cities and counties. The most common method calculates the basic living standard as the product of a locally determined percentage rate and the local consumption expenditure per capita in past 12 months. The monthly allowance paid to a household is the difference between the household's income and calculated basic living standard. For example, if the local living standard is RMB 1,200 per person per month, a three-person household with a monthly household income of RMB 3,000, would receive a monthly allowance of RMB 600 (RMB 1200*3 - 3000 = 600).[23]

37. Other social assistance programs to tend to be small and targeted. These programs include emergency, housing, education, unemployment, and medical assistance and price subsidies. Price subsidies are available to those receiving unemployment insurance benefits or assistance. There is no national unified standard for price subsidies. The subsidy amount is determined

[23] The *dibao* program implicitly provides child support payments. When a new child enters the family the per capita income of the family will fall generating a greater monthly *dibao* payment to the family.

according to the local urban and rural subsistence allowance standard and the basic cost of living price index (SCPI) for low-income urban residents.

38. The adequacy and coverage of social assistance programs could be improved. The local living standard, on which *dibao* is based, could be better aligned with local consumption expenditure per capita by adjusting the local percentage rate upwards. Given the relatively small and declining number of participants in the program (44 million) the increased assistance payments would likely have a limited impact on the budget, but provide significant additional support to those participating in the program. In addition, consideration could be given to extending unemployment assistance to "gig' workers who are laid off at least until a more permanent solution is found to provide these workers greater economic security.

39. Rules-based automatic transfers could also reduce economic uncertainty of poorer households. A rules-based fiscal stimulus explicitly links the automatic activation of spending and tax measures to the state of the economy through a macroeconomic trigger, such as a rise in the unemployment rate. Such a rule would help shape household and business expectations by promising a robust countercyclical response and act as a form of income insurance to the targeted population. The April 2020 WEO illustrated that a one-half percentage point rise in the unemployment rate above its natural rate generates fiscal transfers targeted to liquidity-constrained households equivalent to about 0.7 percent of GDP (IMF 2020b).

40. A child assistance (allowance) program would complement the three-child policy. Government transfers to households with children would ease the financial strain of having more children and reduce the number of children in poverty.[24] Many countries have child benefit programs. Almost 110 countries have a periodic child or family allowance anchored in national legislation (ODI/UNICEF 2020). The child benefit packages vary along several dimensions including type, eligibility requirements, population coverage, nature of benefit indexation, and administrative rules. Spending on child benefit packages averages about 0.4 percent of GDP in low- and middle-income countries, compared with 1.7 percent of GDP for high-income countries (ODI/UNICEF 2020).

41. Social assistance transfers could also be made more efficient by expanding the scope of a pilot program that utilizes e-CNY and related technology to reach the less well off. Central government transfers to low-income individuals pass through three layers of government before reaching beneficiaries bank accounts (if they have one). The central authorities have begun to streamline the transfer channel by bypassing provincial-level governments and progressively allocating more central transfer payments directly to lower-tier governments. With e-CNY digital wallets, these local governments could distribute assistance directly to low-income people's "hard" digital wallets (i.e., a hard wallet is akin to a credit card, meaning that the participant does not have to have a mobile phone). A pilot study in Shenzhen suggests this is feasible (SIP 5).

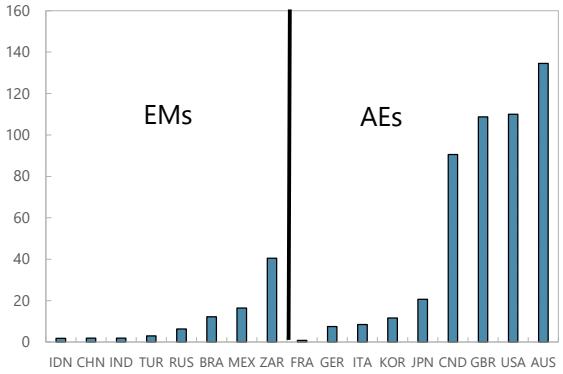
[24] On a smaller scale, China recently included 253,000 unsupported children – children with parents who are unable to care for them – in a designated social security system, which will also help reduce child poverty. A monthly subsistence allowance of 1,140 yuan ($176) is provided per child, the same amount provided to orphans (ILO 2021).

F. Savings, Social Protection, and a Third Pension Pillar

42. Social protection reforms can boost private consumption. Lack of adequate coverage and uncertainty about the viability of local social protection systems and the ability to access system benefits likely induces households to self-insure by accumulating precautionary savings against loss of income, health emergencies, chronic health problems, and risks associated with aging (SIP 2). Within the Asia region, microdata suggest that the decline in aggregate household savings in Japan and Korea was driven by lower savings rates across all income deciles, although the drop was much more pronounced for low-income households, reflecting the improvement in social safety nets (Zhang 2018). In China's case, empirical studies have found a positive impact of pension payments to rural residents on their consumption expenditure (Zhao and Li 2018; Zheng and Zhong 2016).

43. A Third Pillar pension program would complement social protection reforms and possibly reduce aggregate savings. The purpose would be to generate retirement savings to complement, not replace, social security pensions[25] and support domestic capital market development. China's *funded* pension assets are low relative to most other G20 members (Figure). Voluntary, individual, pension investment accounts (Third Pillar), which are typically fully funded, could ease spending pressure on the public system by providing another stream of income for retirees. A number of emerging markets have also established (Brazil, Chile, Poland, Turkey) or planning to establish such schemes (Russia) (Heinz 2019). A Third Pillar also could induce a lower household savings rate as an individual's savings portfolio would be more diversified. Moreover, a Third pillar could prove attractive to "gig" economy workers who lack long-term labor contracts with employers that underpin access to urban employee pension benefits.

G20 Funded Pension Plan Assets, 2019
(In percent of GDP)



Sources: OECD; and IMF staff calculations.
Notes: Excludes Argentina and Saudi Arabia due to data unavailability.

44. The authorities have launched multiple third pension pillar initiatives Past efforts include a pilot in 2018 of a tax-deferred pension product. The 2018 pilot results were less than expected. Several new approaches have been announced or are planned: (i) In June 2021, the China Banking and Insurance Regulatory Commission (CBIRC) introduced a one-year pilot of a voluntary individual account pension program (CBIRC 2021); (ii) the MoHRSS plans to promote the establishment of the personal pension system (the third pillar pension system); and (iii) the authorities are establishing a national pension company to manage qualified commercial investment products under a Third Pillar pension system.

[25] Funded systems are no panacea as increases in longevity or lower than expected investment returns could cause funding to fall short of providing adequate pension benefits at retirement.

45. Development of a Third Pillar is a long and complicated process.[26] An over-arching structure will have to be selected. For example, the Third Pillar could be run by on a special government agency (similar to the existing provident housing fund), regulated commercial firms (as in several advanced economies) or incorporated into the existing second pillar (Hong Kong SAR). With all structures, coordination and sequencing of reforms across government ministries, financial regulators, and financial firms will be critical to develop proper infrastructure, incentive policies, distribution channels, product innovation, investment policies, risk management, and provide extensive public education. Derivatives markets to hedge risk (e.g., interest rate and longevity risk) of firms offering third pillar investment products will also have to be developed.

46. An exclusive account system, financial incentives, and a wide range of qualified investment products tend to be important features of a Third Pillar. Heinz (2019) stresses the importance of sound public policies supporting the scheme, both in the design as well as in the default options being offered. An exclusive account system could be created with individual accounts to receive, invest, and manage retirement savings. The account would track use of incentive policies. It would also allow the allocation of pension funds in different financial products. To induce individual retirement savings, several countries offer deferral of income taxes on earned income invested (United Kingdom; United States) or tax-free earnings on invested amounts (United States) or subsidies (Germany). Given most low-income earners do not pay income taxes, a matching subsidy from the government that is capped may be more effective. The government should develop a list of "Qualified" 3rd pillar investment products and standards, including duration, purpose, and early redemption penalties. A robust educational campaign is also necessary.

G. Conclusions

47. A unified, rules-based social protection system can support quality growth. Besides shielding vulnerable households and workers from economic shocks (including from COVID-19), social protection can generate public support for growth-enhancing structural reforms such as optimization of state-owned enterprises. Social protection is also a crucial fiscal tool to foster more inclusive growth, support greater labor mobility, and reduce incentives for household precautionary savings. A system with good coverage, adequate benefits, and automatic benefit provision would help rebalance the economy. More economically secure households are likely to spend more on consumer goods and services allowing China to reduce its dependence on carbon-intensive manufacturing, while preserving economic growth.

48. Resident pension and unemployment insurance reforms along with greater unification, including risk pooling, should be the priorities. For rural and non-salaried urban residents, pension coverage is good, but benefit adequacy is wanting. Unemployment insurance coverage and benefit adequacy should be improved for all workers. Accelerated implementation of longstanding efforts to bring more uniformity to system administration and reforms to align system

[26] This and the following paragraph draws on "Research Report on the Third Pillar of Pension Funds in China" issued by the Insurance Association of China in conjunction with McKinsey in November 2020. A synopsis of the report is available publicly here.

benefits with changing demographics are critical. Other important reforms include: higher medical insurance benefits and provision of low-cost opportunities to insure against uncovered medical costs; introduction of a child allowance program; and reforms to put the urban employee pension program on a more sustainable footing. Reform complementarities such as the creation of well-structured and integrated third pension pillar can ease pressures on basic pensions, while also supporting capital market development

49. To be effective, the social protection system must be sustainably financed. Fortunately**,** reforms that lead to more adequate, reliable, and equitable social benefits will foster trust in the system and a greater willingness by participants to finance it through contributions. General tax revenues from a more progressive taxes and base broadening as well as expenditure reprioritization will also be important financing sources (See staff report for more detailed tax measures). Reprioritization can also come from within the social protection system. For example, savings from reforms of the urban employee pension program could be applied to cover higher costs elsewhere in the system. More broadly, sound fiscal finances in general can add to greater household security.

Annex I. Recommended Reforms

Social insurance system: Create a unified system to improve coverage, adequacy, and service	
1	Accelerate implementation of 2011 Social Insurance Law that envisages a unified system.
1a	Pool all local insurance reserves by type of insurance (pension, medical, unemployment, injury) at the provincial level then the national level.
1b	Develop necessary information technology to improve information sharing capabilities and provide subsidies to poorer regions to support IT development.
1c	Improve contribution compliance by moving all contribution collection responsibility to local tax authorities and ensure they have the required information to assess compliance.
2	Remove obstacles to obtaining residency permits in location of employment for migrant workers or further downplay household registration system (Hukou) strictures.
3	Consider measures to bring 'gig' economy (flexible) workers into social insurance system (e.g., change employment status).
Urban employee pension: Reinforce sustainability	
1	Raise and unify retirement ages and link future increases to changes in life expectancy at the retirement age.
2	Publish formula used to calculate annual changes in pension benefits.
3	Consider adjusting benefits indexation to moderate increases but preserve purchasing power.
4	Strictly enforce abolishment of buy-in option.
Resident pension: Improve adequacy and fairness	
1	Raise pensions to at least the absolute poverty line in localities where the pension is below it.
Third pension pillar: Provide long-term savings opportunity for retirement	
1	Develop comprehensive and integrated approach to create private voluntary pension plan regulated by the government and managed by private firms (Third Pillar).
1a	Consider establishing exclusive account system, financial incentives, and a wide range of qualified investment products.
1b	Include an education campaign to ensure that all individuals receive a fair deal, in terms of low fees, adequate investments, and proper service.
Medical insurance: Boost benefit adequacy	
1	Consider raising cap on reimbursed medical costs.
2	Establish a national supplementary medical insurance plan for individuals to purchase coverage for uncovered medical expenses at reasonable rates. Subsidize purchase for poorer individuals.
3	Allow use of individual medical account savings to pay for family member contributions to basic medical insurance under residents program.
Unemployment insurance: Overhaul coverage and benefit adequacy	
1	Align the bases for calculation of contributions and benefits.
2	Equate migrant worker benefits with urban employee benefits.
3	Consider permanently waiving or shortening minimum contribution period.
Social assistance: Expand coverage and improve adequacy and delivery of benefits	
1	Develop a targeted child benefit (allowance) program, drawing on experience of other countries.
2	Increase minimum income guarantee program benefits (*dibao*) perhaps by aligning benefit more closely with local consumption expenditure per capita.
3	Link activation of transfers to households to an economic trigger (e.g. the unemployment rate).
4	Expand use of digital technology to improve assistance delivery, building off successful pilot of e-CNY digital wallets in Shenzhen.

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HOUSEHOLD SAVINGS AND ITS DRIVERS: SOME STYLIZED FACTS[1]

Despite fast the recovery from the crisis, growth remains unbalanced with private consumption lagging and the household savings rate—which was high in international comparison even before the crisis—now well above pre-pandemic levels. Empirical analyses based on prefecture- and household-level data suggest that higher government spending on social security and health is associated with a lower savings rate, while rising household debt, particularly housing-related debt, is associated with a higher savings rate.[2] Rising income inequality at the expense of lower-income households, which tend to spend more of their income than higher-income households, also contributes to the higher aggregate savings rate. These findings suggest that targeted policy efforts to strengthen the social safety net, contain housing-related debt, and address income inequality would lower household savings rate.

A. Introduction

1. Despite China's rapid recovery from the COVID-19 pandemic, private consumption lags other GDP components. Amid the pandemic and the associated strong containment measures to contain the spread of the virus, China's private consumption as a share of real GDP has declined significantly in 2020. Although the virus was largely under control in China in the second half of 2020, the recovery in private consumption still lagged the other GDP components. Moreover, the decline in China's private consumption share in 2020 (in percentage points of GDP) was larger than in most other major economies, with the share remaining well below the emerging market average (Figure 1, panel 1). The household savings rate was already well above major emerging market economies before the pandemic and has increased further since (Figure 1, panel 2). At the same time, households' marginal propensity to consume in China estimated from prefecture-level data has also dropped to multi-year lows, particularly for rural households (Figure 1, panel 3).

2. China's household savings rate varies significantly across income levels and between urban and rural households.

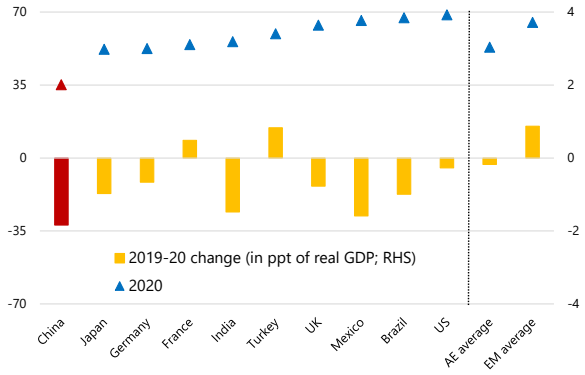
- *Across income groups*. Prefecture-level data suggest that the household savings rates increase with income levels (Figure 1, panel 4), which is consistent with the micro-level evidence from the Chinese Household Income Project data (Zhang and others, 2018) and reflects the different propensities to consume out of income. While savings rates increased substantially in 2020 for all income groups, high-income households saw a more prominent increase.

[1] Prepared by Fei Han (APD) and Fan Zhang (RES).

[2] Social security spending in this chapter is a component of the total social protection expenditures discussed in SIP 1 and includes the central and local governments' subsidies for the social insurance system (mostly social pension insurance) and social assistance. The health spending refers to the central and local governments' spending on medical services (such as public hospitals) and subsidies for medical insurance, and hence has a slightly different coverage than the medical insurance expenditures discussed in SIP 1.

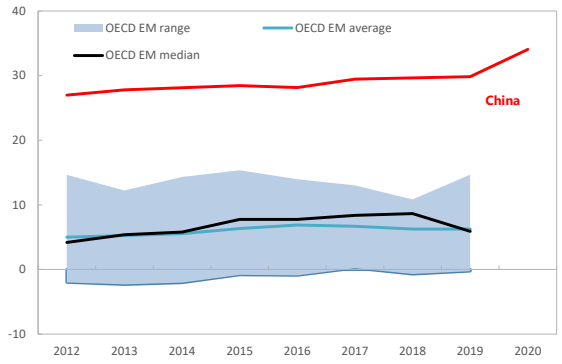
Figure 1. China: Household Consumption and Savings During the Pandemic

Share of Private Consumption in Real GDP in Selected Economies
(In percent)



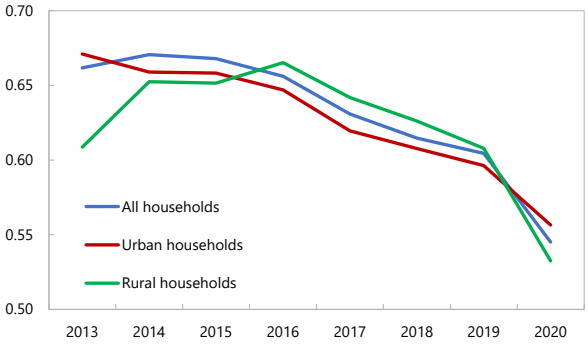
Sources: WEO database; and IMF staff calculations.

Household Savings Rates of Selected Economies 1/
(In percent of disposable income)



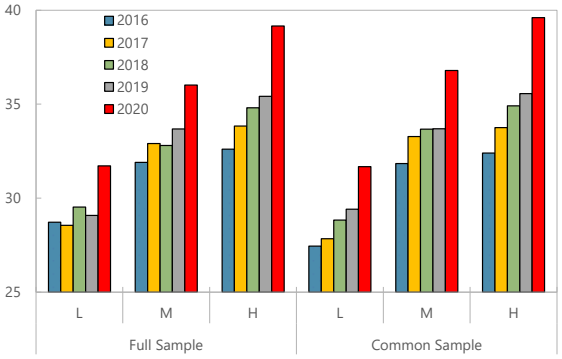
Sources: CEIC; OECD; and IMF staff calculations.
1/ Based on available data for OECD-monitored emerging market economies.

Estimated Marginal Propensity to Consume 1/
(Estimated from prefecture-level data)



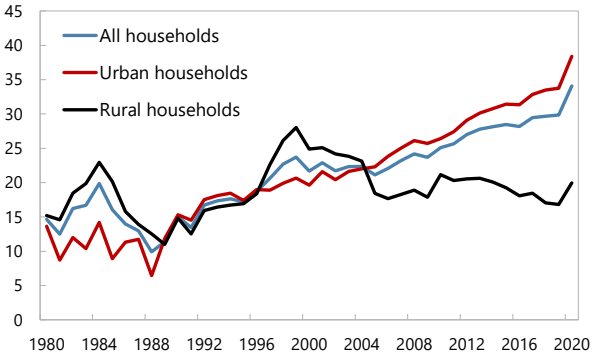
Sources: CEIC; and IMF staff calculations.
1/ The MPC is estimated by a simple OLS regression of household consumption expenditure against disposable income using prefecture-level data.

Average Saving Rate By Income Group 1/
(In percent of disposable income; average across prefectures)



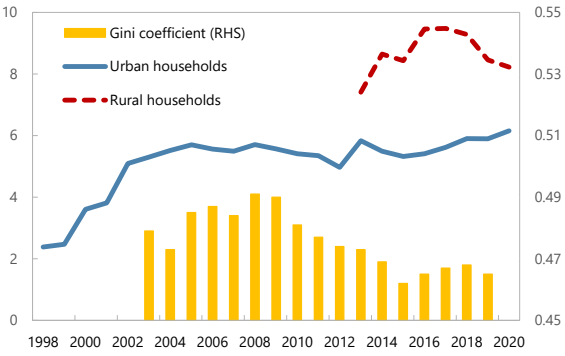
Sources: CEIC; and IMF staff calculations.
1/ L, M, and H represent low-, middle-, and high-income groups, respectively,

Savings Rates of Urban and Rural Households 1/
(In percent of disposable income)



Sources: CEIC; and IMF staff calculations.
1/ Calculated using disposable income per capita and consumption expenditure per capita.

Gini Coefficient and High/Low Income Ratio 1/



Sources: NBS; and IMF staff calculations.
1/ High/low income ratio is calculated as the income of highest-income group divided by income of the lowest-income group as defined by the NBS.

- *Between urban and rural households*. The savings rate of urban households is significantly higher than rural households (Figure 1, panel 5), which is in line with the distribution of savings rate

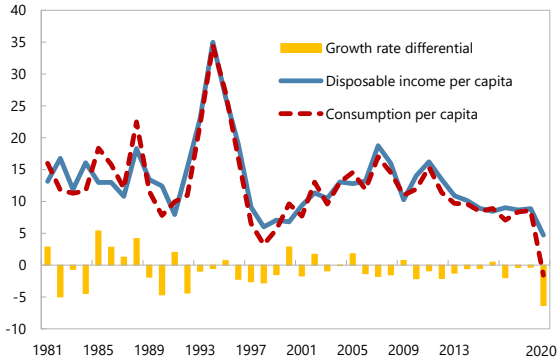
across income levels as urban households typically earn higher incomes. However, the savings rate of rural households had been declining since the global financial crisis (GFC), while the urban households' saving rate has been rising rapidly, likely reflecting the widening urban-rural income gap in monetary terms: the difference between urban and rural households' disposable income *per capita* nearly tripled from 11 thousand RMB in 2009 to 27 thousand RMB in 2020, even though the ratio between the two has declined.

3. Income inequality has likely increased also within household groups, especially within urban households, which could also contribute to a higher aggregate household savings rate. The decline in China's overall income inequality measured by the Gini coefficient before the pandemic has likely been driven by lower within-rural household inequality, as the income gap between urban households' top and lowest income groups widened significantly in the past two decades (Figure 1, panel 6). The widened high/low-income ratio within urban households and the widened urban-rural income gap in monetary terms (discussed above) point to a likely increase in income inequality in 2020.[3] Since higher-income groups tend to save more than lower-income groups, an increase in income inequality (e.g., resulting from a pure redistribution of income) could potentially lead to a higher aggregate savings rate due to the composition effect (Zhang and others, 2018).

4. These changes by the pandemic could threaten the transition towards a balanced and sustainable recovery. Continued high savings would risk reversing the rebalancing efforts towards private consumption-driven growth and create upward pressure on the current account. Meanwhile, there is growing evidence that rising income inequality is harmful for the pace and sustainability of growth (Jain-Chandra and others, 2018; Ostry and others, 2014; Cingano, 2014; Berg and others, 2012; Berg and Ostry, 2011), mainly through reducing the equality of opportunity and curbing investments in education by the poor and lower middle classes. Reducing the high household savings rate and income inequality is important to achieve balanced and inclusive growth.

5. This paper investigates some of the key drivers of China's high household savings rate, and explores policy options to achieve balanced and inclusive growth. In particular, we use empirical analyses based on both prefecture-level macro data and household-level micro data, with a focus on the drivers that are potentially more relevant for the recent increase in the savings rate during the pandemic. In addition, we also combine prefecture-level with household-level data to examine income inequality and its key sources.

Household Income and Consumption
(Year-on-year, percent change)



Sources: CEIC; and IMF staff calculations.

[3] The Gini coefficient for 2020 has yet to be published.

Finally, we provide policy recommendations to reduce China's household savings rate and income inequality.

B. Potential Drivers of Household Savings During the Pandemic

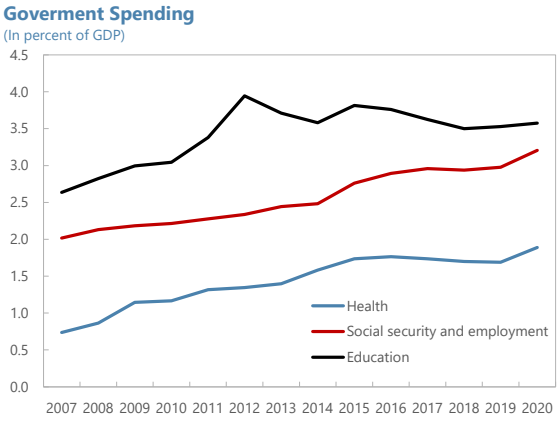
6. Household consumption and income growth have been highly correlated until the COVID-19 pandemic. The annual growth rate differential between household consumption expenditure *per capita* and disposable income *per capita* had been below 3 ppt since early 1990s before the pandemic, but has widened to -6.3 percent in 2020 (text chart). This suggests little consumption smoothing by households, possibly related to the unique nature of the pandemic shock where services-related consumption was limited by stringent restrictions to contain the spread of the virus. However, the recovery in private consumption continued to lag other GDP components even when the containment measures were gradually lifted in 2020H2, and household savings rate still remained elevated at 35 percent in 2021Q2—well above its pre-pandemic level of 30 percent.

7. There is a large body of literature on the potential reasons behind China's high household savings rate. One strand of the literature focuses on demographic factors (Curtis and others, 2015; Choukhmane and others, 2014; Modigliani and Cao, 2004), arguing that the changing demographic structure resulting from the one-child policy has led to high household savings, through lower spending on children and less expected inter-generational support given the fewer children. Another strand focuses on the role of precautionary savings (He and others, 2017, 2018; Chamon and Prasad, 2010; Blanchard and Giavazzi, 2005), arguing that the lagged transformation of the social protection system and falling job security during China's transition towards a market-based economy is the 1990s led to a rise in household precautionary savings. Others have pointed to low returns on household deposits as another potential driver of high savings, although empirical evidence has been scant. Some studies also analyzed the impact of house prices and housing ownership on savings but generally found mixed evidence (Chen and others, 2016; Wang and Wen, 2011), while others examining the impact of house prices on income inequality pointed to a significant positive impact for urban households (e.g., Zhang and Zhang, 2015). Zhang and others (2018) provide a comprehensive study of all these factors and found that the demographic changes and the lagged transformation of the social protection system and job security contributed the most to China's high household savings rate, with rising house prices and income inequality also playing a role.

8. The rest of this section uses prefecture-level macro data and household-level micro data to take a fresh look at these potential drivers, paying particular attention to the short-term factors—that may have been amplified by the pandemic—including, the weaknesses in the coverage and adequacy of the social protection system, rising household debt, the role of household assets particularly housing ownership, and income inequality. As a contribution to the literature, the household-level micro data allow us to estimate the debt and wealth effects on household savings rate separately.

Social Protection System

9. Despite the significant policy efforts to strengthen the social protection system after the GFC, government spending in social security and health as a share of GDP had remained broadly unchanged until the pandemic. In 2009, the government strengthened the healthcare scheme for rural households by introducing the pay-as-you-go pension system heavily subsidized by direct government transfers and, for urban areas, established a mandatory insurance scheme for formal sector workers—mostly funded via social security contributions from employers and employees. An insurance scheme and a basic pension scheme for non-working residents were also established in 2009 and 2010, respectively, with significant government subsidies. However, the social protection system still remains incomplete and lacks adequate coverage and benefits (SIP 1). In particular, the pension benefits remain low for rural households and access to healthcare remains an issue for migrant workers (Jain-Chandra and others, 2018; Zhang and others, 2018). Moreover, government spending in social security and health as a share of GDP had remained stable or even declined somewhat in the case of health during 2016-19 (text chart) and remains low compared to international standards (Zhang and others, 2018), despite a minor rebound in 2020 due to the pandemic. Here, the social security spending is a component of the total social protection spending, including the central and local governments' subsidies for the social insurance system (mostly social pension insurance) and social assistance; and the health spending includes the central and local governments' spending on medical services (such as public hospitals) and subsidies for medical insurance.



Sources: CEIC; and IMF staff calculations.

10. Our analysis finds that higher spending on social security and health is significantly positively associated with household consumption, with differing impacts on urban and rural households, suggesting a targeted policy focus. We study the impact of precautionary motives by observing regional variations in government spending on social security, health, and education. Using cross-sectional analysis based on all 296 prefectural municipalities monitored by the National Bureau of Statistics (NBS), we find a significant positive relationship between social spending and urban and rural consumption (see Appendix for data and detailed empirical analyses).[4] Our findings broadly confirm previous studies such as Zhang and others (2018).

- *Social security spending has a significant impact on urban household consumption….* Social security spending has a stronger association with household consumption expenditure than other types of social spending, with a 1-percent increase in social security spending *per capita*

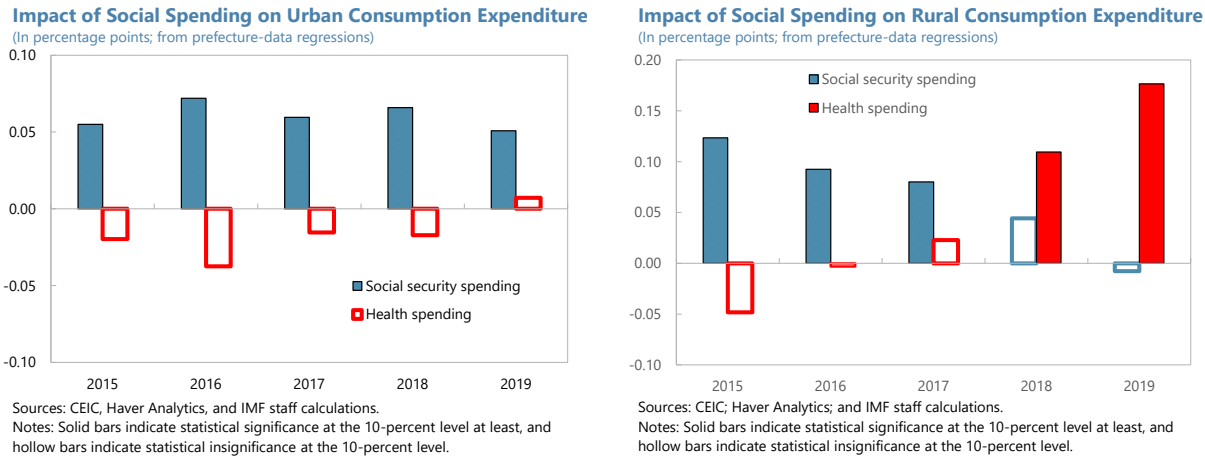
[4] Notice that the empirical analyses throughout the chapter are not trying to infer causality but rather capture association between endogenous variables.

associated with a 0.05—0.08 percent increase in household consumption expenditure *per capita* and hence lower savings rates (Figure 2, panel 1). This suggests that, using the magnitude of the impact at each variable's mean, a 100-RMB increase in annual social security spending *per capita* (representing about 6 percent of the average social security spending *per capita* in 2019) is associated with an increase in annual urban consumption *per capita* of about 90 RMB.

- *…but the health spending has a significant impact for rural households*. While social security spending seems to have had a strong association with household consumption during 2015-17, health spending mattered significantly during 2018-19, with a 1-percent increase in the health spending *per capita* associated with a rise in rural consumption *per capita* by 0.1—0.2 percent (Figure 2, panel 2). Assessing the impact at the mean suggests a 100-RMB increase in the annual health spending *per capita* (about 9 percent of the average health spending *per capita* in 2019) is associated with an increase in annual rural consumption *per capita* of about 185 RMB on average.

11. The differences in urban and rural results could be related to the relatively weaker healthcare support in rural areas. Healthcare services and the social health insurance system are relatively more developed in urban areas, and hence less of an issue for urban household consumption. As a consequence, rural households might feel the need to accumulate relatively higher levels of precautionary savings—an effect that was likely heavily amplified by the pandemic.

Figure 2. China: Estimated Impact of Social Spending on Household Consumption



Sources: CEIC, Haver Analytics, and IMF staff calculations.
Notes: Solid bars indicate statistical significance at the 10-percent level at least, and hollow bars indicate statistical insignificance at the 10-percent level.

Sources: CEIC; Haver Analytics; and IMF staff calculations.
Notes: Solid bars indicate statistical significance at the 10-percent level at least, and hollow bars indicate statistical insignificance at the 10-percent level.

Household Indebtedness

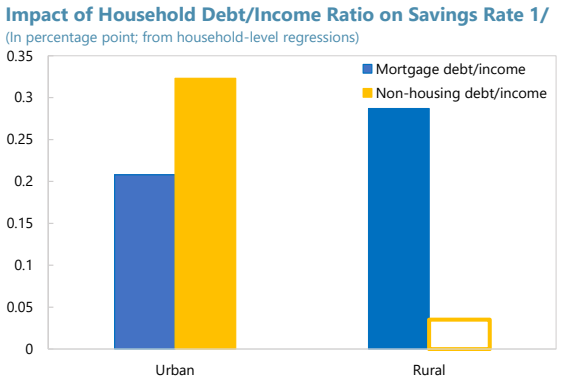
12. Household debt could constrain consumption and increase the savings rate. The literature suggests that the short-term and medium-term effects of higher household debt on growth differ (e.g., IMF, 2017; Mian and others, 2017; Lombardi and others, 2017; Jordà and others, 2016). For example, using cross-country panel data, Lombardi and others (2017) find that household debt increases consumption and GDP growth within one year but reduces them in the long run, with

the negative long-run effects intensified when household debt-to-GDP ratio exceeds certain thresholds. The negative impact could come from the high marginal propensity to consume of heavily indebted households who cut spending rapidly following negative macro-financial shocks (Mian and others, 2013). In China's case, however, this effect might be mitigated by the fact that more than half of all household debt is housing-related rather than driven by consumption (PBC, 2019).

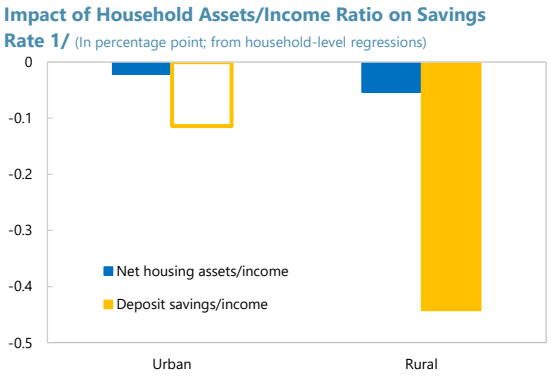
13. China's high and rising household debt may have started to constrain consumption growth. Recent empirical studies for China (e.g., Han and others, 2019; Tian and others, 2018) find that the rapid growth in household debt, particularly since 2015, may have already started to have a negative net impact on consumption growth. Moreover, higher household indebtedness could also reduce the income elasticity of consumption, particularly when facing a negative income shock, likely due to the higher debt service burden (Han and others, 2019).

14. Our empirical analysis confirms that higher household indebtedness is associated with higher savings rates for urban households. We use the longitudinal household survey data from the China Family Panel Studies (CFPS) to analyze the relationship between household indebtedness and urban and rural savings rates.[5] Using fixed-effects panel data regressions, we find that the debt-to-income (DTI) ratio linked to mortgages and non-housing debt, has positive associations with the savings rate, for both urban and rural households (Figure 3, panel 1; see Appendix for data and more detailed empirical analyses). These associations are statistically significant except that between non-housing debt and the rural savings rate, likely because rural households still have limited access to consumption credit and hence less non-housing debt service burdens.

Figure 3. China: Estimated Impact of Household Debt and Assets on Savings Rate



Sources: CEIC; Haver Analytics; and IMF staff calculations.
1/ Solid bars indicate statistical significance at the 10-percent level at least, and hollow bars indicate statistical insignificance at the 10-percent level.



Sources: CEIC; Haver Analytics; and IMF staff calculations.
1/ Solid bars indicate statistical significance at the 10-percent level at least, and hollow bars indicate statistical insignificance at the 10-percent level.

[5] The CFPS provides detailed income, expenditure, debt, and asset information every two years between 2010 and 2018. We exclude 2010, due to the much smaller sample size.

Housing Ownership

15. Housing ownership could affect household savings behavior through various channels. These include the down payment effect, mortgage effect, and wealth effect (Zhang and others, 2018). The down payment channel implies that a tenant would save more if he or she decides to buy a house, and rising housing prices would make that incentive even stronger. The mortgage channel suggests that homeowners would need to save more to pay mortgages, and has been analyzed above in the estimated debt impact. Both the down payment and mortgage effects imply higher savings when house prices rise. The wealth effect implies the opposite: homeowners would increase consumption and reduce savings as they would feel wealthier with rising house prices. The overall impact of housing ownership on savings depends on the relative strength of these offsetting channels. Similarly, non-housing assets, such as equities or other risky financial assets, could also have both a debt effect (discussed above) if funded by borrowing and a wealth effect on household consumption and savings rate.

16. Our analysis suggests that housing ownership has a significant positive association with urban households' savings rate. Similar to the breakdown of household debt into mortgages and non-housing debt, we include both net housing assets (by subtracting mortgages from gross housing assets) and the non-housing savings stock (as a proxy for non-housing assets) in the panel regressions. Estimation results suggest (Figure 3, panel 2):

- *Net housing assets have a significant negative association with the savings rate for both urban and rural households*, suggesting a significant wealth effect through housing ownership. However, the magnitude of the wealth effect is much smaller than that of the debt effect for both urban and rural households, suggesting a more dominant mortgage effect on the savings rate than the wealth effect.

- *Non-housing assets* have a significant wealth effect for rural households only. Combined with the significant impact of non-housing debt on the savings rate, this suggests that the non-housing wealth effect (which reduces the savings rate) dominates the non-housing debt effect (which increases the savings rate) for urban households, likely reflecting their easier access to credit and higher non-housing debt service burdens. While for rural households who have less access to non-housing credit, the non-housing wealth effect is more prominent.

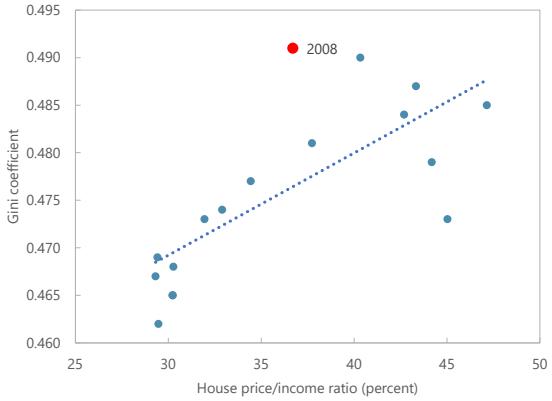
Income Inequality

17. Income inequality translates into savings inequality. The prefecture-level data suggest that the household savings rate tends to be increasing with income levels as shown in Figure 1, reflecting the different propensities to consume out of income. Chinese household savings rates are higher than most countries at every income decile, but the difference is particularly large for the poor: the savings rate for the bottom 15 percentiles of Chinese urban households was about 11 percent in 2012 according to estimates based on data from the Chinese National Bureau of Statistics, while the savings rates for the bottom 10–20 percentiles are negative in many other countries due to the substantial social transfers to support the basic consumption (Zhang and

others, 2018). Similarly, Jin and others (2011) find that income inequality significantly reduces households'—particularly low-income households'— consumption expenditures on non-education items, likely due to the savings motives to improve their social status.

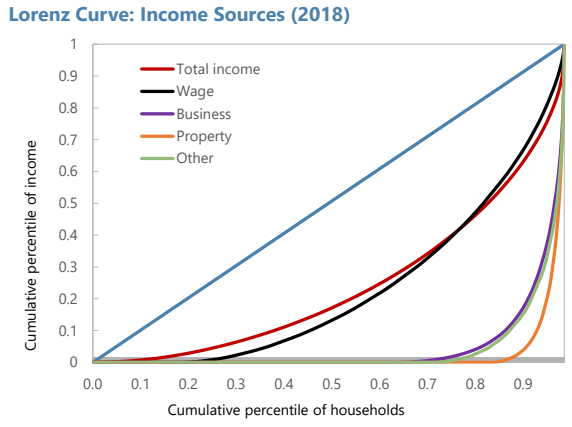
18. Income inequality has multiple dimensions. In addition to the inequalities within urban households and between urban and rural households, we also use the CFPS survey data to break down the total income into different sources of income—including, wage income, housing-related income, business-related income, and other income. Higher inequality in non-wage income sources, particularly housing-related income, contributed to the overall income inequality (Figure 4, panel 1). In terms of wages, there is significant variation in the within-province wage inequalities, as shown by the wide distribution of the Lorenz curve across provinces relative to the national average (Figure 4, panel 2).

19. Income inequality appears positively associated with house price misalignment. The national Gini coefficient, only available until 2019 before the pandemic, shows a positive relationship with house price misalignment (text chart). This is in line with the finding that there is a significant positive association between housing prices and the Gini coefficient of the income of urban households as higher-income households benefit more from house price growth through housing-related income (e.g., Zhang and Zhang, 2015).

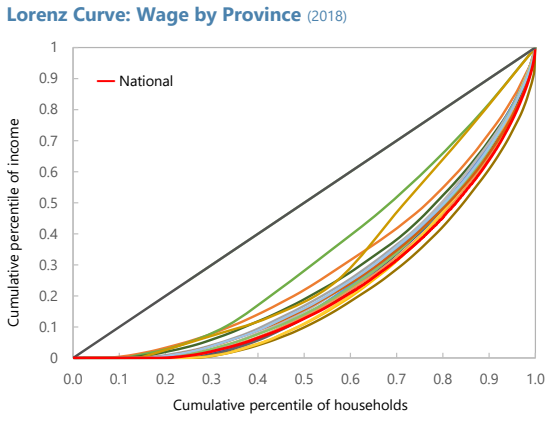


Sources: CEIC; and IMF staff calculations.

Figure 4. China: Income Inequality by Source and Region



Sources: CFPS; and IMF staff calculations.



Sources: National Bureau of Statistics;, and IMF staff calculations.

Sources: CFPS Household Survey data; and IMF staff calculations.

C. Policy Implications

20. The empirical relationships discussed above suggest that measures to strengthen the social protection system and reducing income inequality would help reduce China's elevated household savings rate. Specifically:

- **Increasing government spending on social security and health.** Higher social security and health spending is associated with higher household consumption and lower precautionary savings, especially if targeted on health spending in rural areas and on social security spending in urban areas. Unemployment and social assistance reform could boost household economic security through, for example, better coordination between central and local governments, promotion of transfers of insurance and benefits between urban and rural areas, and a more generous minimum income guarantee program and non-contributory basic pension for rural and non-salaried urban residents (SIP 1). In addition, continued *Hukou* reform can help ensure that migrant workers have the same access to the social safety net as urban workers (Lam and Wingender, 2015). While spending on education does not appear to have a direct impact on household savings, it would help reduce income inequality in the future by providing equal education access to the poor (Zhang and others, 2018).

- **Further improving the macroprudential policy framework and toolkit to contain household debt and reduce house price misalignment.** The larger mortgage effect of housing ownership on the savings rate than the wealth effect suggests that macroprudential policies targeted at reducing housing-related debt can help lower the savings rate in addition to the house price misalignment. International experience suggests that demand-side macroprudential measures such as limits on debt-service-to-income ratios and loan-to-value ratios are also effective in mitigating the negative effects of household debt, including mortgages, on consumption and GDP growth, and could enhance policy effectiveness (Han and others, 2019). In particular, the limits on debt-service-to-income ratio could be lowered and extended to fully cover household loans from non-bank financial institutions. Reducing the house price misalignment could help improve income inequality given that higher-income households typically benefit more from house price growth.

- **Increasing social transfers to poor households and further improving the efficiency of social transfers through improved risk-sharing mechanism**. Further increasing social assistance spending in China, would also help reduce income inequality and low-income households' savings rates, contributing to the reduction of the national savings rate. In addition, further increasing the efficiency of the central government transfer system by introducing an automatic and non-regressive fiscal risk sharing mechanism could help achieve higher fiscal risk-sharing and similar redistribution effects at lower costs, helping free up extra resources for social transfers to the poor (IMF, 2021).

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Appendix I. Data and Empirical Analyses

Data

The prefecture-level data are obtained from the revamped household survey for 296 prefecture-level municipalities during 2015-19 published by the NBS. Key variables include urban and rural disposable income, house price, government spending in social security and employment, government spending in health, and government spending in education. Missing data are common so the total number of observations for each year is usually below the total number of prefectures.

The household-level data are used to study the role of households' indebtedness and wealth in determining the household savings rate. In particular, we use fixed effects panel regressions with the household-level survey data from four waves of the China Family Panel Studies (every two years from 2012 to 2018 CFPS) conducted by Peking University. The CFPS data are collected through questionnaires. The survey contains detailed information on household income structure, expenditures breakdown, indebtedness, and assets.

Empirical Strategy

Prefecture-Level Analysis

Following Zhang *and others* (2018), we use the prefecture-level annual data to estimate the impact of government spending on social security (including employment), health, and education on household consumption expenditure. In particular, we use cross-section regressions and estimate the following consumption equation (based on the life cycle hypothesis approach) year by year for 2015-19 and for urban and rural households separately:

$$\log(consumption_i) = \beta_0 + \beta_1 \log(disposable\ income_i) + \beta_2 \log(spending_i^{ss}) + \beta_3 \log\left(spending_i^{health}\right) + \beta_4 \log\left(spending_i^{education}\right) + \beta_5 HPI_i + \epsilon_i$$

where i denotes prefecture; $spending_i^{ss}$, $spending_i^{health}$, and $spending_i^{education}$ represent the government spending in social security, health, and education in prefecture i, respectively. HPI_i is the house price-to-disposable income ratio, which is a proxy for household wealth following Zhang *and others* (2018).

Household-Level Analysis

For this exercise, households with zero or negative reported income or expenditures are dropped from the sample. For the estimated households' savings rate, only samples with values between -100 percent and 100 percent are kept. The household savings rate is defined as the residual of disposable income less consumption as a share of disposable income.

The model specification is as follows:

$$savings\ rate_{j,t} = \beta_j + \alpha_0 \log\left(disposable\ income_{j,t}\right) + \alpha_1 DTI_{j,t-1}^{mortgage} + \alpha_2 DTI_{j,t-1}^{non-housing} + \alpha_3 ATI_{j,t}^{housing} + \alpha_4 ATI_{j,t}^{saving} + \epsilon_{j,t}$$

In the panel regression, savings rate for household (j) is regressed against the disposable income, lagged mortgage to income ratio ($DTI_{j,t-1}^{mortgage}$), lagged non-housing debt to income ratio ($DTI_{j,t-1}^{non-housing}$), the net housing asset to income ratio ($ATI_{j,t}^{housing}$), and the saving to income ratio ($ATI_{j,t}^{saving}$), for urban and rural households respectively.

Empirical Results

Table 1. Prefecture-Level Regressions: Urban Households

	Dependent variable: Log(Consumption)				
	2015	2016	2017	2018	2019
Disposable income	0.858***	0.875***	0.874***	0.860***	0.852***
	(0.038)	(0.043)	(0.044)	(0.039)	(0.038)
Social security spending	0.055***	0.072*	0.060***	0.066***	0.051***
	(0.016)	(0.017)	(0.018)	(0.016)	(0.017)
Health spending	-0.020	-0.037	-0.015	-0.017	0.007
	(0.039)	(0.045)	(0.054)	(0.041)	(0.039)
Education spending	0.061	0.004	-0.021	-0.028	-0.031
	(0.035)	(0.042)	(0.051)	(0.041)	(0.039)
House price to income ratio	0.034***	0.033***	0.032***	0.026***	0.029***
	(0.009)	(0.007)	(0.008)	(0.006)	(0.007)
Constant	0.962**	0.805*	0.816*	0.972**	1.063***
	(0.377)	(0.428)	(0.434)	(0.395)	(0.382)
Observations	223	219	225	211	185
R^2	0.845	0.827	0.819	0.851	0.864

Note: *p<0.1; **p<0.05; ***p<0.01

Sources: CEIC; Haver Analytics; and IMF staff calculations.

Table 2. Prefecture-Level Regressions: Rural Households

	Dependent variable: Log(Consumption)				
	2015	2016	2017	2018	2019
Disposable income	0.790***	0.801***	0.793***	0.793***	0.749***
	(0.030)	(0.030)	(0.029)	(0.036)	(0.034)
Social security spending	0.123***	0.092***	0.080***	0.044	-0.008
	(0.030)	(0.028)	(0.031)	(0.028)	(0.031)
Health spending	-0.048	-0.003	0.023	0.109*	0.177***
	(0.072)	(0.068)	(0.073)	(0.059)	(0.047)
Education spending	0.077	0.067	0.046	-0.045	-0.053
	(0.053)	(0.057)	(0.056)	(0.045)	(0.042)
House price to income ratio	0.012	0.005	0.005	0.010*	0.008
	(0.008)	(0.007)	(0.007)	(0.006)	(0.006)
Constant	1.619***	1.569***	1.660***	1.697***	2.183***
	(0.276)	(0.275)	(0.272)	(0.337)	(0.323)
Observations	202	198	207	191	172
R^2	0.835	0.831	0.832	0.830	0.836

Note: *p<0.1; **p<0.05; ***p<0.01

Sources: CEIC; Haver Analytics; and IMF staff calculations.

Table 3. CFPS Household-Level Regressions

	Dependent variable: Savings rate	
	urban	rural
	(1)	(2)
total income	18.889***	21.824***
	(0.576)	(0.532)
mortgage debt to income ratio	0.208*	0.287*
	(0.119)	(0.170)
non housing debt to income ratio	0.323**	0.035
	(0.137)	(0.084)
net housing asset to income ratio	-0.022**	-0.054***
	(0.011)	(0.012)
saving to income ratio	-0.114	-0.443***
	(0.084)	(0.153)
Observations	18,469	17,960
R^2	0.118	0.171
F Statistic	253.853*** (df = 5; 9528)	393.048*** (df = 5; 9531)

Note: *p<0.1; **p<0.05; ***p<0.01

Sources: CFPS 2012-2018; and IMF staff calculations.

LOCAL GOVERNMENT FINANCING VEHICLES REVISITED[1]

Local government financing vehicles (LGFVs) in China are widely recognized for their important role in funding public infrastructure. Financial statement data however show that their activities are considerably more expansive, including varied forms of financial support for local governments, firms, and the property market, much of which is not captured in earnings statements. These activities have not only increased these vehicles' size and interconnectedness, adding to their already considerable financial risk profile, they also appear to have broader ramifications for economic efficiency. More than half of LGFV borrowing is used for purposes other than capital expenditure, and firms with investment linkages to LGFVs tend to have lower capital productivity than other firms. Finally, the risk that LGFVs trigger broader macrofinancial instability is rising, as growing investor concerns about state support for LGFV debt could create negative feedback loops between LGFVs, firms, banks, and local governments. These findings underscore that the solution to China's LGFV problems will require a comprehensive restructuring agenda and institutional fiscal reforms.

A. Introduction

1. Local government financing vehicles (LGFVs) play an important role in China's economy. Local governments for decades have relied on these special-purpose state-owned enterprises to finance public infrastructure and provide countercyclical investment during economic downturns. The widespread use of LGFVs stems in large part from fiscal reforms in 1994 that decreased local governments' share of tax revenues, as well as prohibitions on their direct borrowing that were lifted only in 2015. As a result, local authorities have long been incentivized to use these vehicles to raise capital markets funding for public investments needed to meet government growth targets.[2]

2. The scope of LGFVs and their debt is not precisely known. Official government data on the size of LGFV activities and debt is lacking, in part reflecting the absence of a formal legal distinction between these vehicles and other state-owned enterprises. As IMF staff assess that LGFVs are part of the general government, the IMF has historically used a top-down approach to estimate China's LGFV debt based on the results of the National Audit Office (NAO)'s 2013 audit of LGFV debt. Beginning in 2020, the IMF switched to a bottom-up approach based on the firm-level financial statements of bond issuers classified as LGFVs by the bond market regulatory agency NAFMII, in line with observed market practice. By this measure, LGFV debt reached 39 percent of GDP in 2020, up from 34 percent in 2018.

3. Central government authorities have recently renewed efforts to contain growth in LGFV debt. Since 2010, authorities have used a mix of fiscal and regulatory policies to contain LGFV

[1] Prepared by Henry Hoyle (MCM) and Phakawa Jeasakul (MCM).

[2] For more on the history of LGFVs, see Zhang and Barnett (2014) and Lam, Wei, and van Eden (2016). LGFV activity comes despite legal reforms and regulations passed in 2014 that prohibit local governments from borrowing through LGFVs or assuming liability for the repayment of LGFV debts.

expansion. The 2013 audit was followed by legal amendments that prohibited local governments from borrowing via LGFVs and a plan to refinance NAO-identified public liabilities into sub-sovereign bonds issued directly by provincial governments. Despite shifting some 14 trillion RMB in LGFV debt to the official public balance sheet as part of a debt-swap program, LGFV borrowing continued to grow, prompting renewed efforts to limit the use of LGFV borrowing. In 2018, authorities forbade local governments guarantees for LGFV debts and introduced new measures to make local government officials responsible for debt accumulation on their watch. In early 2021, authorities tightened channels for new LGFV borrowing for the most indebted local governments (except refinancing of existing debt) through a variety of administrative and prudential measures, including tighter controls on working capital loans.

4. A closer look at the risks and costs associated with LGFVs underscores the urgency—and difficulty—of dealing with them. This paper begins by exploring LGFVs' varied functions based on stylized facts from firm-level financial data for over 2200 LGFVs and evidence of linkages with local governments and firms. The subsequent section provides some initial evidence outlining the broader macroeconomic costs of these vehicles' different activities, including their potential impact on productivity and credit efficiency. The last section highlights how these entities' elevated financial vulnerabilities could become destabilizing, especially as other forms of indebtedness rise, underscoring the need for a comprehensive restructuring and reform plan.

5. This analysis makes use of a large database of firm-level financial statements and investment linkages. Data for LGFVs and other firms used in this report is based on a sample of over 14,000 Chinese nonfinancial firms with financial statements available from S&P Capital IQ, including 2200 identified as non-LGFV SOEs, 8300 privately-owned entities (POEs), and roughly 1500 firms with other ownership designations. This database also incorporates information from Capital IQ's trove of data on investment transactions and relationships between firms. While this data does not have consistent information about the size, date or other characteristics of investment relationships, it allows for the observation of investment linkages both between firms within the database and with other firms identified in Capital IQ's database.[3, 4]

B. LGFVs: Large, Interconnected and Risky

6. LGFV balance sheets are large relative to China's economy and growing rapidly. Financial statements of about 2200 LGFVs show that their total assets reached 120 percent of GDP in

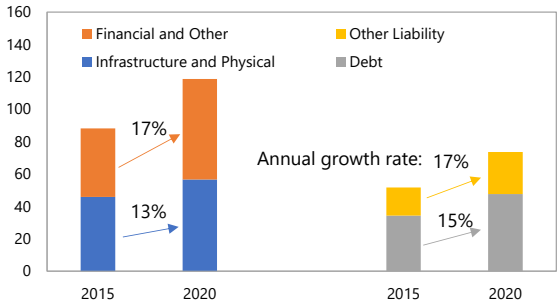
[3] Ownership status and other key information was constructed by integrating data from WIND and Bloomberg LP. For some analytical purposes, firms identified as consolidated subsidiaries of other firms within the sample are removed to avoid double-counting.

[4] Since many LGFVs and other firms do not have publicly available financial statements, and not all investment relationships are captured in the Capital IQ database, the coverage of firms and investment relationships is necessarily incomplete. The 2200 LGFVs in the database likely excludes some 7000 that may have not issued bonds—typically much smaller LGFVs—as well as firms that are similar to LGFVs in both their function and financial profile but lack the LGFV designation, like local government "asset operations firms." This sample nevertheless generates total LGFV debt figures that closely approximate figures produced by Chinese and foreign analysts and think tanks.

2020, after five years of 15 percent annual growth. Total liabilities reached about 75 percent of GDP, after growing 16 percent, with interest-bearing debt about two-thirds of that (Figure).

7. Much of this growth appears driven by activities other than public infrastructure investment. While LGFVs are associated primarily with infrastructure, firm-level financial data show these vehicles also allocate financial resources to implement a range of policy goals, including supporting local firms and real estate markets. Infrastructure and other physical assets like inventories account for 48 percent of LGFV assets, down from 52 percent in 2015. Financial assets, encompassing accounts receivable and investments in securities, cash, loans, company equity and other unspecified tangible assets, are the fastest growing portion of LGFV balance sheets, accounting for 48 percent of total LGFV assets, up from 42 percent in 2015. Intangible assets account for the remaining 4 percent of assets.

LGFVs: Assets and Liabilities, by Selected Components
(In percent of GDP)



Sources: Capital IQ; and IMF Staff Calculations
Note: Physical assets includes plants, property, equipment, and inventories. Growth numbers shown are compound annual growth rates.

8. Some of this rapid growth in financial assets likely represents LGFV support for local governments in the form of trade credit. LGFVs are in most cases majority-owned by local governments, and income for infrastructure investment projects is the primary source of LGFV revenues. A large portion of this income is however not paid in cash but in the form of credit, which is not reflected in earnings statements. Receivables, standing at least at 18 percent of GDP and the fastest growing portion of LGFV balance sheets, largely reflect arrears from local governments for investment projects.[5]

9. LGFVs' traditional infrastructure activities also channel significant financial resources to land and real estate markets. LGFV assets reported as inventories are equivalent to 30 percent of GDP, or over a quarter of LGFV balance sheets, and largely comprise land and real estate assets. These vehicles' accumulation of inventory in excess of realized sales indicates that they provide considerable support for these markets in terms of net demand. This underscores their importance in supporting local government fiscal revenue, which is dependent on land sales. Expenditures on inventory in excess of realized sales are not reflected in earnings statements, contributing to a persistent gap between LGFVs' recognized profits and actual cash flows.

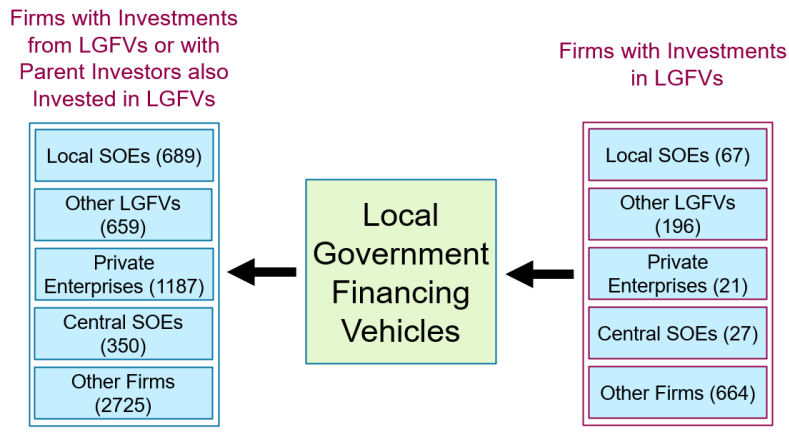
10. LGFVs invest in other nonfinancial firms, creating extensive interlinkages with the corporate sector. LGFVs' estimated equity and debt exposures to other enterprises (excluding deposits and cash-like securities) are equivalent to at least 12 percent of GDP and likely higher, given that some portion of accounts receivable (18 percent of GDP) and unspecified tangible assets (17 percent of GDP) may be claims on firms. Investment linkage data from Capital IQ shows that

[5] For more information on Chinese credit rating agencies findings on LGFVs, see Pengyuan Ratings primer on LGFV financial statements (Pengyuan Ratings 2020)

LGFVs have direct or indirect investments in almost 3400 firms, and are linked via a common parent investor with another 1600 firms.[6] Collectively these roughly 5000 firms include over 1000 private firms, 58 banks, 112 securities companies, insurers, and trust companies, and at least 660 other LGFVs (Figure). Out of these 5000 firms with LGFV investment linkages, 2585 are nonfinancial, non-LGFV firms captured in the 14,000-firm database, and collectively account for a large share of both firms and assets represented in that database. LGFV-linked SOEs (both local and central government-owned) account for 48 percent of all SOEs within the database and 62 percent of their SOE assets. LGFV-linked POEs account for about 14 percent of all POEs within the sample and 32 percent of their assets.

11. The nonfinancial corporate sector also has substantial direct exposure to the LGFV sector. Nearly 1000 other firms and funds have direct or indirect claims on LGFVs, likely in the form of equity or equity-like investment, although only 123 are captured in the financial statement database. LGFVs' non-interest bearing liabilities, equivalent to 26 percent of GDP, have also been growing faster than debt or assets. These liabilities appear to be largely accounts payable to other firms, with their rapid growth likely reflecting efforts to divert cash to limit growth in interest-bearing debt.[7]

LGFV Investment Linkages with Other Firms



Source: Capital IQ, WIND, IMF staff calculations.
Note: Investments include direct investments and those separated by an intermediary.

12. These activities generate additional financial vulnerabilities beyond LGFVs' well-known debt risks. The stock of LGFV debt-at-risk, defined as debt not backed by earnings sufficient to cover interest payments, is equivalent to about 37 percent of GDP and is a primary contributor to China's elevated debt vulnerabilities. These vehicles' wide-ranging financial support for local governments, firms, and property markets, as well as their investments holdings in local firms, also creates a significant degree of interconnectedness. This increases the likelihood that financial stress at LGFVs would spread more widely to other firms, asset markets, and the broader economy. LGFVs' continuous deferral of income and large spending on inventories in excess of sales means that their actual cash flows are considerably weaker than their reported incomes, heightening their dependence on new financing. The rapid growth in accounts receivables and inventories relative to

[6] While some of LGFV exposures to other enterprises may be infrastructure-related, the investment linkage data suggest a considerable portion is not. Of the 3400 firms with direct or indirect investments from LGFVs, only 26 percent are in the infrastructure-linked transportation, capital goods, or utilities sectors.

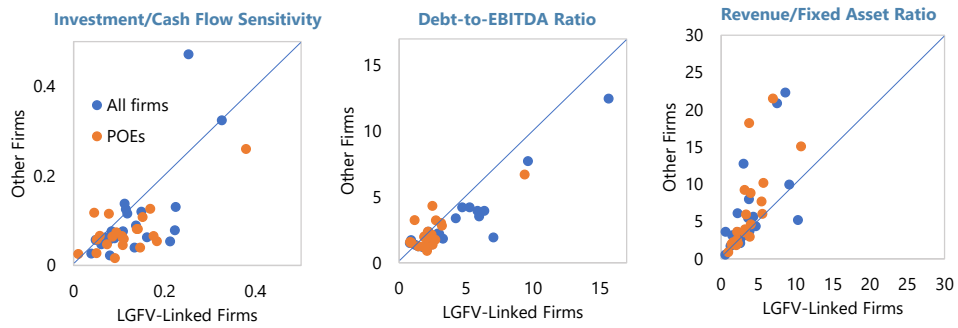
[7] Rating agencies also note that LGFVs are active providers of credit guarantees to local firms, often private firms, creating additional contingent liabilities likely amounting to trillions of RMB.

realized income also suggests some assets are subject to valuation risks. This means LGFVs' relatively comfortable reported equity buffers, equivalent to 38 percent of assets or 45 percent of GDP, may also be overstated.

C. LGFVs' Implications for Efficiency

13. LGFV appear to have an important role in facilitating firm-level investment through their various linkages. Compared with other firms in the 14,000-firm database, the 2643 nonfinancial, non-LGFV firms with investment links to LGFVs tend to undertake more investment relative to their income and carry more debt relative to their income (controlling for year and sector effects).[8] These patterns also hold for LGFV-linked private firms (Figure, left and middle panels). This finding suggests that LGFVs may be able to "share" some of their privileged access to credit with their affiliated companies due to perceived backing of shareholders and/or guarantors that enjoy strong implicit guarantees. This leads to a greater propensity of LGFV-affiliated firms to invest on the back of easier access to credit. It may also reflect local governments' efforts to use LGFVs to provide more support to firms that are carrying out industrial policy and employment goals, which tend to have weaker profitability.

Text Figure. Financial Metrics for LGFV-Linked Firms Versus Other Firms



Sources: Capital IQ;, Wind; and IMF Staff Calculations
Note: Each dot represents the median indicator value of an industry sector. Dots below the blue line show indicator values are higher for LGFV-linked firms. Data is for 2020.

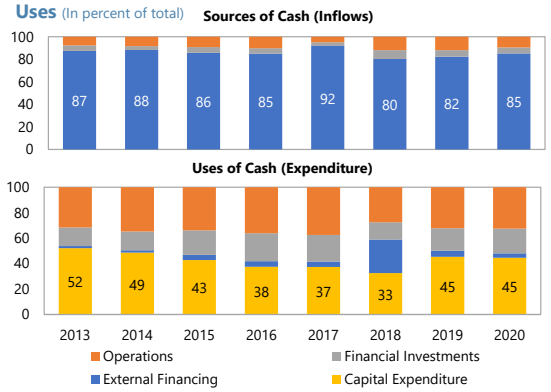
14. Lagging capital productivity at LGFV-linked firms could point to LGFVs' broader ramifications for resource misallocation. LGFV-linked firms tend to have lower capital productivity, as proxied by revenue per unit of fixed assets (controlling for year and sector effects), in comparison to unaffiliated firms (Figure, right panel). A panel regression analysis with sector fixed effects also confirms the association between LGFV-linked firms and lower capital productivity. At the sector level, LGFV-linked firms in the capital goods, materials, semiconductors, and technology

[8] An investment link is defined as an investment between a non-LGFV firm and an LGFV in either direction, either directly or via an intermediary company or investment vehicle. A firm is also counted as LGFV-linked if it has a parent investor also invested in an LGFV. The 2643 firms encompass both the 2585 with investments from LGFVs or a common parent investor with an LGFV and the 123 with investment in LGFVs. The two do not sum because some firms count in both categories.

sectors appear to have lower capital productivity. While these correlations do not establish causality—in principle, LGFVs might be providing capital to already-inefficient firms or their investment backing itself could cause overinvestment—they clearly point to the LGFVs' role in propagating the prevalence of inefficient firms. This role in resource allocation leaves the possibility that LGFVs could be among the possible driver of the broader slowdown in aggregate manufacturing productivity growth documented in Cerdeiro and Ruane (2022).

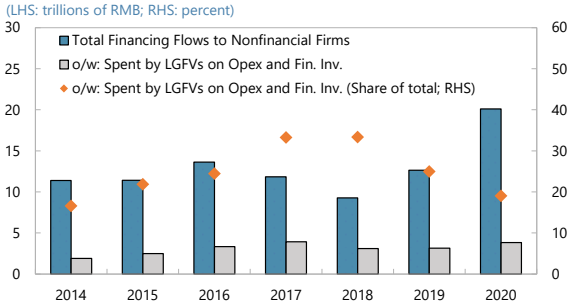
15. Large amounts of LGFV debt are spent on operating expenditures and financial investments. Aggregated cash flow statements of LGFVs show that 80 to 90 percent of their spending is funded by infusions of new external financing each year, primarily in the form of debt, reflecting relatively limited inflows from operations (Figure, upper panel).[9, 10] Of that spending, less than half has been used for capital expenditure in public investments like infrastructure, which can generate broad-based productivity gains. Most of the remaining expenditure is for operating costs, like interest payments, accumulation of inventory like land and real estate, and employee payrolls, and investments in financial assets, like company equity and lending. LGFVs with negative operating cash flows—a segment accounting for about three quarters of LGFV debt—have used at least RMB 10 trillion of net new financing on these forms of spending over the last three years, equivalent to an average of roughly 20 to 30 percent of the new flow of total social financing for nonfinancial firms (Figure, lower panel).

LGFVs: Aggregated Cash Flows by Selected Sources and Uses (In percent of total)



Sources: Capital IQ; Wind; Bloomberg; CEIC; and IMF staff Calculations.

Chinese Nonfinancial Firms: Increase in External Financing in TSF and Selected Externally Financed Expenditures of LGFVs
(LHS: trillions of RMB; RHS: percent)



Sources: Capital IQ, Wind, Bloomberg, CEIC, and IMF Staff Calculations.
Notes: Opex = Operational Expenditure. Fin. Inv. = Financial Investments. Grey bar shows gross cash outflows from opereations and investment (excluding capital expenditure) for LGFVs with negative operating cash flows.

16. This points to broader inefficiencies in the use of credit and local government spending. External financing of operating costs like payrolls and land purchases generates new interest-bearing debt for LGFVs in exchange for spending without long-term benefits for growth or productivity, and ideally should be covered by recurring taxes or operating revenues. The lack of operating cash flow coverage of interest costs

[9] LGFVs report a significant portion of their interest expense as cash flows from financing. In line with rating agencies' practice, this analysis shifts these back from financing cash flows to operating cash flows to reflect their relevance for debt-servicing capacity. As virtually all cash balances are generated from external financing flows, this analysis also excludes cash balances as a source and use of cash for presentational simplicity.

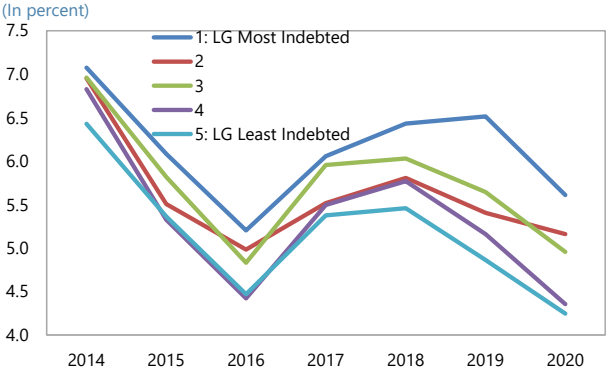
[10] In an anomaly, LGFVs collectively report cash sourced from new equity investments that is several orders of magnitude larger than PBC's measure of new equity financing. This may be because a large portion be equity transactions that are debt-like in nature, e.g. perpetual bonds.

compounds entity-level LGFV debt, magnifying potential contingent sovereign liabilities. Debt-financed public investment in local firms also heightens financial risks for government balance sheets with uncertain long-term economic benefits, especially given the demonstrated low capital productivity of LGFV-affiliated firms. Finally, LGFVs' debt-financed outlays on operational expenditure and financial investments are also large relative to other important fiscal priorities, for example in 2019 amounting to nearly 50 percent of local government spending on education and social safety nets. Increases in these social spending items have relatively large returns for human capital, particularly when such spending is relatively low, pointing to large economic gains from institutional reforms that shift spending to these areas.

D. Rising Risks to Macrofinancial Stability

17. Policy uncertainty around the degree of state support for some LGFVs is rising, affecting their access to debt markets. Given their limited income, LGFVs rely on the perceived financial support of parent local governments to obtain credit. This support however is seen as increasingly uncertain for some LGFVs. In provinces where official local government debt has risen rapidly relative to both provincial GDP and local government revenues, investors have become concerned about the government's capacity or willingness to backstop weak firms, reflected in widening credit spreads for local LGFVs (Figure). More recently, central authorities have also taken steps to limit new borrowing at certain heavily indebted LGFVs, and pushed provincial governments to address excess indebtedness through cost-cutting, asset sales, or other uses of local public sector resources.

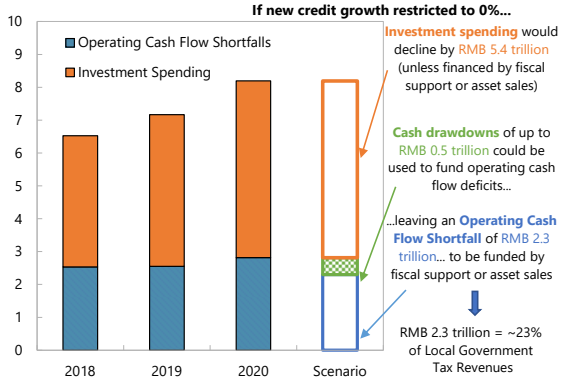
Chinese Local Government Financing Vehicles: Bond Market Funding Cost by Provincial Local Government Debt Burden
(In percent)



Sources: Bloomberg; CEIC; and IMF Staff Calculations
Note: Data shown is the annual weighted average coupon on bonds issued by Local Government Financing Vehicles in provinces.

18. The prospect of weakening access to credit for LGFVs raises the risk of macrofinancial instability. LGFVs intrinsically have weak cash flows and thus need to rely on external financing to fund investment activities and operating cash flow deficits. As discussed in GFSR October 2021, should LGFVs' access to credit becomes significantly constrained, LGFVs could face an operating cash flow shortfall of 23 trillion RMB unless they sell assets and/or receive fiscal support (Figure). As these LGFVs' ability to raise new debt becomes limited, macrofinancial stability could be affected through several transmission channels:

Uses of LGFV Cash Flows from Financing and Estimated Impact of Credit Growth Restrictions (In trillions, RMB)



Sources: Capital IQ; Wind; Bloomberg; CEIC; and IMF staff calculations.

- **LGFVs' weakening role as local investor and guarantor.** As credit conditions for LGFVs become tighter, their capacity to undertake new infrastructure projects and/or facilitate investment carried out by other local firms would become more limited. Given their role as an investor and guarantor for local firms, LGFVs' market access troubles may have consequences for the availability of credit for other firms, especially LGFV-affiliated firms. As a result, in provinces where LGFV credit pricing has become more unfavorable, growth in LGFV debt has slowed, as has growth in total private debt (potential chart).

- **Credit losses and spillovers through banks.** As the largest creditor to LGFVs, banks would see a large increase in nonperforming exposures from even a small amount of LGFV defaults. As discussed in GFSR October 2021, many LGFVs lack the ability to generate sufficient earnings to cover interest expense for three consecutive years, with such risky debt amounting to about 20.1 trillion RMB as of 2020, or 44 percent of total LGFV debt (in the sample). Even a small LGFV default rate of 5 percent would be equivalent to a roughly 75 percent increase in banking system NPLs. The impact would likely be concentrated on smaller local banks, which have weaker buffers and are believed to be most exposed to LGFVs with limited state support. These banks may face tighter funding market and capital-raising conditions, constraining their ability to provide credit to local firms.

- **Regional risk re-pricing.** Following SOE defaults in late 2020, corporate credit conditions have tightened on some borrowers, with the tightening more pronounced for firms located in provinces with relatively weak public finances and/or with recent local SOE defaults. Hence, further repayment difficulty of local SOEs and LGFVs could prompt investors to re-evaluate local government's willingness and capacity to support local firms, potentially leading to significant restrictions in access to credit for firms in the region, especially those with weak balance sheets.

- **Fiscal and macroeconomic feedback loops.** If LGFVs face significant constraints on obtaining new financing, they would be forced to scale back investment, thus hurting economic growth. A drop in fiscal revenues resulting from a potential economic slowdown and any support provided to LGFVs to help finance operating cash flow deficits would put further strain on local governments' fiscal resources. This would in turn reduce their capacity to backstop local firms, further tightening credit conditions and setting off a negative local feedback loop. More broadly, local governments are exposed to contingent liabilities associated with financially weak LGFVs. As presented in GFSR October 2021, many provinces could see a sharp increase in their public debt should such contingent liabilities materialize, which would in turn put significant stress on such local governments' finances.

19. These spillovers raise the risks of adverse macrofinancial feedback loops. The intertwining of the financial health of local governments, firms, and banks via LGFVs means that tightening in financial conditions, worsening local government debt dynamics, and drags on economic activity can become self-reinforcing even without defaults. This sets up the potential for destabilizing feedback loops.

E. Conclusions

20. Efforts to address the problem of LGFVs must go beyond restrictions on their growth and access to finance. Policies that focus primarily on limiting further debt growth may not be credible or sustainable, given the potential for macrofinancial instability. Given LGFVs' elevated debt, interconnectedness with local firms and governments, and lack of cash flows, restrictions on new financing may create negative macrofinancial and fiscal feedback loops that create regional systemic stability risks.

21. These findings underscore the urgency of a comprehensive restructuring agenda and institutional fiscal reforms. To safeguard financial stability, authorities should accelerate the restructuring of financially non-viable LGFVs using the improved legal frameworks outlined below in addition to continued efforts to contain leverage. This should be complemented with the following actions[11]:

- *Phasing out implicit guarantees.* The phasing-out of implicit guarantees is key to reduce excessive debt accumulation by LGFVs. However, this must be handled carefully with coordinated efforts to avoid unintended adverse macro-financial feedback loops between corporates, banks, and local governments especially in regions with weak public finances.[12]

- *Strengthening the corporate restructuring and insolvency frameworks.* An effective, market-based framework can help facilitate the orderly deleveraging, restructuring, and exit of non-viable LGFVs. The framework should incorporate all restructuring and insolvency options. It should also be conducive to loss recognition and burden sharing through out-of-court, hybrid restructuring and the general corporate insolvency regime. Improving the existing insolvency procedures and their coordination with other restructuring options would help reduce excessive indebtedness in an orderly fashion. The capacity of the insolvency system will increase with further support to the specialization of judges and insolvency administrators.

- *Introduction of a comprehensive bank restructuring approach.* Banks will need to significantly strengthen their loss absorption capacity in the form of common equity buffers to cope with potential losses from failing LGFVs. Some weaker banks may need to be resolved and closed, necessitating a legal resolution framework in line with international standards that allows enforcement of the recognition of losses, the sale and/or transfer of assets, the execution of bail-in, and the preservation of critical bank functions. A temporary and fiscally backed centralized resolution fund could be established to complement the deposit insurance scheme once a resolution regime is in place, contingent on mechanisms to recover losses from industry over time.

- *Legal and institutional fiscal reforms to address excessive government debt and strengthen intergovernmental risk sharing.* Intergovernmental reforms should be introduced to reduce local

[11] For detailed policy recommendations, see (Kang and others, 2022))

[12] See IMF, Global Financial Stability Report, October 2021 (forthcoming).

governments' need to borrow over the long term by aligning central government revenue with provincial spending and centralizing some responsibilities in education and healthcare previously shouldered by provincial governments. A sound public debt management legal framework should also be introduced requiring strong financial oversight by the central government over local government debt via administrative controls for local borrowing. This should be complemented by improved reporting systems to provide timely and reliable data on local government debt and extra-budgetary activities. More robust accountability mechanisms, especially audits and proportional sanctions for non-compliance, would also be helpful. Furthermore, enhancing fiscal risk sharing between financially weaker and stronger provinces (for example, through conditional central government transfers) could help address unsustainable public finances of the former and mitigate potential macrofinancial feedback loops in provinces with relatively weak public finances (Han, 2021).

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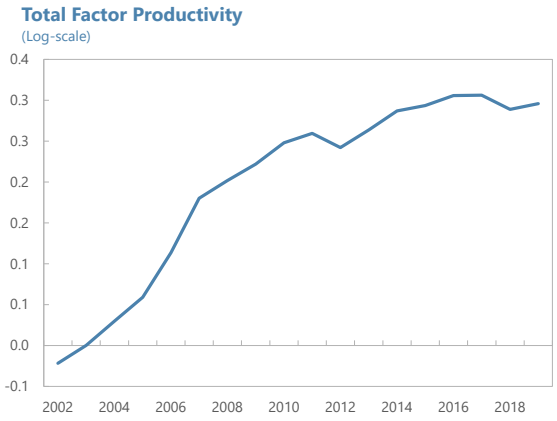
CHINA'S DECLINING BUSINESS DYNAMISM[1]

After impressive growth in the 2000s, China's productivity has more recently stagnated. We use firm-level data to analyze productivity and firm dynamism trends from 2003 to 2018. We construct a bottom-up estimate of manufacturing productivity from our data and confirm the productivity growth slowdown. We then document five facts coming out of the microdata that show a decline in China's business dynamism. We show that the share of young firms in the economy has declined, that life-cycle growth of young firms has become weaker relative to older incumbents, that younger and smaller firms are more capital constrained than their older and larger counterparts, that the economy's ability to allocate capital has worsened over time, and that there are large and persistent productivity gaps between SOEs and private firms. In the cross-section of provinces, we find that where SOEs account for a larger share of assets, business dynamism tends to be weaker. The findings underscore the need for China to undertake pro-market reforms to boost productivity growth. In particular, SOE reform could boost productivity growth both directly through resource reallocation and indirectly by stimulating business dynamism.

A. Overview of Trends in Productivity Growth and SOE Intensity.

1. After impressive growth in the 2000s, largely driven by the rapid growth of young private firms, China's productivity has more recently stagnated. While this slowdown in aggregate total factor productivity (TFP) has also occurred in other countries, that China's productivity deceleration in the post-GFC period has been particularly dramatic, with TFP rising by around 22 percent between 2003 and 2011 and a mere 5 percent between 2011 and 2019 (see figure). Given looming demographic headwinds and diminishing returns to state-led investment, China's medium and long-term growth prospects are set to become increasingly dependent on its ability to reignite productivity growth. An extensive literature has documented how various large-scale reforms in the early 2000s spurred China's productivity growth, including entry into the WTO and reductions in external trade barriers (Brandt and others, 2017), reductions in internal trade and migration barriers (Tombe and Zhu, 2019), and SOE reform (Brandt, Van Biesebroek and Zhang, 2012). Studies using rich firm-level data have also documented the importance of the private sector (Hsieh and Song, 2015), with the entry and rapid growth of young private firms the primary driver of aggregate productivity growth (Brandt, Van Biesebroek and Zhang, 2012). However, this dynamism may be losing steam, with evidence that firm productivity growth and entry started dramatically slowing down from 2008-2013 (Brandt et al, 2020, Brandt and Lim, 2021).

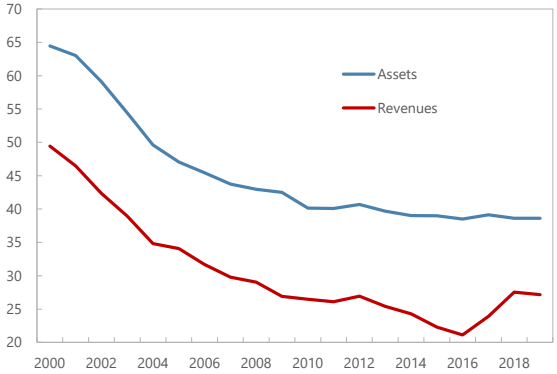


Source: Penn World Tables.

[1] Prepared by Diego Cerdeiro (APD) and Cian Ruane (RES).

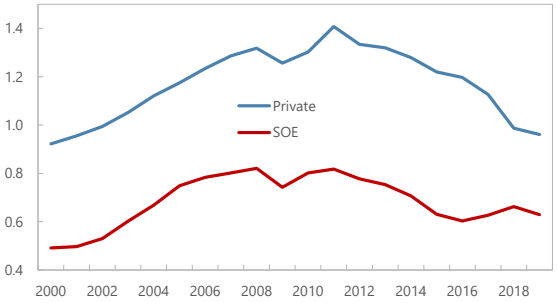
2. Following a large decline in the wake of dramatic reforms in the 2000s, the share of state-owned enterprises (SOEs) in the economy has more recently remained flat. New opportunities for private firm growth in both external and internal markets were created in the 2000s thanks to China's WTO entry as well as domestic product market reforms. This growth of the private sector was in part enabled by large-scale SOE reform (involving the closure, privatization or merger of more than 80 percent of SOEs between 1998 and 2007 (Hsieh and Song, 2015)) which allowed for productivity-enhancing resource reallocation (Hsieh and Klenow, 2009). The left panel figure shows a reduction in the pace at which the state-owned sector has been shrinking, with SOEs still accounting for 27 percent of industry revenues and 39 percent of assets in 2019. Given that SOEs also have lower capital productivity than private firms within the same sector (see right panel figure), this suggests potentially large direct gains from capital reallocation between SOEs and private firms (see Jurzyk and Ruane (2021) for a quantification of these gains among listed firms). However, SOE intensity can also have *indirect* effects on productivity if it reduces private sector dynamism. A large SOE presence could therefore both impede productive capital reallocation between private firms and disincentivize young entrepreneurs from investing in growing their firms and innovating. We explore these issues in this paper using a large new dataset of Chinese firms from 2003 to 2018 (for more details see Cerdeiro and Ruane, 2021).

SOE Share of Manufacturing Assets and Revenues



Sources: CEIC; NBS; and authors' calculations.

Capital Productivity in Manufacturing
(Controlling for industry composition)



Sources: CEIC; NBS; and authors' calculations.
Notes: we control for industry composition of SOEs by aggregating within-industry capital productivity using time-invariant industry-specific weights.

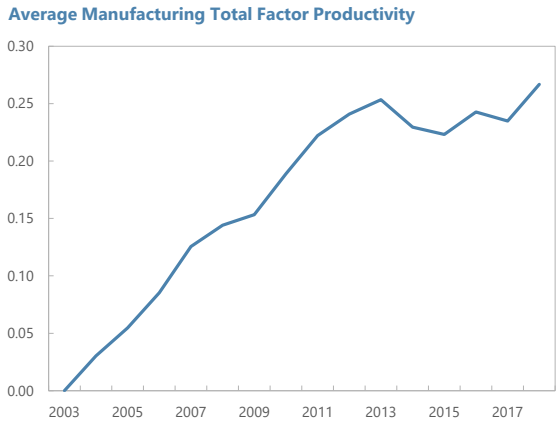
B. Bottom-up Productivity Estimates from Manufacturing Firm-level Data

3. We use firm-level data from Bureau Van Dijk's Orbis database to analyze productivity and firm dynamism trends from 2003 to 2018. There are two main benefits from these data; the coverage of firms and the time horizon. The Orbis database has a broad coverage of manufacturing firms across the size distribution. Because there is a minimum annual revenue threshold up to 2012, we impose a RMB 5mn revenue threshold across our whole sample.[2] The database contains on average 240 thousand firms per year for which we can observe revenues and total assets, with around 2,600 SOEs every year on average in manufacturing and mining sectors, and (for the

[2] The minimum threshold is of RMB 5mn in annual revenues from 2003 to 2010, and RMB 20mn in 2011-2012. These are the same thresholds in the commonly-used Chinese Industrial Survey.

subperiod 2013-2018) 6,400 SOEs every year on average in services sectors.[3] We identify SOEs in our database by combining information from Orbis' own ownership database and linking firm identifiers to Wind ownership data for listed firms.[4] (see Cerdeiro and Ruane (2021) for more details on the data). Most importantly, the Orbis database has information on firms through 2018, allowing us to study firm dynamics in the more-recent past, compared to most other comprehensive studies that rely on samples ending in 2013. While sampling changes lead to changes in coverage over time relative to official values, aggregate manufacturing revenues from our data are 72 percent of official aggregates on average for above-scale manufacturing.

4. Our bottom-up measure of manufacturing TFP indicates a slowdown in productivity growth post-GFC. We construct an aggregate TFP series from our firm-level data as a gross-output weighted average of industry-level TFP, based on an industry production of the type: $Q = A(K^{\alpha}L^{1-\alpha})^{\gamma}X^{1-\gamma}$, where Q is output, K is capital, L is labor, X is intermediate inputs, and A is total factor augmenting productivity. We use revenues as our measure of output, tangible fixed assets as our measure of capital, and use industry shares to identify labor and intermediate inputs from the sum of cost of goods sold plus non-operating costs. We deflate all variables using 2-digit industry deflators for revenues and intermediate inputs. We construct our TFP measures at the same-level as our industry-specific deflators, thereby avoiding the possibility of conflating true productivity growth with changes in markups.[5] Sampling changes post-2013 increase the volatility of TFP series, however it is clear that TFP growth slowed down considerable post-GFC relative to the previous decade. Understanding whether declining firm dynamism is in part responsible for this decline is a critical input for the design of policies to reverse it and achieve sustainably high long-run growth.



Sources: Orbis, and authors' calculations.

C. Five Facts about China's Declining Business Dynamism

5. An extensive literature documents how business dynamism matters for aggregate productivity. Business dynamism reflects the forces that drive growth at the firm-level in an economy, such as entry and exit, resource reallocation among incumbent firms, innovation and

[3] Excluding firms for which either fixed assets or costs need to be imputed from either the firm's previous data or sectoral averages, these numbers are of 2,400 for manufacturing sectors and 2,900 thousand for services sectors. For our firm-level regressions, we exclude all firms for which fixed assets or costs had to be imputed.

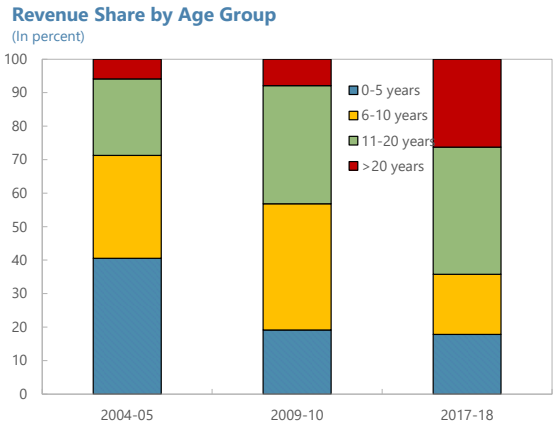
[4] Data for firms in services sectors are available for 2013-2018. In the absence of proper deflators for 2-digit services sectors, the subset of manufacturing-sector results that we extend to below for services firms are those that do not require deflation.

[5] Note that our TFP series is not directly comparable to that from the PWT, both because we focus only on manufacturing, and because our production function is in terms of gross output rather than value-added.

knowledge diffusion. These are important drivers of economic growth. For example, Garcia-Macia, Hsieh and Klenow (2019) find that entry of new firms accounts for around a quarter of U.S. productivity growth between 1983 and 2013. Decker and others (2020) provide evidence that firm responsiveness to shocks has been declining in the U.S. and that this has contributed to slow productivity growth. Akcigit and Ates (2019a, b) highlight that declining U.S. business dynamism reflects lower knowledge diffusion between firms. Akcgit and others examine the role that market power and M&As play in driving business dynamism in a larger set of countries.

6. We document five facts from the data that show a decline in China's business dynamism. We show that the share of young firms in the economy has declined, the life-cycle growth of young firms relative to older incumbents that enter has become more feeble, younger and smaller firms are more capital constrained than their older and larger counterparts, the economy's ability to allocate capital has worsened over time, and there are large and persistent productivity gaps between SOEs and private firms.

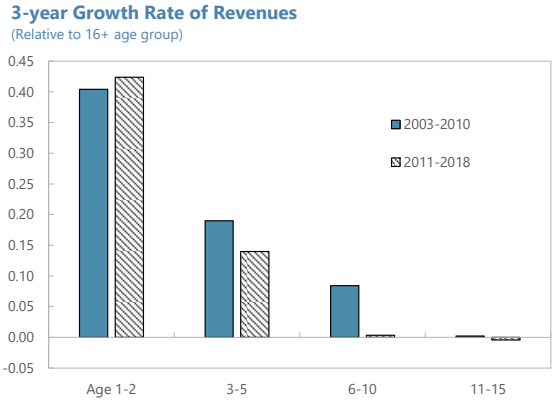
7. <u>Fact 1</u>: The revenue and asset share of young Chinese firms has declined over time. It is well established that entry of young firms is an important contributor to aggregate productivity growth (see e.g. Alon, Berger, Dent and Pugsley, 2018). A critical moment to quantify their importance is their share of outputs and inputs (Garcia-Macia, Hsieh and Klenow, 2019). We show that the revenue share of young firms has declined dramatically over time: the share of firms under 10 years old fell from around 70 percent in 2003-04 to around 30 percent in 2017-18. This low share of young firms in recent years is not driven by sampling, as it is similar when we include firms below the RMB 5mn revenue threshold in 2017/2018, which expands the sample from around 200,000 firms to 700,000 firms. We also find a similarly small revenue share for young firms using Orbis' data on service sector firms, indicating that this is a common pattern across the whole economy. While it is natural that the share of young firms was particularly high in the wake of China's WTO entry and large-scale market reforms in the early 2000s, the dramatic decline since then also suggests that market dynamism may have declined markedly.

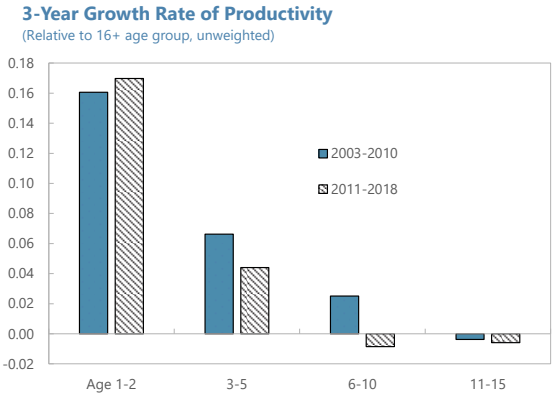


Sources: Orbis; and authors' calculations.

8. <u>Fact 2</u>: Life-cycle growth of young Chinese firms has declined over time. Recent evidence suggests that growth over a typical firm's life-cycle tends to be much higher in the U.S. than in developing economies (Hsieh and Klenow, 2014), with the U.S. in particular exhibiting strong up-or-out dynamics which spur aggregate productivity growth (Haltiwanger, Jarmin and Miranda, 2013; Eslava, Pinzon and Haltiwanger, 2019). Our data allow us to track firms over their life-cycle and evaluate how medium-run growth dynamics have changed over time. We report average 3-year firm revenue growth by age group relative to older firms (16 years +) in the same sector and year, splitting our sample into two periods: 2003-2010 and 2011-2018. As has been previously

documented in the literature, we find that average firm growth decreases with age. However, more strikingly, we find that the growth rate of firms under the age of 10 (relative to older firms) is substantially smaller from 2011-2018 than from 2003-2010.[6] Such flatter life-cycle growth could be due to a) increasing distortions which prevent firms from growing, or b) firms investing less in R&D, process efficiency, quality improvements, or other intangible inputs.[7] We don't find evidence of worsening distortions with age driving this trend, but rather in we show that productivity growth of young firms relative to older firms is much weaker – young firms are investing relatively less in process efficiency and quality improvements than they had in the previous decade. While this might not be a problem if it was compensated by innovation and rapid growth of older firms, this is clearly not the case given the very weak TFP growth from 2011-2018 shown in Figure 3 These findings indicate a concerning decrease in the dynamism of young firms in China, which could be contributing to the aggregate productivity growth slowdown.





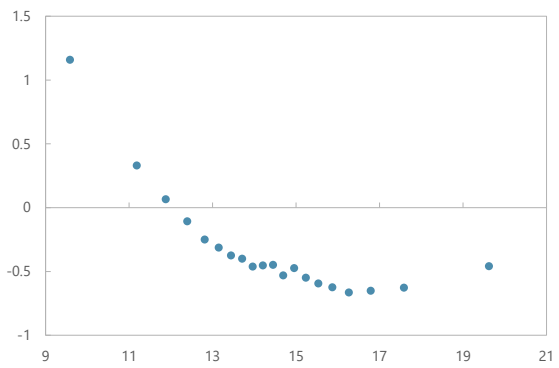
Sources: Orbis; and authors' calculations.

9. <u>Fact 3</u>: Younger and smaller firms appear to be more capital-constrained than larger and older firms. Younger and smaller firms tend to have much higher capital productivity (revenue per unit of capital) than older and larger firms in 2017-18 (see figures).[8] Such differences in capital productivity likely reflect (at least in part) differences in the marginal products of capital across firms, suggesting that there are large potential gains from capital reallocation across firms. Financial frictions are likely to be playing an important role for explaining this pattern, and while the literature has focused on the importance of such friction in the 2000s (see Bai, Lu, Tian, 2018 for a quantitative evaluation of financial frictions for Chinese firms), these patterns suggest that such frictions are an equally important barrier to firm growth today.

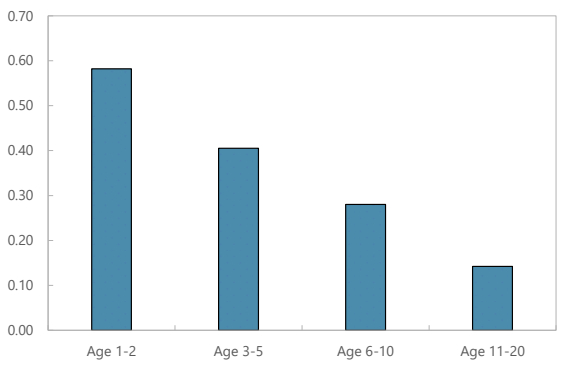
[6] This finding is not driven by any sampling issues, as we get even stronger results when we control for initial firm size (as smaller firms tend to have higher growth rates), and is also robust to excluding SOEs. We also note that controlling for initial firm size also makes the growth rates for startups (firms age 1-2) in 2011-2018 significantly lower than in 2003-2010.

[7] Increasing distortions would show up as higher average revenue products (TFPR), while lower efficiency would show up as lower physical productivity (TFPQ). This widely adopted TFPR vs. TFPQ notation goes back to Foster, Haltiwanger and Syverson (2008).

[8] We focus on capital productivity rather than total factor productivity because revenues and assets are the two variables which are most commonly reported.

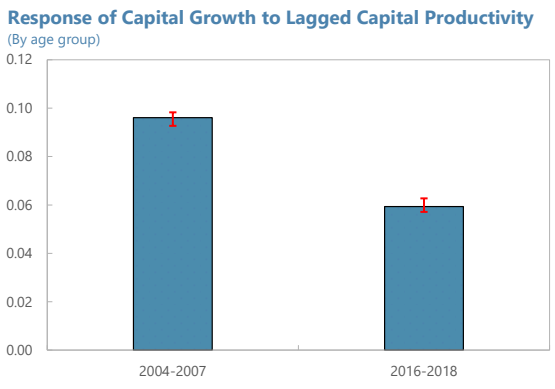


Sources: Orbis; and authors' calculations.

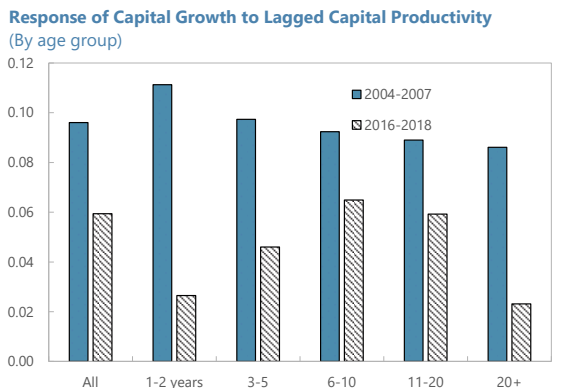


Sources: Orbis, and authors' calculations.

10. <u>Fact 4</u>: The allocation of capital to firms with high marginal products of capital is worsening over time. An important measure of market dynamism is the dispersion of input growth. This captures the speed of reallocation of inputs across firms and tends to be higher when the economy has many high-growth firms (Akcigit and Ates, 2019a,b). We find however that dispersion in total asset growth (which is reported by all firms in our database) has declined over time from 0.126 in 2003-2007 to 0.083 in 2013-2018. More importantly, we evaluate whether capital is moving towards the firms with the highest measured marginal products of capital (as captured by their ratio of revenue to total assets). We report the elasticities of capital growth to the firm's initial capital productivity. A higher elasticity is suggestive evidence of a more efficient reallocation of capital across firms. We find that this elasticity declined from 0.096 in 2004-2007 to 0.059 in 2016-2018. The decline appears to be particularly marked among the youngest and oldest firms (see figure), a feature that is consistent, for example, with older and less productive firms being better able to access finance at the expense of younger and more productive ones. This decline in responsiveness of input growth to marginal products suggests that the process of capital allocation across firms, particularly from old to young firms, has weakened over time.



Sources: Orbis; and authors' calculations.
Notes: Regressions control for size and sector-year fixed effects. Standard errors clustered at firm-level.

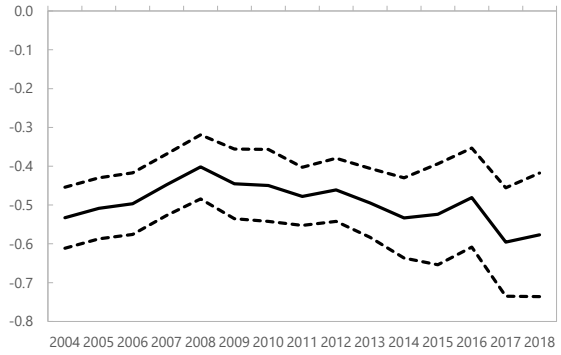


Sources: Orbis, and authors' calculations.
Notes: Regressions control for size and sector-year fixed effects. Standard errors clustered at firm-level.

11. <u>Fact 5</u>: SOEs have persistently lower revenue and capital productivity than POEs in the same sector. Using data for above-scale industrial firms, various papers have documented large productivity gaps between SOEs and private firms through 2013 (Hsieh and Klenow, 2009; Berkowitz, Ma and Nishioka, 2017; Bai, Liu and Tian, 2018). These gaps have also been found for the more recent period (through 2019) for the case of listed firms (Jurzyk and Ruane, 2021). Little is known about whether the earlier findings apply more generally in the recent period, or whether such gaps exist in services as well as manufacturing sectors. Our data allow us to measure these gaps accounting for non-listed firms and covering both manufacturing and services sectors. By controlling for sector-year fixed effects, we ensure that the measured gaps do not reflect, e.g., the fact that SOEs tend to be present in more-established and thus less-productive sectors. Figure 8 (top left) shows that SOEs have consistently had lower revenue productivity than private firms, with an average gap of around 4-5 percent. As found in most of the earlier literature, these gaps are almost exclusively explained by SOEs' lower capital productivity, as show in the top left panel figure. The gaps for services, estimated for the 2013-2018 period in which services-sector coverage becomes meaningful in Orbis, are somewhat smaller but still statistically and economically significant.

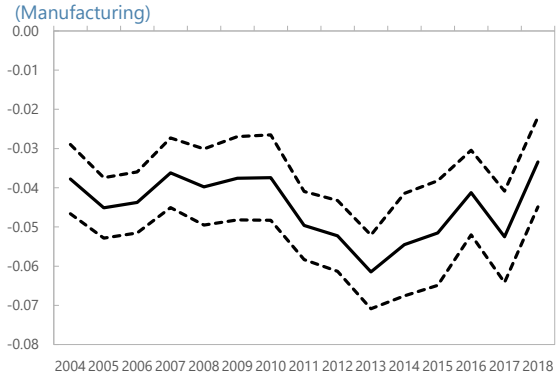
Text Figure. SOE Performance Gaps

SOE Capital Productivity Gaps
(Manufacturing)



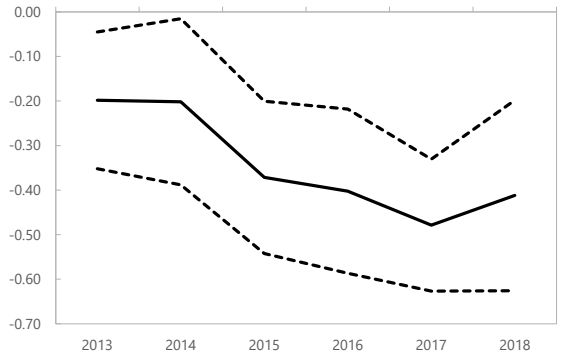
Sources: Orbis;, and authors' calculations.

SOE Revenue Productivity Gaps
(Manufacturing)



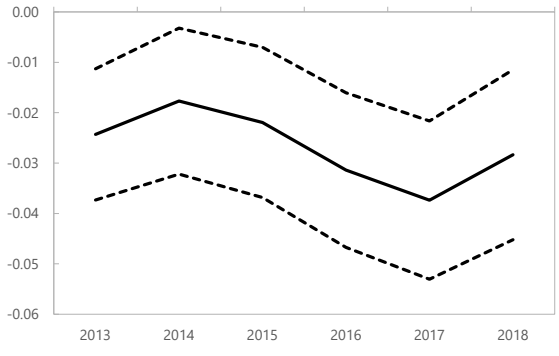
Sources: Orbis; and authors' calculations.

SOE Capital Productivity Gaps
(Services)



Sources: Orbis; and authors' calculations.

SOE Revenue Productivity Gaps
(Services)



Sources: Orbis; and authors' calculations.

D. Regional Heterogeneity and Business Dynamism

12. To understand the decline in Chinese business dynamism, we explore its connection to SOE presence across provinces. A critical puzzle is why China's business dynamism has slowed down so dramatically since the 2000s. Many factors are most likely at play, especially given such trends have been observed in other countries such as the U.S., where changing demographics and market power have played a role (Pugsley and Sahin, 2019; Akcigit and Ates, 2019). We focus here on one factor that seems particularly relevant for China – the role played by the state, which we measure as the SOE share—or SOE intensity—of economic activity. Brandt, Kambourov, Storesletten (2020) find that regional state presence may be an important factor in reducing the creation of new firms. Given that China's growth spurt in the 2000s happened during a period of large-scale SOE reform (the SOE share of industrial assets declined from over 54 percent in 2003 to below 43 percent in 2008), it is natural to investigate whether state presence in China is associated with lower private sector dynamism.

13. Young firms in provinces with higher SOE intensity have weaker life-cycle growth. We use our data on manufacturing firms to explore how the life-cycle growth of private firms varies with both sector-level and province-level SOE intensity. We construct SOE intensity as the asset share of SOEs identified in our Orbis database.[9] We then construct the 3-year average growth rates of young firms (age < 5) relative to old firms (16+) in each sector- and province-year, and regress these against initial SOE intensity. We control for year fixed effects and either sector or province fixed effects, to control for common time trends and time-invariant province or sector characteristics. We find that young firms operating in provinces with higher SOE intensity have weaker revenue growth, capital growth and TFPQ growth relative to older firms. These results are shown in the text table and are both significantly and economically significant. Our results suggest that some of the negative spillover effects of high SOE intensity to private firms may be local rather than sectoral and may reflect political economy problems, as those discussed in Brandt, Kambourov, Storesletten (2020). For example, young firms may invest less in productivity improvements or market expansion because they may face local regulatory barriers, which are put in place out of the concern that business dynamism could threaten the position of local SOEs through product market competition and competition for local factors of production.

Text Table. Capital Growth vs Capital Productivity and Province-Level SOE Intensity

	Revenue Growth	Capital Growth	TFPQ Growth
SOE Intensity	-0.007**	-0.006**	-0.0035**
	(0.00352)	(0.00302)	(0.00157)
Observations	394	394	394
R2	0.237	0.269	0.264

[9] While we are not capturing all manufacturing SOEs in Orbis, we capture the largest and most important ones.

14. Capital reallocation between private firms is less efficient in provinces with higher SOE intensity. We also use the richness of our data to explore how the responsiveness of capital to profitable opportunities across private firms varies with local SOE intensity. Again, we construct SOE intensity as the asset share of SOEs identified in our database and divide provinces into terciles of SOE intensity in two separate periods: 2003-2007 and 2013-2018. We regress at the firm-level capital growth on the average product of capital, dummies for terciles of SOE intensity and interaction terms. We estimate separate elasticities for each period to control for the simultaneous aggregate trend decreases in capital responsiveness and SOE intensity. We do not find a significant link from 2003-2007 between local SOE intensity and capital responsiveness (see text table). However, in the 2013-2018 period, we find that provinces with medium and high SOE intensity have significantly lower capital responsiveness. This is concerning as it suggests a worsening allocation of capital to firms with high capital productivity, in particular in provinces with high SOE intensity. A potential explanation for this finding is that the efficiency of the local banking system for capital allocation is worse in regions where most banks can lend (or are incentivized to lend) to SOEs. This is suggestive evidence that high SOE intensity is not only problematic because the assets owned by SOEs could be better allocated, but also because they result in a worse allocation of resources among private firms.

Text Table. Province-Level Young Firm Life-Cycle Growth vs. SOE Intensity

	Capital Growth	
	2003-2007	2013-2018
ln(ARPK)	0.096***	0.070***
	(0.0015)	(0.0020)
ln(ARPK) x Medium SOE Intensity	-0.002	-0.040***
	(0.0019)	(0.003)
ln(ARPK) x High SOE Intensity	0.003	-0.035***
	(0.0019)	(0.0028)
Observations	628,666	318,616
R-squared	0.06	0.049

15. The evidence is suggestive of SOE intensity being potentially an important driver of declining business dynamism. The evidence presented in this section bears direct links to young firms' declining life-cycle growth (Fact 2), and the worsening of capital reallocation over time (Fact 4). All else equal, worsening reallocation could help perpetuate productivity gaps between SOEs and private firms (Fact 5). Given that younger and smaller firms have higher capital productivity (Fact 3), the declining reallocation ability of the economy risks amplifying the effects of financial frictions. Altogether, worsened prospects for younger firms will likely lead to a continued decline in their share of economic activity (Fact 1) and contribution to economic growth.

E. Reform Priorities

16. Pro-market reforms could boost productivity growth. Structural reforms have been advancing in China even in the wake of the pandemic, for example on opening up the financial sector, on hukou liberalization, and by accelerating financial opening up. Yet the dramatic deceleration in China's productivity growth, coupled with the looming demographic headwinds, underscore the need for further reforms that can lift the economy's potential. Removing barriers to entry, e.g. by further opening up non-strategic sectors to new domestic and foreign firms, and removing regional regulatory barriers can promote competition and improve factor allocation. Market power that stifles innovation should be addressed through a transparent and predictable anti-trust framework, treating SOEs and private firms on an equal basis. Corporate restructuring and insolvency frameworks need to be strengthened to facilitate market-based exit of nonviable firms, including SOEs, while ensuring financial stability.

17. SOE reform could boost productivity growth both directly through resource reallocation and indirectly by stimulating business dynamism. SOE reforms can help increase productivity directly by shifting resources to firms that are more productive at the margin. As we document in this paper, however, a greater role for markets can also bring about indirect productivity gains by boosting business dynamism. We find, in particular, that a reduction in SOE intensity —such as the one China achieved in the 2000s—could spur young firms' investments in productivity improvements and market expansion by loosening explicit and implicit barriers that favor SOEs, both in product and factor markets.

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RECENT DEVELOPMENTS AND MACRO-FINANCIAL IMPLICATIONS OF THE E-CNY[1]

The e-CNY pilot tests have been expanded to more regions and scenarios, including in rural areas and across borders, although there is still no timetable for the official national rollout. This chapter discusses the recent e-CNY developments and explores the key macro-financial benefits and risks from its domestic and cross-border uses, which should be carefully studied and assessed before the official rollout.

A. Recent Developments

1. The development of the e-CNY continues, including additional pilot tests.

- *More regions.* Previously, the e-CNY had been tested in four cities and regions (i.e., Shenzhen, Suzhou, Xiong'an, and Chengdu) since end-2019, and planned for foreigner-use scenarios in the 2022 Beijing Winter Olympics. As the pandemic was largely under control, the PBC has expanded the e-CNY pilot tests since November 2020 to more than ten cities and regions in total. At the same time, the PBC has also expanded the pilot tests to rural areas and Hong Kong SAR (as a cross-border test). The e-CNY pilot program currently covers a wide range of regions in China, taking into account China's coordinated regional development strategies and preparing for a nationwide rollout in the future.

- *More scenarios.* As of end-June 2021, e-CNY has been applied in over 1.32 million scenarios, covering utility payment, catering service, transportation, shopping, and government services (PBC, 2021a). Meanwhile, the plan for foreigner-use scenarios in the 2022 Beijing Winter Olympics has been progressing as devices with e-CNY payment functions are being deployed in the Olympics venues, and the ongoing pilot program in Hong Kong SAR would test the cross-border payment scenarios.

2. The PBC published a White Paper to communicate with the public the key design and features of the e-CNY, helpfully clarifying objectives and key design issues, including data privacy (PBC, 2021a).

- *Objectives.* Domestically, the main objectives of the e-CNY include meeting public demand for digital cash, supporting financial inclusion, and facilitating fair competition and increasing the efficiency and safety of retail payment services. From a cross-border perspective, the PBC also aims to explore the e-CNY's potential in improving cross-border payments through collaboration with other central banks and international organizations.

- *Key design and features*. The e-CNY is the digital version of the RMB, characterized chiefly as a substitute for cash in circulation (M0) but not M2, and will coexist with the physical RMB. The e-

[1] Prepared by Fei Han (APD).

CNY adopts a two-tiered system under the centralized management of the PBC, where the PBC is in charge of issuing and disposing the e-CNY (first tier) while the authorized operators, including commercial banks, payment service providers, and telecom operators, provide the e-CNY account opening and exchange services within the PBC-managed e-CNY quota (second tier). The e-CNY differs from the other electronic payments in the following key aspects: i) it will be a legal tender being instituted by the revised draft Law of the PBC (revised draft for comments), ii) it is a form of money while the private payment service providers (PSPs) such as Alipay and Tenpay are payment platforms where the e-CNY could also be used, iii) it can be transferred without bank accounts and hence can support financial inclusion and achieve higher anonymity, as private digital payments usually rely on bank accounts which require KYC procedures,[2] and iii) it supports off-line transactions and has the "settlement upon payment" feature.

- *E-CNY wallet structure*. PBC (2021a) presented the matrix structure of the e-CNY wallet, which aims to strike a balance between anonymity and AML/CFT needs and satisfy the needs of different users (e.g., young vs. old individuals, and corporates). In particular, the e-CNY wallets could be classified by ID requirement (wallets with different transaction and balance limits), by the type of holder (personal or corporate wallets), by the carrier (software or hardware wallets), or by the authorization (parent or sub-wallets). Although the first-level wallet (under the classification by ID requirement) does not require ID information, it still requires a valid mobile phone number which is usually required to be linked to a real ID in China. The hardware wallet—by using security chips or other technologies—can be supported by IC cards, mobile phones, and wearable objects (e.g., badges and clothes with payment functions), some of which are being deployed in the Beijing Winer Olympics venues.

- *Data privacy ("managed anonymity") and security*. The e-CNY transactions will have "managed anonymity" in the sense that small transactions will be largely anonymous but large ones are traceable for the AML/CFT purpose. The WP also clarified that the ID information that e-CNY collects is less than the other electronic payments (e.g., credit cards or private digital payments) and will not be shared with other government agents. In terms of data security, the PBC has built a preliminary multi-layer security system and introduced frontier technologies (e.g., decentralized identity service) to strengthen privacy data protection for e-CNY users. Moreover, a "firewall" is being built inside the PBC to separate the e-CNY related information and help implement security and privacy protocols.

B. Key Macrofinancial Benefits and Risks in Domestic Use …

3. The e-CNY, similar to other retail central bank digital currencies (CBDCs), promises to lower payment service costs and enhance financial inclusion and the efficiency of fiscal support.

[2] There is still some population in China (about 8 and 12 percent of urban and rural adults in 2020, respectively) that does not have active bank or nonbank payment accounts according to the PBC's inclusive finance report (PBC, 2021b).

- *Lowering payment service costs by promoting competition and innovation in the payment industry*. Alipay and Tenpay have dominated China's nonbank payment market in recent years, with the market share of both accounting for over 90 percent of the total market in 2020 (Peng, 2021). The combined market share of the two was above the threshold to be determined as market dominance, established by the recently proposed Draft Regulations on Nonbank Payment Institutions.[3] The e-CNY is a new interoperable means of payment that is free of charge to users by the PBC or second-tier operators and can be used in digital payment platforms such as banks' e-CNY apps, which could potentially help diversify payment instruments and reduce the current market dominance by a few market players, promoting competition and innovation in the payment industry.

- *Enhancing financial inclusion and fiscal support efficiency*. Given that private digital payments were already advanced and widespread in China compared to international peers, the marginal benefits from the domestic retail use of the e-CNY to financial inclusion are likely to be relatively less.[4] However, one near-term potential of the e-CNY in this regard might be to bring targeted fiscal support and payment services to the unbanked population in rural areas or those in the remote areas without effective internet services (IMF, 2020a). For example, some rural regions have been facing difficulties in transferring fiscal support or healthcare refunds to the unbanked population in remote areas (usually low-income individuals), where the e-CNY might help make the fiscal or healthcare transfers to these people more efficient and timely, including through the hardware e-CNY wallets (e.g., IC cards) for those who cannot afford smart mobile phones. More recently, some pilot cities have distributed fiscal subsidies to local financial institutions and guarantee firms via their corporate e-CNY wallets as a reward for their efforts in supporting SMEs during the pandemic.

4. However, retail CBDCs, including the e-CNY, could also bring operational risks for data privacy/security, bank run risk from competition with bank deposits, and potential financial integrity risks depending on the design.

- Ensuring *data privacy and security* of CBDCs has many aspects, including, for example: i) ensuring the security of users' CBDC wallets against cyberattacks, ii) preventing fake CBDC wallets, iii) ensuring secure collection, storage and usage of private data from CBDC accounts and transactions, iv) ensuring the cybersecurity of second-tier operators particularly smaller banks and nonbank institutions (in the case of a two-tiered system), and v) ensuring the business continuity and security against weather-related disruptions from climate change. All of these could incur significant operational risks and challenges, particularly in a large-scale or nationwide issuance in the future.

[3] The *Draft Regulations on Nonbank Payment Institutions* were published by the PBC in January 2021 to seek public comments. According to the draft regulations, the PBC can request the anti-monopoly agency to review whether market dominance is achieved if one company reaches a market share of one half, two companies together reach a market share of two thirds, or three companies together reach a market share of 75 percent.

[4] According to PBC (2021b), 89 and 83 percent of urban and rural adults had access to electronic payments in 2020, respectively.

- *Competition with bank deposits* could happen if CBDCs are positioned as the most secure digital payment instrument which makes it attractive as a savings vehicle, although the impact is still largely uncertain at present. On the one hand, household savings in the form of the CBDC could increase the central bank's balance sheet and crowd out deposits at commercial banks, which could put the business models of commercial banks at risk since their source of funds would become more expensive. Such a run from bank deposits to the CBDC could affect monetary policy effectiveness and financial stability, and have a potentially negative impact on the economy (Andalfatto, 2020; Fernandez-Villarverde and others, 2020). On the other hand, as the central bank receives a massive inflow of funds, it would have to reinvest these funds, thereby assuming a role as investor it was not set up for (Auer and Böhme, 2021).
- *Financial integrity*, including AML/CFT rules among other things, could be strengthened or undermined, depending on the design of the CBDC. On the one hand, financial integrity could be strengthened if the authorities impose strict limits on the size of transactions; on the other hand, CBDCs offering full anonymity and large-value transactions would undermine financial integrity relative to cash and current non-cash fund transfer systems (IMF, 2018).

5. The PBC has taken measures to mitigate these potential risks, while more efforts could be made to strengthen the regulations and data governance for the e-CNY.

- *For data security and privacy*, the PBC has made efforts to establish a multi-layer security system to contain potential risks and has also built an internal "firewall" inside itself to separate and protect e-CNY related information. Moreover, the e-CNY is supposed to comply with the recently adopted Data Security Law (DSL) and Personal Information Protection Law (PIPL), under which telecom operators are not allowed to share the user identity data collected from e-CNY apps to third parties including the PBC, and the sharing of such data for wallets with higher Know-Your-Customer requirements will require individuals' permission first. To this end, establishing a prudent and transparent regulatory and data governance framework for the e-CNY in line with the DSL and PIPL would help protect data security and user privacy to increase public confidence, and facilitate the implementation of security and privacy protocols. Given that many smaller banks that are or will be involved in the e-CNY distribution usually have weaker cybersecurity architectures than large ones, it is important to test and strengthen their capability in addressing the potential operational risks from the e-CNY, including through the ongoing pilot tests.

- *For the bank run risk*, the PBC has announced to apply zero interest rate to the e-CNY and impose limits on the amount of transaction and balance for e-CNY wallets. These measures should help increase the frictions for conversion from bank deposits to e-CNY, thus reducing the potential competition with bank deposits and the associated bank run risk. Having said that, the run risk cannot be completely ruled out by the frictions (Carstens, 2021) and the imposition of such frictions would need to strike a balance between reducing the exposure to bank run risk and enhancing competition within the payment system.

- Measures to address *financial integrity* concerns of the e-CNY include conducting a money laundering/terrorist financing risk assessment on the domestic and cross-border uses of e-CNY,

putting in place risk-sensitive mitigation measures, and ensuring risk-based supervision of e-CNY operating institutions. The steps taken by the PBC in this regard and the planned AML/CFT guidelines for e-CNY operating institutions are welcome.

6. In the longer term, the e-CNY may also contribute to the ongoing changes in fintech firms' business models as the payment functions are being separated from their lending business. Some of the large fintech firms were reportedly required by regulators to create separate platforms for their lending business, but it remains unclear whether and how the user data that underpins the firms' lending decisions will be shared between the firms' payment and lending arms. The e-CNY could bring more uncertainty to the payment data collection and sharing, which may challenge the existing business models of fintech firms. In principle, as the e-CNY encourages competition and innovation in the payment market, the payment data collected by individual PSPs would become less complete, leading to fragmented payment "big data" at each individual PSP assuming no data sharing among PSPs (as is the case now). Since the payment data have been particularly important for the credit risk analysis and lending decisions given the highly integrated online businesses in China, the segregated payment data may become less useful and could accelerate the change in the fintech business models. However, at the same time, commercial banks may revitalize their diminished role in the payment market and the collected payment data may also help enhance their credit risk assessments in credit provision (Huang and others, 2020). In addition, more business opportunities may arise in the area of payment data collection and compilation. This also underscores the importance of having prudent and transparent regulations for the usage of the e-CNY payment data collected by the PBC.

C. … and in Cross-Border Use

7. In principle, CBDCs used across borders could bring extra benefits beyond those from domestic use, particularly further cuts in transaction costs and providing access to a wider range of cross-border financial services. According to the Bank for International Settlements, the average total cost of a US$200 bank-based cross-border remittance is over 10 percent of the remittance value based on a sample of 112 countries (BIS, 2020). Much of the cost reflects service charges and cost recovery by financial intermediaries, which can be significantly reduced by CBDCs through flattening the multi-layered correspondent banking structure and shortening the payment chains (IMF, 2020b). Moreover, cross-border use of CBDCs could make it easier for household and corporates to access a wide range of other cross-border financial services leveraging the big data generated from individual transactions.

8. However, cross-border use of CBDCs could also bring additional risks and policy challenges. Although CBDCs are unlikely to qualitatively change the economic forces that lead to the international use of currencies, they could quantitatively reinforce the incentives behind currency substitution and currency internationalization (IMF, 2020b). In particular, foreign CBDCs could i) raise pressures for currency substitution, which could worsen vulnerabilities from currency mismatches and reduce the ability of local authorities to run monetary policy, and ii) facilitate illicit flows and make it harder for regulatory authorities to enforce exchange restrictions and capital flow management measures without appropriate safeguards. Moreover, the data privacy and security

concerns would likely be higher in cross-border transactions than domestic use, as it is more difficult to monitor such risks or conduct regulatory coordination across borders. Multilateral collaboration to agree on design principles will be key to addressing concerns of central banks regarding currency substitution risk, capital flow volatility, and contagion risk (BIS and others, 2021).

9. Similar to many other central banks, the PBC has been actively exploring the cross-border use of CBDCs, including the e-CNY. Given the potential complicated issues involved in the cross-border use of CBDCs, including, for example, monetary sovereignty, foreign exchange policies and arrangements, as well as foreign regulatory and compliance requirements, the PBC has started a technical pilot test of the e-CNY in Hong Kong SAR and collaborated with other central banks and the BIS to further research wholesale CBDCs in the *Multiple CBDC (mCBDC) Bridge* project.

- *E-CNY cross-border test*. The e-CNY, despite being mainly used for domestic retail payments at this stage, is technically ready for cross-border use as well (PBC, 2021a). The PBC has signed an MOU with the Hong Kong Monetary Authority (HKMA) to technically test the use of the e-CNY in Hong Kong SAR through PBC-designated banks. The technical test reportedly includes exploring ways to minimize the potential disruptions to the Hong Kong dollar (e.g., currency substitution risk) and achieve interoperability with the Faster Payment System in Hong Kong SAR, a local payment system that connects banks and digital wallet operators.

- *mCBDC Bridge project*. The PBC has also been researching the cross-border use of *wholesale* CBDCs with other central banks and the BIS in the *mCBDC Bridge* project.[5] The project explores the capabilities of distributed ledger technology (DLT) and CBDC in facilitating real-time cross-border foreign exchange payment-versus-payment transactions in a multi-jurisdictional real-time context. More specifically, the project has been developing a DLT-based cross-border corridor network prototype to support multiple currencies and interface with new or traditional domestic payment systems. This aims to alleviate the pain points in cross-border fund transfers (e.g., inefficiencies, high cost and complex regulatory compliance) and evaluate the feasibility of CBDCs for cross-border fund transfers, international trade settlement, and capital market transactions. It has adopted three general principles: (*i*) no disruption to other monetary authorities or international monetary system, (*ii*) compliance with local regulations, and (*iii)* interoperability between different CBDC systems as well as between CBDC and traditional payment systems. Although the e-CNY is currently positioned as a *retail* CBDC, it uses a hybrid model, which is flexible and adaptable to any technology (including the DLT), and hence can be adapted to *wholesale* use in the *mCBDC Bridge* project.

10. In the case of the cross-border use of the e-CNY, the PBC has also committed to complying with the three general principles to minimize the potential currency substitution risk. These principles are essentially high-level objectives, and how to achieve these objectives

[5] The project was first initiated bilaterally by the HKMA and the Bank of Thailand under the name *Inthanon-LionRock*, and was renamed to *m-CBDC Bridge* when the PBC, the central bank of UAE, and the BIS joined. A *wholesale* CBDC can only be used by permitted institutions for settlements in the interbank market, whereas a *retail* CBDC would be used like a digital cash by the general public.

remains an important issue that is being studied and tested, including in the ongoing pilot test in Hong Kong SAR. One key measure to implement the principles in the Hong Kong SAR test is the mandatory conversion between the e-CNY and Hong Kong dollar (HKD), i.e., e-CNY payments from a Mainland Chinese e-CNY wallet are automatically converted into HKD in the Hong Kong SAR receiver's HKD account. It is up to the Hong Kong SAR authorities to decide whether their local individuals or corporates can open e-CNY wallets. For example, in the absence of local restrictions on e-CNY wallet opening, Hong Kong SAR merchants could in principle open and hold e-CNY wallets, which could make the mandatory conversion less effective in reducing the currency substitution risk. In this case, one way for the Hong Kong SAR authorities to enforce the use of HKD could be through checking IP addresses. Moreover, the capital account restrictions and capital flow management measures in China could pose technical and policy challenges for the e-CNY's cross-border use given China's largely closed capital account.

11. The e-CNY alone is unlikely to significantly push forward the RMB internationalization. In principle, CBDCs could quantitatively reinforce the incentives behind currency substitution and currency internationalization, but are unlikely to qualitatively change the economic forces that lead to the international use of currencies (IMF, 2020b). In the case of e-CNY, although it could help with RMB internationalization given the promised lower transactions costs, its digital form alone is unlikely to have a substantial impact, as the global demand for a country's currency depends mainly on its economic fundamentals as well as financial market depth and openness, while the RMB or e-CNY is still not freely convertible under the capital account.

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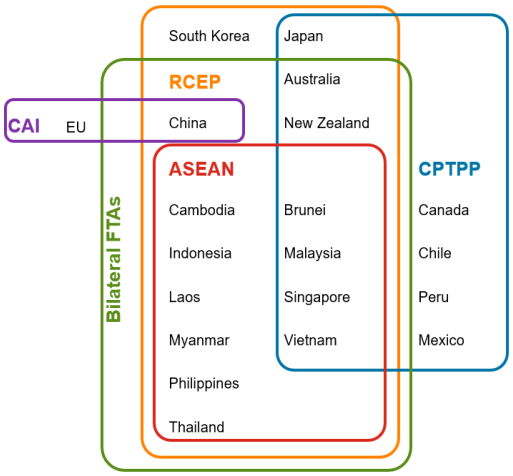
RECENT TRADE AND INVESTMENT AGREEMENTS AND THEIR IMPLICATIONS FOR REFORM[1]

This paper explores the implications of recently signed trade and investment agreements for reform in China. To that end, it reviews the historical experience of WTO accession and provides a preliminary analysis of the consequences the new agreements could have on further opening up and domestic structural reforms.

A. Introduction

1. China has recently signed a series of trade and investment agreements with key trading partners, including the "Economic and Trade Agreement" (Phase I Deal) with the U.S.; the "Regional Comprehensive Economic Partnership" (RCEP) with 14 countries in the Asia Pacific Region which is expected to enter into force in January 2022; and the Upgraded Free Trade Agreement with New Zealand. Agreement in Principle has been reached with the European Union on the "Comprehensive Agreement on Investment" (CAI)[2]. On September 16, 2021, China formally applied to join the "Comprehensive and Progressive Agreement for Trans-Pacific Partnership" (CPTPP). This followed the 10 bilateral free trade agreements (FTAs) China has signed since 2010, as its efforts to pursue FTAs has gained momentum in recent years.



2. These agreements, to varying degrees, include commitments to reforms that will directly impact the domestic market. This may be because the agreements mandate reform or because the agreements trigger non-mandated, complementary reforms—for example, because an external agreement to allow market access for foreign firms provides a rationale and/or political momentum for lowering barriers to entry also for domestic firms. The academic literature has stressed that non-mandated reforms can be associated with longer-standing priorities already been on the national agenda or efforts of reform-oriented policymakers welcoming the binding mandate

[1] Prepared by Yiqun Wu (SPR) and Fan Zhang (RES). We would like to thank Brad McDonald and Elizabeth Van Heuvelen for very helpful comments and suggestions.

[2] The EU-China Investment Agreement was agreed in principle on December 30, 2020. In May 2021, the European Parliament took formal action to pause the ratification process. The text, which this paper refers to, was published by the European Commission for information purposes only and may undergo further modifications as a result of the process of legal and technical revision. This text is without prejudice to the final outcome of the agreement between the EU and China.

provided by an external agreement (Maggi and Rodriguez-Clare, 2007) [3]. Against this backdrop, this paper discusses the China's WTO accession experience and analyses the consequences of recently agreed investment and trade agreements on domestic structural reforms.

B. China's Reform Experience in the Context of WTO Accession

3. The WTO accession process brought a series of reforms. Before joining the WTO, China's high tariffs and nontariff barriers insulated some of its critical sectors from international competition (Lardy, 2001). As a condition for WTO membership, China took substantial policy steps that involved opening up these protected sectors (including those heavily protected sectors such as such as automobiles and petrochemicals), significantly reducing tariffs and non-tariff barriers, and liberalizing the right to trade.[4]

- One of the most significant reforms was the amendment of the *Foreign Trade Law* in 2004. Under the new law, the trade approval system implemented since 1979 was cancelled, and the "designated trade" approach was abolished by 2004.[5] In doing so, China fulfilled its commitment to liberalize trading rights within three years after accession.

- The average applied Most Favored Nation (MFN) tariff was reduced from 15.3 percent in 2001 to 7.1 percent in 2021, fulfilling China's commitment to bring the average level to under 10 percent. China reduced average tariffs on agricultural products to 12.7 percent in 2021 (less than one fourth of the world average), a reduction exceeding its commitment.

- Non-tariff measures were lowered, including the discontinuation of import quotas in 2004 and the progressive reduction of import prohibitions and licensing.

- China took steps to simplify its administration of other border control measures, such as standards, sanitary and phytosanitary measures, and contingency measures.

4. In line with the WTO agreement, China overhauled parts of its legislative and regulatory systems to bring relevant domestic laws and policies into compliance with the international trading system. Important steps included:

- China amended laws regulating the quality of products, commodity inspection, customs, adjusted rules governing pharmaceutical products, and made changes to its copyright, patent, and trademarks laws (WTO, 2006).

[3] See Bagwell and Staiger (1999) for theory; and Broda, Limão, and Weinstein (2008) and Bagwell and Staiger (2006) for empirical evidence. Li et al (2014) argued that one reason that China sought to negotiate regional and bilateral trade agreements was to use international disciplines to underpin and support domestic reforms. Note that it has also been argued that large countries seek reciprocal market access commitments to neutralize the terms-of-trade effects of trade liberalization (Bown, 2010).

[4] The information in this section is partly based on WTO Secretariat (2006, 2021).

[5] China's foreign trade was monopolized by state-owned foreign trade companies before 1979.

- China overhauled certain national institutions to strengthen the state's regulatory capacity. The new General Administration of Quality Supervision, Inspection, and Quarantine (AQSIQ) took the lead in reviewing all of China's existing over 21,000 standards and technical regulations, abolishing about 1,400 of them, and revising over 9,000 others for conformity with WTO rules (Tan, 2021).

5. China also embarked on complementary reforms. Efforts were made to develop private enterprise in certain sectors. The amendments to the Company Law eased the establishment of private companies, especially small and medium-sized enterprises. The 2005 guidelines issued by the State Council permitted private investment in several industries previously restricted to the public sector, including electric power and other utilities, railways, civil aviation, and oil.

6. The structural reforms associated directly with the WTO access and complementary efforts have addressed key domestic needs. Since its WTO accession, China has achieved significant progress in opening up, and made commendable efforts in streamlining business administration, relaxing hukou restrictions, and developing capital markets.

7. That said, despite the progress made in the context of WTO accession, China's domestic structural reform agenda is far from complete (IMF, 2021). Progress in real-sector reform has been slow, especially in the areas of SOE reform and competitive neutrality. This comes at significant domestic costs—for example, the services industry, with its large presence of SOEs, remains far away from the global productivity frontier. Important reform steps include: (*i*) Listed SOEs continue to enjoy privileged access to credit and other resources, despite their significantly lower productivity than POEs in the same sector. Removing preferential access to credit and implicit guarantees for SOEs would ensure competitive neutrality between private and state-owned firms and help raise productivity overall. (*ii*) Decisive steps are needed to lower entry barriers for domestic and external firms and promote efficient market-based resource reallocation. (*iii*) There is also scope for further reforms to unify product markets by removing local protections, improving labor market flexibility through more comprehensive hukou reforms that allow for greater labor mobility. (iv) Moreover, China's export regime remains complex. On the one hand, only a small number of export commodities are levied within the scope of China's WTO commitments. On the other hand, export quotas still exist. There are export prohibitions and export licensing such as those specified in the 2020 Export Control Law.

C. Key Reform Provisions in Recent Trade and Investment Agreements

8. Recent trade and investment agreements contain reform commitments in a number of areas that may eventually contribute to progress on domestic reforms. These include: (i) market access, (ii) intellectual property right protection, (iii) services trade, (iv) government procurement, (v) climate and labor policies and (vi) competition policy and SOEs. It is important to note, however, not all commitments summarized in this section are enforceable under the dispute settlement mechanism in their respective agreements. Moreover, the reform commitments associated with the CAI are subject to the negotiation process being completed.

Market Access for Foreign Investors

9. The gradual emergence of the negative list approach has been an important marker of increased market accessibility for foreign investors. The first "Catalogue of Industries for Guiding Foreign Investment" was introduced in 1995, with market access for foreign investors divided into four categories: "encouraged," "permitted," "restricted," and "prohibited." The scope of the "encouraged" category was gradually expanded after several revisions. In 2019, the "Catalogue of Industries for Encouraging Foreign Investment" was introduced, which combined the "encouraged" market sectors in the "Catalogue of Industries for Guiding Foreign Investment" and the "Catalogue of Priority Industries for Foreign Investment in Central and Western China". The negative list approach for foreign investors was first discussed when US and China started the negotiation of a Bilateral Investment Treaty in 2013. The first official *negative list*[1] for foreign investors at the national level was introduced in 2015 following the establishment of the pilot free trade zone (FTZ), with two separate but mostly overlapping lists being implemented in the FTZs and nationwide currently. The *preferred list* and *negative list* are implemented simultaneously and revised by the National Development and Reform Commission jointly with the Ministry of Commerce and other relevant government bodies. The negative lists have been shrinking in size since 2017, with number of sectors with restrictions falling from 90 in 2017 to 33 in 2020 in the national version, and from 122 to 30 in the FTZ version. The most significant progress was made in removing foreign equity caps and the requirement of joint ventures in the auto sectors and financial services.

10. China's commitments in the context of new trade and investment agreements in the area of market access include:

- *Moving from a white list practice to a non-expanding negative list (RCEP).* The practice for market entry of foreign investors in the RCEP marks significant progress in China's ongoing opening up of its domestic market.

- *Liberalization of foreign investments (CAI).* The agreement in principle of the CAI, which is yet to be ratified, embedded a more detailed level of market access than a negative list. Section II (Liberalization of Investment) Article 2 (Market Access) of the CAI explicitly prohibits joint venture requirements, and numerical caps on number of enterprises, amount of business transactions, total output and employment in business areas open to investors from the European Union. In addition, Annex III (Schedule for China) details sectoral limitations on foreign investment, the commitments in the CAI suggest a much higher level of openness to EU investors than those in both versions of the *negative lists*. For example, for communication services, the 2020 version of the national negative list requires medical services to be joint ventures. In contrast, CAI Annex III (Schedule for China) sub-sector II.h only requires "establishment of hospitals or clinics to be subject to quantitative limitations in line with China's needs". The schedule of commitments foresees a hybrid approach for the implementation, with

[1] The current *negative list* refers to the "Negative List for the Access of Foreign Investment" and the "Negative List for Foreign Investment Access in Free Trade Zones" which are being revised by the National Development and Reform Commission jointly with the Ministry of Commerce and other relevant government bodies on an annual basis.

a *negative list* approach in relation to the MFN treatment, and a *positive list* approach in sectors subject to economic needs test.

11. China's reform commitments have the potential to improve market access not only for foreign but also for private domestic investors for the sectors outside the negative list, once RCEP enters into force, as market access is increasingly governed by the negative list rather than business ownership. The pace of reform is expected to be rapid in the manufacturing sectors which have fewer restrictions in the negative list, while services sector opening is likely to gain traction after the CAI is ratified given that the standstill and ratchet mechanism[2] has already been agreed upon in the recently upgraded FTA between China and New Zealand.

Intellectual Property Right (IPR) Protection

12. China's IPR protection relies mostly on traditional legal systems. Four dedicated IP regional courts have been established since 2014, 24 IP tribunals have been established since 2017, and an IP tribunal in the Supreme People's Court was created in 2019. The establishment of dedicated IP courts/tribunals improved professionalism, consistency, and efficiency of the trials through the traditional legal system. It also helped deal with jurisdictional challenges for cross region IP cases. However, the penalties awarded remained low compared to the legal costs involved despite the relatively high win rates for rights holders. Bian (2018)[3] found that the IPR protection system is actually stronger than commonly thought, with high rates of winning the litigation, but the damages awarded were very low. A recent study by Anjie Law Firm (2019)[4] suggests that damage awarded to patent holders have been increasing; and heavy criminal penalties on IPR violations are to be introduced.[5]

[2] A "standstill" clause in a trade agreement means that the parties have to list all the barriers as they are at the time of making commitments, and no new barriers could be introduced afterwards. A "ratchet" clause means that if – after entry into force of an agreement – a party unilaterally removes a barrier in an area where it had made a commitment, it cannot reintroduce it anymore.

[3] A study of 1663 patent infringement cases in 2014 found that, despite the damages awarded remained very low, with a median of USD4885.99, the system is stronger than commonly thought (Bian, 2018). Plaintiffs have an average win rate of 80 percent, comparing to 66 percent in Germany and 60 percent in the US. Permanent injunctions were automatically granted in 94 percent of the cases, partially offsetting the low damages awarded. He also found that foreign patent holders were more likely to win litigation and being granted permanent injunction than domestic patent owners. The damages awarded to foreign patent holders were higher at about three times of the domestic patent holders, despite the overall low monetary amount. A more detailed study by the IP center of Midsouth University of Financial and Political Science (2013) shows that average damage awarded from 2008 to 2013 averaged only RMB15,000 (USD 2277) for copyright violations, RMB326,000 (USD 49500) for trademark violations.

[4] Anjie Law Firm (2019) studied 88 patent infringement cases with awarded damages over RMB 1 million between 2016 and 2018. The highest damage awarded reached RMB 80.5million (USD12.7 million), with the median rose from RMB 1.03 million (USD 154,000) in 2016 to RMB 2.0 million (USD 300,000) in 2018.

[5] Following the enactment of the 11th "Amendment to the Criminal Law" on March 1, 2021, the criminal penalties for IP crime increased to a maximum of 10 years. The amendments also added a new article somewhat similar to the US' Economic Espionage Act potentially in effect if not in wording, according to Aaron Wininger (2021) reported on the National Law Review.

13. China's commitments in this area include:

- *Detailed action plan (Phase I)*. The US-China Phase I Agreement focused on strengthening the legal and regulatory frameworks for IPR protections. Chapter 1 (Intellectual Property) requires China to publish a detailed 'Action Plan' for strengthening IPR protection. In addition, it also commits China to increase IP enforcement actions in a number of areas, such as counterfeit goods and pharmaceuticals, protection of trade and business secrets, and regularly publish data on the impact of those actions. China also agreed to raise penalties for IP theft.

- *Streamlined IPR enforcement (RCEP)*. RCEP focuses on the IPR of cross border goods and its enforcement. Chapter 11 (Intellectual Property) of the RCEP detailed the protection of IPR for tradable goods, which include copyright, trademark, patents, geographical indications, and genetic resources. It streamlined and aligned the enforcement procedure of IPR protection by authorizing customs in cross border trade and courts in civil judicial procedures when rights holders file complaints.

- *Prohibited transfer of technology and business secrets (CAI)*. The CAI goes beyond prior commitments by prohibiting disclosure of confidential information. Section II (Liberalization of Investment) Article 3 (Performance Requirements) would specifically protect foreign investors from any form of involuntary technology transfer and disclosure of confidential business information, including to regulatory bodies and local authorities.

14. IPR protection has been improving in recent years, yet further reform, both legislative and procedural, is needed in order to meet the commitments made in RCEP and the yet-to-be ratified CAI. Lester and Zhu (2021) assess that China has addressed many of the IPR related concerns in the Phase I agreement with the US through revisions to its legislative and regulatory framework[1], and data disclosure.[2] If followed through, the commitments China made are likely to result in more efficient and less costly resolution of IPR related disputes, making it more likely that higher penalties for IPR infringement appear in court rulings. The measures would eventually facilitate healthier competition among market participants, and encourage innovation and IPR development domestically.

Services Trade

15. The existing practice for cross border services providers still mostly follows a *case-by-case* approach. For example, in 2018, the Shanghai municipal government piloted a *negative list* for services trade in the Shanghai FTZ.[3] The Hainan Free Trade Port (FTP) has introduced China's first

[1] The USTR "2021 Special 301 Report" (link) acknowledged that China amended its Patent Law, Copyright Law and Criminal Law in 2020, and published several draft regulatory measures on IP.

[2] Regular statistics on IPR protection cases and annual reports are published by the China National Intellectual Property Administration (link) and the Amendment to Criminal Law in footnote 11.

[3] Shanghai municipal government announced the "Negative list on cross-border trade in services for Shanghai Pilot Free Trade Zone" (link) on September 29, 2018.

formal negative list in services trade and lowered the number of restricted service sectors from 159 in the Shanghai FTZ to 70.[4] However, a *negative list* for services trade has yet to be published at the national level.

16. China's commitments in this area include:

- *Adopt a non-expanding negative list (RCEP)*. Adopting the *non-expanding negative list* practice within 6 years was mandated in the RCEP, with fewer restrictions, lower entry and licensing requirements as agreed in Chapter 8 (Trade in Services). At least 65 percent of service sectors will be fully open to members of the RCEP, with increased shareholdings in several services sectors, with significant implications in areas such as education, financial and cultural services for China.

- *Mandated standstill and ratchet mechanism (Upgraded China New Zealand FTA)*. Chapter 9 (Trade in Services) of the recent Upgrade of the China-New Zealand FTA remains on a *white list* approach, though with access expanded in some areas. However, the provisions mandated the *standstill and ratchet mechanism*, through the MFN treatment to each party, which means if New Zealand or China makes any commitments to future trading partners in specific sectors, the other party will automatically benefit from this enhance treatment as well. Both parties also agreed to commence negotiation of a *negative list* based services framework within two years of entry into force, likely to be shorter than the six-year limit mandated in the RCEP.

17. The commitments made in more recent agreements show that the approach of opening up is converging to the international standard. The *non-expanding negative list* approach and the *standstill and ratchet* mechanism agreed in the most recent China-New Zealand FTA are likely to be the standard terms in the (bi)multilateral agreements in the future as it is more difficult to retract than to expand once agreed with one trading partner. Meanwhile, domestic private service providers are likely to enjoy a more leveled access to previously restricted service sectors at home and overseas markets.

Government Procurement

18. China started its negotiation on accession to the WTO Government Procurement Agreement (GPA) in 2007, and submitted six revised offers since then. In its latest submission in 2019, China included 26 provincial level authorities, permanent thresholds correspond to those used by most parties, more SOEs and services sectors, and an offer on defense procurement.

19. China's commitments in this area include:

- *Higher transparency (RCEP)*. RCEP Chapter 16 (Government Procurement) requires higher transparency on government procurement, through publishing laws and regulations on

[4]The negative list for service trade refers to the "Negative list on cross-border trade in services for Hainan Free Trade Port (2021)" (link), published on July 26, 2021.

government procurement. It is a step forward since no government procurement provisions were included in the bilateral FTAs currently existing between any two members at the time of signing. However, disputes arising under the Government Procurement chapter are not covered by the Dispute Settlement Mechanism under RCEP. Going forward, the chapter foresees the opportunity for more extensive revisions every five years once China completes its GPA accession.

- *Regulations to ensure integrity in public procurement (Upgraded China New Zealand FTA).* Chapter 20 (Government Procurement) of the Upgrade of the China-New Zealand FTA commits to have laws and policies in place to conduct procurement with integrity and to prevent corruption. The chapter also includes a built-in agreement to enter into market access negotiations with New Zealand once China completes its accession to the WTO GPA or if it were to negotiate market access on government procurement with another country.

20. China's accession to the WTO GPA would lead to more progress on opening up the government procurement sector than the recent trade agreements would imply. The ratification of the RCEP, and the Upgraded China-New Zealand FTA. focused on higher transparency in the government procurement regulation and process, instead of liberalization of the market.

21. Recent domestic reform proposals could bring Chinese laws closer to GPA requirements and might be a positive sign regarding China's efforts to join the GPA itself. China proposed a major revision to its Government Procurement Law (GPL) in 2021.[5] In October 2021, the authorities instructed local governments to correct discrimination of foreign companies as supplier candidates, a de facto barrier to foreign companies' participation in government procurement. As the trade policy expert Jean Heilman Grier analyzes[6], the proposed version sets evaluation of bidding entities on lowest price or comprehensive scoring, which is consistent with the "most advantageous tender" rule in the GPA. It also requires suppliers participating in a government procurement to have the ability to undertake a procurement, and conditions on excluding a supplier from a procurement, such as tax evasion, both are consistent with GPA practices. The proposed revision also improves clarity and transparency on the conditions and procedure for different government procurement methods and related dispute settlement procedures. Other revisions would imply additional steps to conform with GPA requirements, such as the 20-day minimum tendering period in contrast to the 40-day requirement in the GPA. Overall, the revised GPL has the potential to bring China's procurement system closer to conforming with the GPA.

Climate and Labor Policies

22. China as pledged to peak carbon emission by 2030, and achieve carbon neutrality by 2060, but the implementation of its climate strategy is at its early stages.

[5] China's Ministry of Finance invited public opinions on its proposed version of the Government Procurement Law (link). The first major revision since its enactment in 2003 and a minor revision in 2014.

[6] Jean Heilman Grier's analysis: "China: Revising Government Procurement Law" (link).

23. China's commitments in this area include:

- *Binding provisions on environment and labor standards (CAI).* Binding and enforceable provisions on environment and labor standards are included in Chapter IV (Investment and Sustainable Development) of the CAI. The commitments mostly reaffirmed the voluntary commitments made in the WTO, ILO and in the Paris Accord. China also committed to effectively implement the ILO's Conventions it has ratified.

24. The binding climate and environment commitments China made is likely to complement domestic climate policies in the transition to a greener economy.

Competition Policy and State-Owned-Enterprises (SOEs)

25. The potential for reforms of the SOE sector and to ensure competitive neutrality between SOEs and private firms remains high. This includes, for example, access to credit and markets. SOEs may also benefit from possible undisclosed subsidies in various forms (IMF, 2020).

26. China's commitments in this area include:

- *Strengthened competition law enforcement (RCEP).* Chapter 13 (Competition) of RCEP includes obligations to adopt or maintain competition laws and to establish independent competition authorities to enforce antitrust laws. It also includes provisions on higher transparency and enforcement of competition laws.

- *Higher transparency for all businesses, including SOEs (CAI).* Under the CAI, China would agree, in principle, to improve transparency on subsidies, standard setting and licensing in Section III (Regulatory Framework) of the CAI. The agreement requires all business entities, including SOEs, to behave in accordance with commercial considerations and not to discriminate in their purchases and sales of goods or services. China also commits explicitly to provide, upon request, specific information to allow for the assessment of whether the behavior of a specific business, including SOE, complies with the agreed obligations in Section III Article 4 of the CAI.

- *Fairer competition law enforcement (Upgraded China New Zealand FTA).* Chapter 21 (Competition Policy) of the Upgrade of the China-New Zealand FTA, committed to the principles of transparency, non-discrimination, and procedural fairness in competition law enforcement.

27. Improving international competition can stimulate the reform of China's domestic market, including by and help ensure a level playing field for all market participants, including SOEs, foreign and private domestic enterprises.

Dispute Settlement Mechanism

28. The extent to which the commitments discussed in this section will not all be enforceable through the dispute settlement mechanisms set out in the respective agreements.

RCEP employs a standard state-state dispute settlement system. However, e-commerce[7], competition[8] and government procurement related disputes are excluded from the dispute resolution mechanism. Chapter 10 (Investment) Article 18 requires discussion of *investor-state* dispute settlement mechanism to commence no later than two years after the date of entry into force of RCEP, and the discussion shall last for no more than three years. The CAI pushes this forward by implementing a r*obust state-state dispute settlement system.* The agreement also foresees an institutional framework for monitoring the implementation of the commitments, including regular political oversight, an ad hoc fast engagement mechanism for serious and urgent issues, and a regular dialogue with involvement of key stakeholders such as businesses, civil societies and other organizations.

D. Qualitative Impact Assessment of Trade and Investment Agreements

29. To varying degrees, the recent trade and investment agreements have the potential to support the continued opening up of the Chinese market, improve IPR protection, and SOE reform.

- **Significant liberalization of investment and promotion of equal market access.** The binding commitments in RCEP and the potential CAI, together with the *non-expanding negative list* and the *standstill and rachet mechanism* adopted in Upgraded China New Zealand FTA, hold the promise of more transparent and predictable domestic policies on market access, and dispute settlement procedures. The current negative list met, to some extent, the negative list requirements in the RCEP, but falls short of that agreed in the potential CAI. The evolution of the negative list over the past 5 years reflects the gradual transition to a more open market, which marked progress made in parallel with the then ongoing RCEP negotiations. The increased transparency, predictability and stability of policy can be expected to lead to further revisions and reforms in domestic laws and regulations for investors to enjoy equal market access.

- **Opening up of the services trade is likely to accelerate.** Both RCEP and the Upgraded China New Zealand FTA include notable commitments to an opening up the still mostly closed services trade to foreign service providers. The introduction of the first negative list for services trade in Hainan FTP in 2021 is an encouraging step forward, and it is possible that the national negative list for the services trade will follow and shrink in size in over time, if the momentum observed over the evolution of the negative lists for foreign investors in the past years were to continue.

- **IPR protection may be strengthened through revisions in regulations, simplified enforcement and higher penalties.** The recent developments have mostly come in the form of revisions in IPR related regulations, including the amendment of the criminal law and the patent law. Increased cases of higher damages awarded for IPR infringements in recent years also point to progress in the right direction. However, the high cost of the current IPR litigation process

[7] Chapter 12 (Electronic Commerce) exempts dispute arising under this chapter from the dispute settlement.

[8] Chapter 13 (Competition) prohibits recourse to dispute settlement under RCEP for any matter arising under this chapter.

and the still low compensations despite recent increases, suggest there is still large room for improvement. The commitments in the RCEP and potential CAI promise more efficient and low-cost forms of IPR protection enforcement for goods and services trade and foreign investment. Simplification of domestic IPR related arbitration and litigation process, and a market-based evaluation of damages to IPR holders would help equalize level of protection between the current domestic IPR system and those implied by the recent investment and trade agreements. A more efficient and a more balanced cost benefit IPR protection legal system would lead to a better environment for domestic innovation and knowledge creation.

- **Mandated higher transparency of competition policy and SOEs commercial behavior marks a step in the right direction**. RCEP demands higher transparency from competition laws and enforcement. The potential CAI imposes enforceable mechanisms on SOEs behavior under commercial consideration[9] in purchase and sale of goods or services. It is a step forward in requiring SOE to purchase or sell non-discriminately, with only commercial considerations such as price or quality. The higher standard on SOE behavior may lead to reforms on clearer division of SOE's commercial and non-commercial responsibilities, which may foster competitive neutrality. A study by the Development Research Center of the State Council (DRC, 2020) on China's stance in response to the reform on WTO rules for SOEs concluded that additional domestic reforms could be a way to reduce external pressures. The study called for lower objections to commercial consideration principles for some SOEs who have commercial responsibilities. The report also advised on raising transparency for SOEs, and to absorb the regulatory shock to SOEs through continued deepening of reform. The commitments in the recent agreements—which are in line with the DRC (2020) study – suggest a positive direction for SOE reforms.

E. Potential Implications of China's Accession to the CPTPP

30. Similar to the RCEP, the CPTPP belongs to a new generation of free trade agreements which not only regulate trade of goods and services, but also encompass requirements related to market access and fair competition. With regard to trade, China's possible accession to the CPTPP could involve additional commitments in the form of a *standstill and ratchet mechanism* for the *non-expanding negative list* for both manufacturing and services. Market access (e.g., investment negative lists) is a matter for negotiation with existing CPTPP members and could lead to further lower entry barriers for foreign investors. China's commerce ministry (MOFCOM, 2021) has indicated

[9] According to TPP Article 17.1, "commercial considerations" means price, quality, availability, marketability, transportation, and other terms and conditions of purchase or sale, or other factors that would normally be taken into account in the commercial decisions of a privately owned enterprise in the relevant business or industry;

that "China will commit to allowing unprecedented level of access to its markets to join the CPTPP." Other key areas could potentially include[10]:

- **IPR protection**: The provisions in Chapter 18 (Intellectual Property) of the current CPTPP agreement require protection and enforcement of IPR across almost all areas. In the case of China, joining the CPTPP will likely require broadening the field of intellectual property protection—for example, non-traditional trademarks in Article 18.18, including ~~sound and~~ scent marks. Some of China's IPR protection standards fall behind those in the CPTPP, such as damage compensation for copyright and trademark infringements. Laws and regulations (including copyright law and patent law) would likely need to be aligned with the CPTPP and the enforcement regime would need to be strengthened.

- **Services trade**: The CPTPP Chapter 10 (Cross Border Trade in Services) requires higher levels of protection, predictability, and transparency on cross border services trade. It also includes general obligations to secure a level playing field specifically for foreign financial institutions, as well as dispute resolution provisions tailored to financial services. China's cross-border service trade is less open than the average level of CPTPP members. For example, the number of restricted service sectors in China is higher than that of CPTPP members. Therefore, joining the CPTPP will likely require further service trade opening, including in finance as well as in telecommunications and transportation.

- **Government procurement**: The CPTPP Chapter 15 (Government Procurement) outlines more stringent obligations on government procurement than existing agreements signed by China, such as national treatment of foreign suppliers, transparency of rules and procedures, impartiality of among participants, and accountability where suppliers may challenge an alleged breach of the rules through domestic review procedures. The CPTPP's government procurement procedural provisions largely repeat provisions of the WTO GPA with minor modifications. In line with China's latest efforts to conform with the GPA requirements, CPTPP accession would hold the potential of faster progress in this area than what is implied in recent trade and investment agreements and facilitate a more open, transparent, and fair playing field in government procurement process.

- **SOE and competition policy**: The provisions on SOE behavior in the CPTPP are also more stringent than existing agreements. Chapter 17 (State-owned Enterprises and Designated Monopolies) require SOEs to act in accordance with commercial considerations except when providing a public service; and to buy and sell goods and services in a non-discriminatory

[10] There are other areas which are not covered in this paper. For example, the CPFPP Transparency and Anti-corruption Chapter promotes transparency in the making and implementation of laws, regulations, and government decisions. The transparency requirements under the CPTPP are much more stringent than under RCEP. Given the public good nature of information, a higher bar of transparency in legislative and administrative decision-making supports a positive environment for international trade and investment. Another key area not covered in this paper is digital and data policy. The CPTPP encourages free cross-border data flow and prohibits disclosure of source code and data localization requirements. Note that on November 1, 2021, China applied for joining the Digital Economy Partnership Agreement (DEPA) between Chile, New Zealand, and Singapore.

manner. The CPTPP prohibits a member country from causing harm to the interests of another member country through non-commercial assistance provided to SOEs. Certain information regarding SOEs is required to be disclosed to encourage good corporate governance. This suggests that a potential accession of China would require additional SOE reforms. For example, China would likely need to ensure that transactions between state-owned banks and SOEs conform to the principle of competitive neutrality and eliminate any anti-competitive subsidies provided to SOEs. Many of these reforms are consistent with China's stated reform agenda (Zhang, 2020).

- **Climate and labor**: The CPTPP contains a binding commitment to International Labor Organization (ILO) labor standards in its Chapter 19 (Labor) and on climate in its Chapter 20 (Environment). The CPTPP environmental rules cover trade in endangered species of wild animals and plants and the protection of the ozone layer, where China has not yet established relevant laws. Similarly, if China is to join the CPTPP, it would need to revise its labor law and improve its labor legal system, incorporating additional international labor standards that strengthen labor rights.

F. Conclusions

31. Chinese authorities have made meaningful commitments in recent trade and investment agreements on further opening up of the domestic market. Based on the experience of China's WTO accession, these commitments could help achieve significant progress in the areas of market access, IPR protection, and further liberalization in services trade. Given that the CPTPP entails more stringent requirements along a number of dimensions, a potential accession to the CPTPP would provide further opportunity for reforms aligned with China's stated reform agenda.

32. At the same time, by joining a new generation of regional agreements—the RCEP and, going forward, potentially the CPTPP—China can play a positive role in shaping future international trade and investment negotiations as well as the evolution of multilateral trade rules in the context of the WTO reform discussions.[11]

[11] See Mavroidis and Sapir (2021) for an exploration of the challenges to the current multilateral trade system. They suggested that CPTPP could serve as a "source of inspiration" for new WTO agreements, including on SOEs and technology transfer.

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