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SELECTED ISSUES

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December 19, 2023

Approved By
Asia and Pacific Department

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CONTENTS

SMOOTHING THE PATH TO A NEW NORMAL: CHINA'S PROPERTY SECTOR TRANSITION[1]

The Chinese authorities have taken resolute actions to address the risks from the property sector since the start of the pandemic. The key challenge now is to smooth the transition of the sector to a smaller, more sustainable size amid unresolved financial distress among developers, weakened homebuyer confidence, and a backdrop of large inventories and structurally declining demand. Key policy priorities should be to expedite the resolution of underlying supply-side imbalances, most importantly by restructuring nonviable developers; support and de-risk surviving developers; and take steps to contain the buildup of risks in the property market.

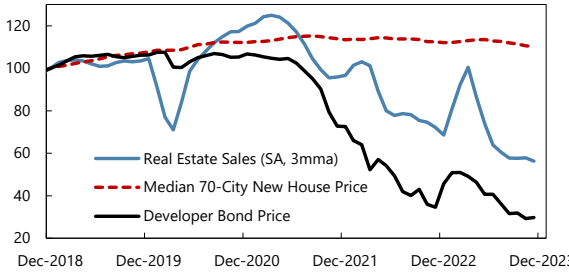
A. Introduction: China's Real Estate Markets at a Turning Point

China's Real Estate Markets: An Overview

1. Real estate activity has been important for China's rapid growth but has come with significant risks. Property-related activities accounted for an estimated 20 percent of GDP through China's decades of rapid growth, with real estate ubiquitous as a form of collateral and household wealth. While the authorities proactively limited risks from household leverage, average sales prices still rose almost 350 percent in the 15 years through 2021 and remain at significantly stretched levels relative to incomes. This price growth partly reflected strong investment-driven demand from households, driven by massive savings, a mortgage lending boom, and limited investment alternatives. At the same time, the country's large developer sector leveraged up heavily to expand construction at a rapid pace, often working closely with local governments who relied on property activity for revenues.

2. The authorities have taken resolute action to address property sector risks since the start of the pandemic. New rules were put in place to rein in developers' growing leverage and liquidity risks in 2020, including phased-in limitations on debt growth and other business operations for firms exceeding specified threshold for key balance sheet indicators.[2] These exposed vulnerabilities among many developers operating with risky, high-turnover business models. After the default of the second largest developer by sales in late 2021 imperiled the completion of millions of presold homes, severe liquidity stress spread through large segments of the developer sector as

Real Estate Sales, Prices and Developer Bond Prices
(Index: December 2018=100)



Source: Haver Analytics, CEIC Data Company LImited, Bloomberg LLP, and IMF staff calculations.
Note: SA=Seasonally adjusted. Sales in gross floor area terms. Developer bond price is the Markit iBoxx USD China Real Estate bond price index.

[1] Prepared by Henry Hoyle (APD).

[2] Known as the "Three Red Lines', these rules imposed regulatory limitations on developers with liability-to-asset ratios above 70 percent; net debt higher than 100 percent of equity; and cash less than 100 percent of short-term debt. The rules were introduced in August 2020 and were set to take effect in mid-2023.

new presales—relied on as a key form of working capital—slowed sharply. The authorities eased demand-side policies, including relaxing downpayment requirements, easing mortgage restrictions and lowering rates for existing mortgages, but avoided large-scale bailouts to defaulting developers.

3. The resulting adjustment of property market imbalances has, however, been uneven, driven largely by sharp declines in sales as opposed to prices. Real estate activity—particularly forward-looking indicators such as starts and developer land purchases—have been contracting quite sharply relative to recent real estate downturns in many other countries. Home prices have declined only modestly, however, in large part reflecting local government efforts to maintain price stability.[3] Developers' balance sheet restructuring has also been largely delayed via forbearance, to allow defaulted developers time to finish their large quantities of unfinished presold homes and limit the immediate effects on the financial system.

4. The authorities are rightly focused on helping the industry transition to a smaller and sustainable size. Over the next decade, demand for new housing is likely to shrink as gains from urbanization diminish, the population declines, and significantly fewer households live in dwellings without modern amenities. At the same time, the returns to real estate investment are likely to shrink as new rules curb risk-taking from leverage and misuse of presale proceeds. The authorities have recently signaled intensified support for construction of public and rental housing, most notably at the Central Financial Work Conference in late 2023. They have also extended policy support only to developers with more conservative business models and better governance.

5. This Selected Issues Paper (SIP) projects the path of real estate investment in China over the medium term and considers policies that will help ease the transition. New housing construction is set to fall significantly in the coming decade. This reflects a likely slowdown in urban household formation and urban redevelopment activities, amid an expected gradual contraction in the overall population. Construction will also face a significant drag from excess developer inventories and rising secondary market supply of previously vacant homes. While there is significant uncertainty around the likely path of sustainable demand for new housing, real property investment is likely to fall by 30 to 60 percent from end-2022 levels and rebound only modestly thereafter, with wide spillovers to other sectors via real estate construction's large share of domestic value-added. The prospect of delayed price declines and uncertainty related to distressed developers threatens to suppress demand, potentially deepening and prolonging the adjustment. The authorities should expedite the resolution of underlying supply-side imbalances, most importantly by restructuring nonviable developers. Measures are also needed to support and de-risk surviving developers and reform the pre-sales system, to contain the buildup of risks in the property market.

[3] Under the authorities' Long-Term Mechanism for Real Estate, introduced in 2018, local government are officially mandated with maintaining real estate price stability, and in practice often use listing approvals and other formal and informal tools to discourage transactions above or below a narrow range around desired prices. Local governments do have discretion to ease these policies, but media reports suggest they often face intense lobbying from homeowners and rival developers to avoid doing so.

6. The remainder of this SIP is organized as follows. The next section explains key factors affecting supply and demand for new housing in the coming decade and establishes a framework for projecting these variables into the medium term. The following section explores how the medium-term real estate transition could play out at the province-level. The penultimate section considers how certain factors outside the supply and demand framework could shape the real estate projections and then a final section concludes with policy advice.

B. New Housing Investment over the Medium Term

Overview

7. China's demographic transition is set to reduce the fundamental demand for new housing in the coming decade. The long-run sustainable demand for new housing investment is primarily a function of the additional units needed to: (i) accommodate projected growth in the overall number of households and (ii) replace existing units lost on net from the stock of housing.[4] Growth in China's urban population is set to decelerate significantly from the rapid pace of the last two decades, as net migration to urban areas slows and China's total population declines. This slowdown could be somewhat offset by declining average household size, reflecting growth in the share of adults in the population due to aging and declining fertility, which could increase demand for housing relative to the population. In cross-country experience, average household sizes decline as societies age but are also influenced by changes in the business cycle and behavioral or cultural factors.[5]

8. Publicly funded redevelopment played a key role in boosting new housing demand in the last decade. Shantytown redevelopment policies accelerated the demolition of millions of units of older housing, particularly in the 2013-2018 period, much of it lacking in modern amenities. Census data showed the share of the population living in housing built before 2000 dropped from 66 percent in 2010 to 35 percent in 2020, implying the net destruction of 66 million pre-2000 housing units, while the share of housing units without modern amenities fell from 28 to 12 percent. Targets for urban redevelopment programs were scaled down almost 75 percent for the 14th Five Year Plan (2021-25) from the 13th Five Year Plan (2016-2020).

9. This source of demand may rebound in the near term but is likely to remain lower than in the last decade. While the authorities have recently called for stepping up publicly supported urban redevelopment programs to ease the property sector adjustment, several factors will likely limit their scale relative to past programs. The significant taxpayer cost associated with such programs—in particular, compensating and relocating displaced households—will have to be largely borne by local governments facing significant fiscal and financial challenges. These programs are

[4] Belsky et al. 2007. In the literature, an additional source of demand for new housing construction comes from the estimated demand for second homes, investment homes, and vacant homes that accommodate the normal turnover of the housing stock. Given evidence of high rates of vacant housing held by owner-investors (see footnote 8), this analysis assumes that the stock of vacant housing will go down over the projection period as owner-investors reduce their portfolios of unused housing. This is treated as a supply-side channel, discussed in paragraph 13.

[5] For more see, Lee and Painter, 2013, and Paciorek, 2016.

also likely to be constrained by the now much smaller stock of pre-modern housing in need of redevelopment and increased challenges in securing developer participation given widespread financial distress within the sector.

10. Supply-side factors are likely to add to the adjustment for new construction. The rapid pace of developer building before mid-2021 and the sharp decline in property sales since then has left developers with large inventories of finished and unfinished housing inventory, which will have to be absorbed by future demand. Some portion of the large share of unoccupied investment properties is also likely to enter the secondary market or be taken over by investors' grown children, further reducing the new construction required to satisfy fundamental housing demand. Finally, the extensive and protracted liquidity stress for much of the developer sector is likely to weigh on new housing construction, as the authorities ensure that the troubled developers' limited resources are used to complete the large backlog of unfinished presale homes.

11. Prices play a critical role in determining supply and demand, but the evolution of prices in China's current situation is subject to significant uncertainty. In the academic literature, decreases in house prices (relative to construction costs) generally lower developers' profit margins and reduce supply, independent of demographic or other housing stock factors. Rising prices also shape homebuyer expectations for future price increases, similarly bolstering demand (Muellbauer, 2022). These relationships generally assume flexible, market-clearing prices, but these conditions do not hold in China's current situation, where interventions to limit house price declines appear to have exacerbated declines in sales and created uncertainty about the level of the true market-clearing price. Use of these price floors is also likely to come with significant trade-offs for economic activity, as discussed in Section D, creating uncertainty about authorities' commitment to maintain them over time.[6]

12. Even in the absence of price controls, the future path of house prices remains unclear. Long-run house prices are typically modeled on changes in mortgage credit conditions, household incomes relative to the housing stock, as well as house price expectations, the effects of demography, and other factors (Chauvin and Muellbauer, 2018).[7] Mortgage credit availability and the continued trend growth in household income since the property crisis broke out in mid-2021 would be generally expected to provide continued support to house prices, as has the prospect of slower growth in the housing stock due to the collapsing activity in starts. Other factors are however likely generating increased downside risks to house prices, potentially skewing price expectations lower:

- The *ongoing financial turmoil in the developer sector* and the *ubiquity of pre-sales* has introduced completion risk, or counterparty risk, into most homebuying transactions, reducing the

[6] These trade-offs would have to be measured against the economic growth costs of a sharp, destabilizing adjustment in house prices, with potentially wide-ranging spillovers to household and financial sector balance sheets and ultimately activity.

[7] Controlling for demographic factors, income relative to housing stock is a proxy for demand relative to supply.

marketable value of unfinished properties. The possible eventual liquidation of large stocks of distressed developer inventories at a discount could affect broader house prices.

- A *structural reduction in speculative demand* could impact prices through various channels. Structural decline in the vacancy rate due to sales of previously unoccupied investor-owned properties could effectively boost housing supply relative to household income, reducing prices over time in a standard model like the one noted above. More generally, declining investment- or collateral-motivated housing demand may reduce the market-clearing price of housing, particularly given how high home prices are relative to household incomes and rental yields.

- *Expectations for lower growth of household incomes and weaker activity* would similarly create expectations for softening house price growth. Developers' financial distress may also worsen already-stretched local government finances, raising the likelihood of tighter regional financial conditions and future fiscal consolidation (see Section D and the SIP on LGFVs).

Projecting Future Demand and Supply

13. This analysis projects residential real estate investment into the medium term based on the path of expected fundamental demand and the unwinding of supply-side distortions. Using the approach developed in Chivakul et al (2015), this analysis assumes that the developer sector supplies new homes based on the expected demand for housing, i.e., fundamental demand. This baseline production decision is then modified due to various supply-side distortions, which prompt developers to reduce supply in the short run. For the sake of simplicity, the potential impact of prices is not factored in but discussed qualitatively in Section D. In subsequent sections, the estimated path of supply over the medium-term—measured in housing starts in floor space terms—is then used to project the path of real estate investment in GDP.

14. The path of fundamental demand is estimated as a range between two scenarios. For simplicity, both scenarios use United Nations projections for total population growth, under the medium fertility assumption, and assume urbanization slows in line with World Bank projections, but use different assumptions on the size of the average household.

- *In a scenario with lower average household size*: the average persons per household falls from 2.77 in 2021 to 2.4 in 2034, approaching levels similar to Japan or Korea, more than offsetting the drag from aggregate decline in the population.[8] Net demand from replacement of older units is derived by extending the 2010 to 2020 pace of decline in the pre-2000 housing stock, but starting from a significantly lower base of housing, roughly equivalent to 2.8 million units per year. The average new-build apartment size also grows, from 114 square meters in 2020 to 121 square meters. This reflects both strengthened policies to redevelop remaining substandard

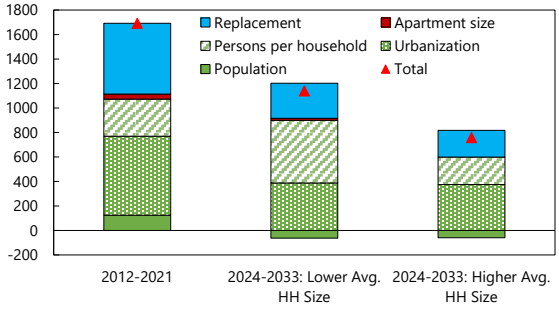
[8] Japan's average household size was 2.52 persons when it reached a similar stage of aging (in 2007) that China is projected to reach in 2034 (approximated by the old-age dependency ratio). Korea has not yet reached China's projected 2034 old-age dependency ratio but average household size (estimated by total population divided by total households) has been below that of China or Japan at comparable periods of aging.

housing and robust demand for larger, more modern housing driven by ongoing income growth.[9]

- *In a scenario with higher average household size*: the average household size falls to only 2.6, reflecting greater drag on net household formation from persistent youth unemployment, weak consumer confidence, and continued cohabitation of older adults with working children. Replacement demand occurs at two-thirds the annual pace of the upside scenario, generating demand for only 2.1 million units of housing per year over a decade. The average apartment size remains unchanged.

15. These estimates project fundamental demand in the coming years will decline roughly in the range of around 35-55 percent relative to the past decade, to an average of about 950 million square meters per year. The largest overall compression comes from estimated replacement demand, given the rapid pace of demolition in the 2013-2018. The decline in average household size accounts for the largest difference between the upside and downside scenario, reflecting both the importance of this variable in determining net household formation and the significant uncertainty in projecting its path going forward. These fundamental demand estimates are broadly in line with recent estimates by private analysts in China.[10]

Estimated Annual Average Fundamental Housing Demand
(Millions of square meters)



Sources: CEIC Data Company Limited; and IMF staff calculations.
Note: HH=Household.

16. Housing supply is assumed to equal future fundamental demand, adjusted for drag from supply-side factors. Developers' supply function in any given year is expressed in starts in floor space terms and is assumed to equal expected fundamental demand 1.5 years in the future. This reflects an assumption of a three-year production cycle, with pre-sales (the dominant form of new home sales) only allowed one year into the production process, with developers aiming to complete pre-sales before the end of year two. Several other supply-side modules are then layered on to the baseline supply function to derive the expected path of new supply.

- *Excess housing inventories.* Developers are assumed to reduce new starts when realized sales fall below projected demand, resulting in excess inventories.[11] These inventories are cleared over

[9] In both scenarios, projected replacement demand is assumed to be frontloaded as authorities seek to offset downside pressures from the current downturn. In both cases, 60 percent of the 10-year total occurs in the first five years.

[10] Wu and Xu (2021) project demand for new housing in the 2021-2030 period will decline by an average of 43 percent compared to 2011-2015. Xia and Xu (2022) predict 996 million square meters of new demand through 2035; Song and Zhang (2022) see 960 million square meters in the 2026-2030 period. These are slightly above the central scenario but well within upside and downside scenarios.

[11] Excess inventories are calculated as the cumulative sum of lagged 1.5 year starts less sales.

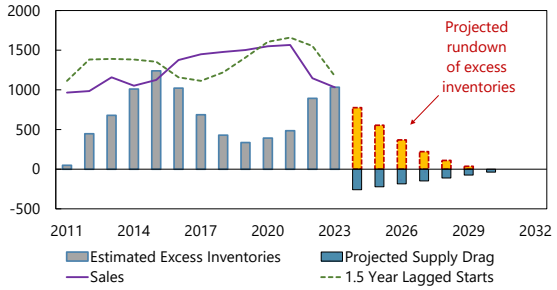
time by the assumed reduction in starts, with their sales in future years assumed to meet the gap between new supply and fundamental demand.

- *New supply from investor sales.* Declining prices and uncertainty related to the prolonged market adjustment lead households to reduce their holdings of unoccupied investment properties. Increased secondary market supply from these investors leads to an equivalent decline in expected fundamental demand. A conservative estimate of 5 percent of cumulative 2017-2021 sales is used.[12]

- *Presale completion backlogs.* Developers facing liquidity stress reduce new starts to redirect available funds to completing overdue presold housing owed to homebuyers, in line with the authorities' policy priorities and observed practice. To account for significant uncertainty in estimating the magnitude of this channel, the developer sector only faces a trade-off for one quarter the estimated presale completion backlog attributed to liquidity-constrained developers, or ten percent of the total.[13]

17. The combined drag from supply-side factors is equivalent to about 17 percent of projected fundamental demand in the 2024-2033 period. Excess inventories as of end-2023 are estimated to be just over 1 billion square meters in floor space terms, slightly below the levels reached during China's property market downturn in 2014-2015 (text chart). New supply from investor sales would amount to 377 million square meters, while the reduction in new starts related to distressed developer backlogs amounts to 535 million square meters.

Estimated Developer Excess Inventories
(Floor area: Millions of square meters)



Sources: CEIC Data Company Limited; and IMF staff calculations.
Note: Data for 2023 is estimated based on year-to-date data.

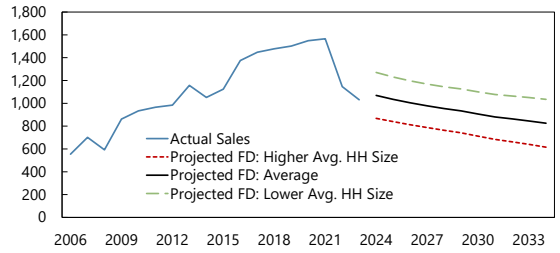
18. Converting fundamental demand to point-in-time levels requires simplifying assumptions but is needed to generate a time path for new supply. Changes in demographic and housing stock factors are expected to have a slow-moving impact on demand and in any given year may be dominated by short-term cyclical variations in household formation or economic

[12] Data gaps are particularly significant in estimating potential new supply from investor sales, but survey data consistently point to elevated vacancy rates. Bloomberg cited China Real Estate Information Service data from March 2022 indicating that for 26 cities over a three-year period, roughly 42 percent of newly purchased homes remained vacant. A 2017 survey by Southwestern University of Finance and Business put the total vacancy rate at 22 percent. A PBC survey on household wealth (PBC 2019) found that a sample of 30,000 urban households owned roughly 45,000 homes, implying a vacancy rate as high as one-third (rental markets are relatively underdeveloped outside of the largest cities).

[13] Their presale completion backlogs are calculated as the cumulative gap between two years' lagged presales and estimated presale completions. The presale completion backlog layer may somewhat overstate the scale of overdue presold housing due to biases in the starts and completion data noted earlier, as starts and sales appear to be somewhat over- and under-reported respectively, due to different statistical survey techniques and other factors. Reliable data on stressed developers' actual project-level liquidity are also not available to ensure the realism of the assumed liquidity budget trade-off between starts and completions.

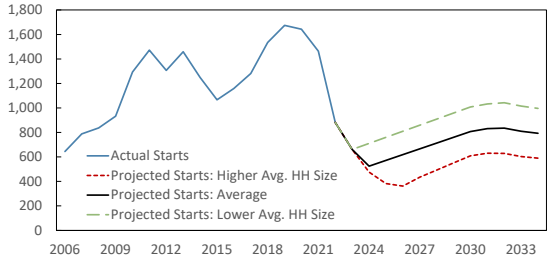
activity. To facilitate more granular forecasting of housing supply from the near term into the medium term, fundamental demand is converted to point-in-time levels. The drag from supply-side disruptions is assumed to be concentrated in the first three years, and then gradually dissipate over the following four years. This is somewhat longer than the average duration of past housing market downturns in many OECD countries but extrapolates forward the slow pace of adjustment seen in the first two years of the crisis.[14] Fundamental demand is expressed in floor space terms and converted to annual data.

Residential Real Estate Sales and Projected Fundamental Demand
(Floor area: Millions of square meters)



Sources: CEIC Data Company Limited; and IMF staff calculations.
Notes: Sales for 2023 estimated. FD=Fundamental Demand. HH=Household.

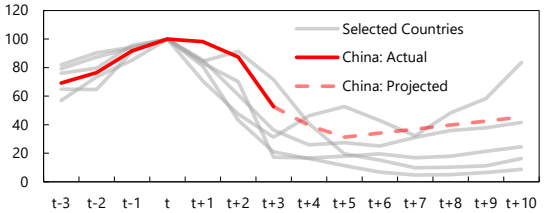
Real Estate Starts: Actual and Projected
(Floor area: Millions of square meters)



Sources: CEIC Data Company Limited; and IMF staff calculations.
Notes: Starts for 2023 estimated. HH=Household.

19. Once supply-side drags are incorporated, the projected medium-term path of new housing starts is subdued for an extended period, with the bulk of the decline stemming from lower fundamental demand. New starts in the ten years of the period starting in 2024 average about 715 million square meters in the central scenario, about 45 percent of the 2019-2021 average level (1.6 billion square meters). The drag from supply-side factors generates about one-quarter of this decline, while declines in fundamental demand and other factors contribute the remainder. As estimated supply factors fade out but fundamental decline falls further in the first five years of the 2030s, the average level of new starts would rebound to only about 52 percent of the 2019-2021 peak pace before starting to decline (text chart).

Selected Countries: Decline in Real Estate Starts During Downturns
(Housing units: Index t=100)



Source: Haver Analytics, CEIC Data Company Limited, and IMF staff calculations
Note: For China, t=2019. Countries include US (t=2005); Spain (2006); Sweden (1990); Denmark (2006); Ireland (2005). For China, starts are measured in square meters of floor space.

20. The magnitude and persistence of the projected decline would not be an outlier based on cross-country experience. Among thirteen advanced economies with relevant data, just five have experienced declines in housing starts of over 50 percent in three years, roughly matching the 60 percent three-year decline in China from 2021-

[14] Bracke (2013) finds that the average duration of 19 OECD housing downturns—as measured by home prices—is five years but notes the duration of downturns tends to be positively correlated to that of the upturn, which also favors assuming a longer adjustment period. Kolscheen et al (2018) find that the median downturn in real estate investment across 15 advanced economies is about 11 quarters.

2023. Among these five countries, housing starts remained subdued for an extended period, averaging 26 percent of peak levels over the subsequent five-year window (text chart). The circumstances of these comparator cases differ from China's current conjuncture in important ways, notably the presence of banking crises, sizable declines in housing prices, and shocks to household balance sheets and employment. In China's case, the severity of the shocks to the housing activity may nonetheless be comparable, as supply is likely to be affected for years by severe and persistent financial distress in the developer sector, while declines in demand are likely to be exacerbated by only modest price adjustments.

Estimating the Impact on Real Estate Gross Fixed Capital Formation

21. The impact of the projected path of new starts on real estate investment in GDP is then estimated. For this, the analysis uses an estimate of real estate gross fixed capital formation (GFCF), which is compatible with national account (GDP) data.[15] Following Chivakul et al (2015), the growth in real estate GFCF is estimated with its own lag terms and the growth in floor space starts, with the results described in Table 1. Both coefficients are constrained to sum to one, which ensures that the average growth rates of the two series are the same over time. The resulting coefficients are then used to convert the path of floor space starts from the previous section into real estate GFCF.

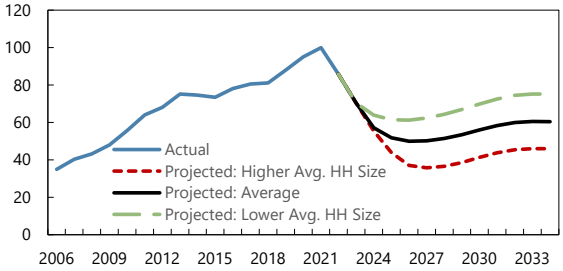
$$\textit{Growth of Real Estate GFCF}_t = \beta_1 \times \textit{Growth of Floor Space Starts}_t + \beta_2 \times \textit{Growth of Real Estate GFCF}_{t-1}$$

Text Table 1. China: Regression Results

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
β_1	0.3383	.0528	6.40	0.000	0.2263	0.4503
β_2	0.6616	.0528	12.52	0.000	0.5497	0.7737

22. The resulting path of real estate GFCF projects declines of roughly 30-60 percent from the end-2022 level by the middle of the 2020s. Real estate GFCF is expected to fall to about 50 percent of its 2021 peak level in the mid-2020s in the central scenario, which is consistent with the lagged impact of the decline in starts. Real estate investment begins to rebound in 2028, eventually reaching 60 percent of its 2021 peak level in the mid-2030s.

Projected Real Estate Gross Fixed Capital Formation
(Index: 2021=100)



Source: CEIC Data Company Limited and IMF staff calculations
Note: HH=Household

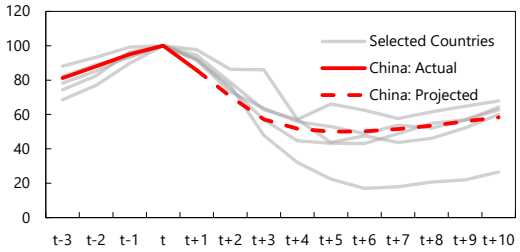
23. This decline would also be consistent with comparable cross-country experience. Of the five countries that experienced a three-year

[15] Real estate GFCF is estimated by using the share of real estate investment (ex-land purchases) in NBS total fixed asset investment, and then using that share in real GFCF in the national accounts data.

decline in starts exceeding 50 percent, most experienced a substantial and prolonged decline in real estate gross fixed capital formation. Real estate investment in these countries averaged 57 percent of peak levels in the ten years after peak investment was reached, compared to 58 percent estimated over the same period in China in the average of the two household size scenarios.

24. The overall impact of declining real estate investment on GDP would be amplified through demand linkages to other sectors. Final demand from real estate-related activity accounted for roughly 20 percent of the economy's total value-added as of 2020, the latest year for which data are available, and has been roughly consistent over the prior decade. About two thirds of this comes from real estate's imputed portion of construction activity, and its upstream linkages to producers of metal, glass, cement, and the other goods and service inputs that are used to build housing. Another third comes from real estate services, a sizeable portion of which comes from services connected to the stock of existing housing, for instance leasing and property management. The impact on GDP could be larger due to declining demand for housing-related goods (furniture, appliances) as well as due to wealth effects.

Selected Countries: Decline in Real Estate GFCF During Downturns
Index (t=100)

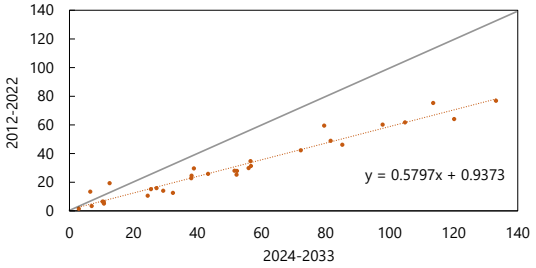


Source: Haver Analytics, CEIC Data Company Limited, and IMF staff calculations
Note: For China, t=2021. Countries include US (t=2005); Spain (2007); Sweden (1990); Denmark (2006); Ireland (2006).

C. Medium-Term Adjustment at the Province Level

25. The demand and supply projections are extended to the province-level with some modifications. The urban population for each province is assumed to grow in line with the national projection scaled by the contribution of that province to urbanization growth in the 2017-2021 period. The change in average household size is likewise assumed to grow in line with the national projection, but scaled by the 2017-2021 province-level change in average household size. Replacement demand is calculated again for each province based on the share of pre-2000 housing in the housing stock in 2020 and the pace of reduction of such housing in the 2010-2020 period.[16]

Estimated Average Annual Province-Level Fundamental Housing Demand, by 10-Year Period
(Millions of square meters)

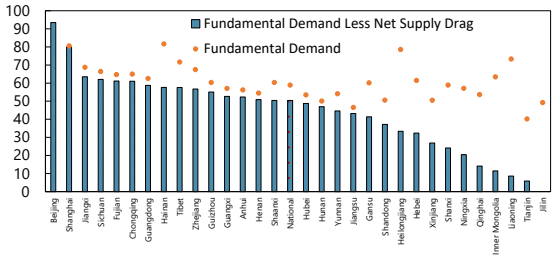


Sources: CEIC Data Company Limited; National Bureau of Statistics China; and IMF staff calculations.
Note: Each dot is a province.

[16] The sum of province-level fundamental demand projections differs only negligibly from the national level projections. For urban household formation- and replacement-driven fundamental demand, provincial vs national projections differ by 1.3 and 0.2 percent, respectively, reflecting minor inconsistencies between national and provincial demographic data.

26. For most provinces, the decline in estimated fundamental demand and supply broadly match the aggregate decline. Fundamental demand for the 2024-2033 period, capturing only demand from urban household formation and replacement, falls by 46 from the 2012-2021 period for the median province, with most seeing declines of 30-55 percent. Factoring in the estimated drag on supply from factors such as excess inventories and investor housing sales, average annual projected housing starts in this period are likely to fall 52 percent from their 2019-2021 average pace in the median province, broadly in line with the projected decline in starts nationwide.

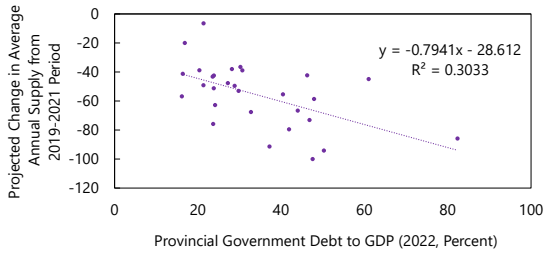
Projected Province-Level Fundamental Housing Demand and Supply Drag in 2024-2033
(Percentage of 2019-2021 Annual Average Housing Starts)



Sources: CEIC Data Company Limited; National Bureau of Statistics China; and IMF staff calculations.
Notes: Each dot is a province. The value for fundamental demand for Beijing is not shown but is 155 percent.

27. The estimated drag on starts from supply-side factors is unevenly distributed across provinces, with some concentration in provinces with well-known debt issues. In the 2024-2033 period, the median province faces an average supply-side overhang effect equivalent to roughly 10 percent of the average pace of starts in the 2019-2021 period. For one quarter of provinces this effect is equivalent to 35 percent or more of the recent pace of building activity, which brings their decline in projected average supply to 30 percent or less of the 2019-2021 pace. This segment of provinces is relatively small in aggregate—accounting for only 13 percent of nationwide starts in the 2019-2021 period—but are already among the more fiscally vulnerable provinces based on their official LG debt to GDP ratio (see chart).

Projected Change in Province-Level Supply vs Local Government Debt Burden



Sources: CEIC Data Company Limited; National Bureau of Statistics China; and IMF staff calculations.
Note: Each dot is a province.

28. Housing market policies—including responses to the recent downturn—should be tailored to localized supply and demand projections. For provinces with relatively limited net fundamental demand in the 2024-2033 period, large-scale stimulus to support new housing construction should be avoided in favor of policies that make better use of the existing housing stock. Local supply and demand considerations should also be important considerations in the resolution of unfinished presold projects of financially distressed developers. For projects with significant unsold housing located in markets with weaker demand, partial monetary compensation to homebuyers may be more effective than completing the project.

D. Implications for the Chinese Economy

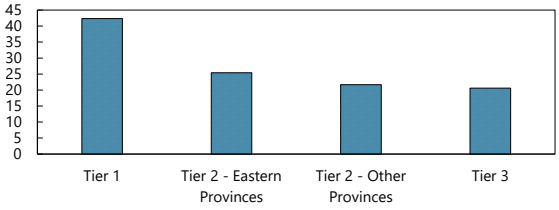
29. The housing market adjustment could be deeper and more protracted if actual sales fall below projected fundamental demand. The supply model underlying this paper assumes that the total absorption of housing supply in each period is equal to projected fundamental demand. As

discussed in section B, actual demand is not solely determined by demographic and housing stock factors, and for instance could fall due to expectations for house price declines or weakening household income. In this situation, developers' stock of excess inventories—or the extra secondary market supply from investor sales—will be run down more slowly than projected or could even rise.[17] If housing demand was weaker than expected, developers would respond by cutting back housing starts further, creating negative spillovers to demand for construction and other upstream industries.

30. The controlled and slow pace of house price adjustment is one factor likely to suppress sales relative to fundamental demand, prolonging the property market contraction. As noted, the relatively limited price adjustment appears to partially reflect efforts by LGs to limit the pace of price declines.[18] While these have likely played an important role in limiting spillovers to household and lender balance sheets, preventing more immediate macro-financial spillovers, price declines generally play an important role in clearing the housing market and restoring equilibrium between supply and demand.

31. Drawn-out price adjustments could reinforce supply pressures and entrench expectations for persistent house price declines. Current house price levels are high relative to both household incomes and rental yields, reflecting the prevalence of investment-motivated demand and the importance of expectations of future price appreciation for homebuyers prior to the property crisis. Going forward, particularly insofar as the decline in home sales is seen as long-lasting, homebuyers' expectations that property prices will gradually adjust lower to converge with market-clearing levels could further weaken actual sales relative to fundamental demand, prolonging the needed adjustment, and undermining the restructuring of developers' balance sheets.

Home Price to Income Ratio, by City Tier (2020)
(Multiples of per capita household disposable income)



Sources: WIND; CEIC Data Company Limited; and IMF staff calculations.
Notes: Figures shown are weighted averages. Tier 1 cities include Beijing, Shanghai, Shenzhen, and Guangzhou. Eastern Provinces in Tier 2 include Anhui, Fujian, Jiangsu, Jiangxi, Shandong, and Zhejiang. Price-to-income-ratio is based on the average 2020 sale price for a 90 square meter flat divided by the 2020 per capita household disposable income.

32. Another procyclical factor likely to continue weigh on sales is the unresolved and widening distress of much of the developer sector. The share of defaulted or distressed private developers continued to grow through mid-2023, surpassing 40 percent of the sector in 2020 market share terms. Restructuring of these developers has largely been delayed amid widespread use of forbearance to encourage completion of these firms' large backlog of unfinished presold

[17] Assuming that existing inventories are sold first, the undershooting of sales in a given period means that some newly built supply enters the stock of excess inventories, slowing the projected decline in excess inventories. If sales decline by more than the amount of excess supply projected to be sold in the period, then the excess inventories rise on net.

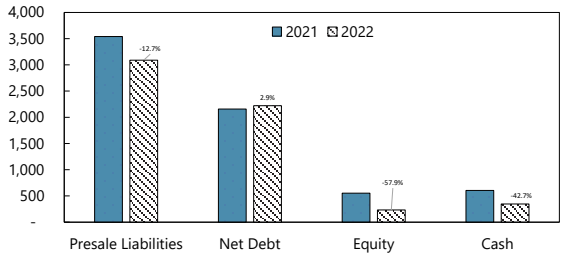
[18] Some downside rigidity in home prices is common in cross-country experience but is typically associated with a lack of "forced sellers", which is not applicable in China's current real estate market. In some cases, developers appear to be reluctant to cut prices, or limits on price cuts appear to be driven by political pressure from existing homeowners.

housing, resulting in continuing deterioration of their financial positions.[19] The unresolved distress among some of these developers—and the slow pace of their delivery of presold housing, proxied by the decline in their presale liabilities in 2022 (text chart)—is likely to reinforce homebuyers' caution in purchasing unfinished homes from all but the strongest developers, for instance those with strong central government backstops. Uncertainty over the ultimate resolution of troubled developers' large stock of unfinished properties, residential land, and arrears to suppliers may reinforce homebuyer concerns about the market more generally and further depress sales relative to fundamental levels.

33. Interlinkages between the property sector and local government finances could amplify fiscal vulnerabilities. Local governments have long relied on land sales to property developers and real estate-related taxes to cover their significant structural fiscal deficits, and many smaller cities saw a surge in land sale revenues in the years before COVID. In many cases these land revenues, and the use of land for collateral, helped secure these provinces' heavy off-budget borrowing. The widespread liquidity distress in the developer sector has however resulted in a sharp decline in land revenues (and likely in land valuations). This has exacerbated on- and off-budget financial difficulties for many local governments, reflected in reports of rising local government and LGFV arrears, and raises the risk of significant fiscal consolidation in the future. Cross-province evidence suggests land sales declines in 2022 were most acute in provinces with pre-existing fiscal weaknesses, proxied by provincial government debt-to-GDP ratios at end-2021 (text chart), suggesting a potential negative feedback loop between declining property activity and fiscal vulnerabilities.

Selected Balance Sheet Items of Distressed Developers

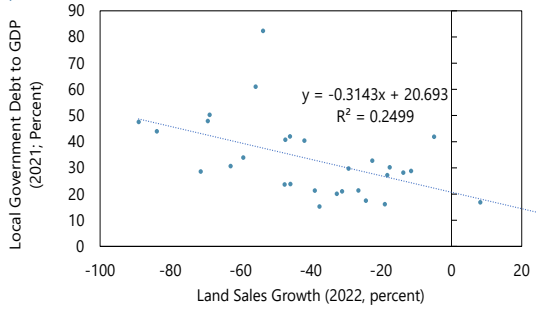
(Billions of renminbi)



Sources: Capital IQ, and IMF staff calculations.
Notes: Includes 24 distressed developers with available financial statements for 2022. Distressed developers have either defaulted within last two years or have average bond prices below 40.

Province-Level Land Sales Growth in 2022 and Local Government Debt to GDP in 2021

(In percent)



Sources: Capital IQ, and IMF staff calculations.
Notes: Each province is a dot. Hainan is excluded.

34. The authorities' plan to increase production of public housing would be broadly beneficial to construction activity but could also increase the required adjustment in the private housing market. Significantly increased public housing production could help offset the decline in construction sector activity, limiting the projected declines in overall real estate

[19] Limits on price adjustments could also interfere with the restructuring of developer balance sheets by limiting discounts on saleable assets.

investment. More public housing would also provide more affordable alternatives to the private market, particularly for relatively lower-income household segments. But increased supply of public housing will also absorb fundamental demand for new housing units, shrinking the equilibrium supply growth needed in the private market, potentially delaying the resolution of oversupply in some regions. The impact could be partially mitigated if developers received new revenue streams from overseeing the production of public housing.

E. Policies for Smoothing the Transition

35. The authorities should prioritize the expedited resolution of supply-side imbalances in the property market. The looming and potentially sharp slowdown in fundamental demand for new housing increases the urgency of reducing excess inventories and restructuring the property developer sector. The multiple potential procyclical feedback loops involving prolonged demand weakness—with house prices, developer balance sheets, local government fiscal vulnerabilities—increase the risk of spreading this market adjustment out over time. To facilitate such supply-side transition, the following policies are needed.

- *Accelerating exit of nonviable property developers*. Forbearance policies for property lending should be phased out. Supervisors should guide lenders to adopt a conservative approach in assessing developer viability and collateral values and require banks to recognize losses and initiate insolvency proceedings as necessary. The existing corporate restructuring and insolvency regime should be used more, with strengthened liquidation proceedings and out-of-court settlements (Araujo et al, 2022).

- *Supporting housing completion.* In cases of commercial nonviability, projects with unfinished presold housing units should be taken over by a central-government-backed support scheme for homebuyers awaiting delivery (as described in Box 1, IMF 2022). The scheme would either complete taken-over projects or provide partial compensation to affected homebuyers, whichever is less costly.

- *Allowing market-based adjustments in house and land prices.* Macroprudential and other housing and development policies should not be used to impede market-based price adjustments, which are needed to restore stability and confidence in the regions with excess supply. Some cross-country evidence shows that faster home price depreciation episodes are associated with stronger growth in GDP and productivity compared to modest but prolonged home price declines, by improving capital allocation efficiency and labor mobility (Jinjarak et al, 2016).

36. Another set of policies is needed to help right-size and de-risk viable property developers.

- *Reforming the presale model.* Developers' use of presale funding as general source of liquidity should be strictly prohibited. Such funding should be backstopped by stronger financial and legal protections for presale homebuyers, for instance by introducing stricter escrow rules and third-party completion insurance. Government-backstopped completion guarantees, backed by conservative underwriting, could also help restore homebuyer and creditor confidence as

developers gradually unwind their business model reliance on presales as a source of liquidity (Box 1, IMF 2022).

- *Expanding housing access.* Further boosting policy support for public and rental housing construction programs would help meet fundamental demand for lower-income segments and reduce the need for household savings to purchase private housing at elevated valuations. Public housing programs could also be designed to help alleviate the transition for the developer sector by re-purposing private inventories—easing the supply-side adjustment—and by providing alternative revenue streams for developers for new construction.

- *Assisting surviving developers repair balance sheets to adapt to a smaller property market*. Surviving firms should be guided to speed up their use of mergers, asset disposals, equity raising, and other tools (including debt restructuring) to boost capital and liquidity buffers.

37. A third set of policies is needed to address the fundamental pressures that incentivized the original build-up of risks in the property sector.

- *Households should be guided towards alternative investment options*. To reduce investment-driven demand for housing, medium-term policy measures should include a new nationwide property tax and introduce alternative saving options such as "third pillar" pensions and a voluntary supplementary medical insurance plan.

- *Fiscal reforms are needed to help reduce local governments' reliance on land sales and property activity.* Tax reforms laid out in the accompanying SIP on revenue measures would generate a significant amount of new revenue for local governments. In addition, the share of revenue allocated from the central to the local government should be increased, where needed, to be commensurate with local governments' spending mandates and thus reduce existing vertical fiscal imbalances. Moreover, transfers to local governments could automatically respond to local economic conditions, attenuating the need for local governments to resort to off-budget financing (IMF 2020). Finally, provinces' growth targets, which encourage excessive investment financing by growing indebtedness at the local level, should be phased out.

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A REVENUE MOBILIZATION STRATEGY FOR CHINA[1]

This Selected Issue Paper (SIP) provides a high-level assessment of the tax system and presents a menu of tax policy reforms to address the main gaps. It covers the largest tax items and estimates the revenue potential of reforms, as well as benefits such as redistribution and rebalancing. It then proposes a sequencing strategy that achieves an adequate pace of fiscal consolidation once the recovery is secure while contributing to a more sustainable and inclusive growth path. Over the coming years, China could move to specific and higher excise tax rates; adjust the personal income tax (PIT) tax schedule to raise average rates while reducing social security contributions (SSCs); introduce a nationwide property tax; reduce the number of value added tax (VAT) rates and exemptions; and increase revenue from carbon emission permits. Such a package of reforms is estimated to raise the tax-to-GDP ratio by 5-6 percentage points over the next 5 years, with about half that amount accruing to (financially stressed) local governments.

A. Introduction

1. China has implemented important tax reforms in the past decade, increasing the efficiency of the tax system. These include transitioning from a turnover tax to a VAT in 2016 and a comprehensive reform of the PIT in 2018, which also simplified the system by reducing the number of schedules. Recent reforms improved the efficiency of the VAT, including by widening eligibility for refunds of excess VAT credits, expanding access to input tax credits, and consolidating VAT registration thresholds. In December 2022, China publicly solicited opinions on a draft VAT law that overhauls consumption taxation, bringing it closer to international best practice.[2]

2. At the same time, tax revenue has declined substantially as a share of GDP, rendering the current tax ratio the second lowest among comparator countries.[3] This trend predates the pandemic, with tax revenues in China and among countries with similar economic fundamentals starting to diverge in 2016. While the tax-to-GDP ratio of comparators increased to 19 percent, China's fell below 14 percent of GDP in 2022 (Text figure 1, left panel). The low tax ratio contrasts with the average of G20 economies at 18 percent of GDP and G7 economies at 23 percent. While China stands out internationally for its low revenue collection from PIT (Text figure 1, right panel), the main driver of the decline in tax revenue have been a series of tax policy measures lowering

[1] Prepared by Sebastian Beer and Daniel Garcia-Macia (both FAD).

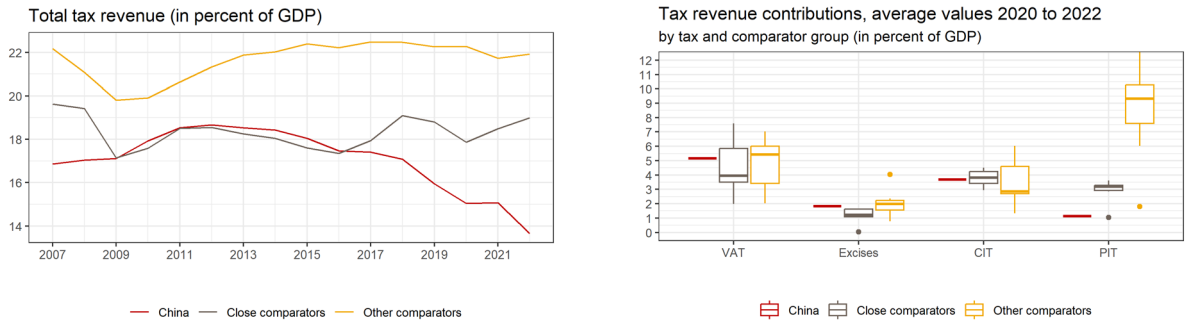
[2] A second public consultation was initiated in August 2023.

[3] China's level and composition of tax revenue is benchmarked against two sets of country comparators. The first set is chosen to resemble China in key economic indicators that impact tax revenue potential (Annex I). It includes Brazil, India, Indonesia, Philippines, and Russia, as well as weighted average of India and Russia (synthetic control). The second set includes seven large advanced and emerging economies as well as averages of two country groupings: Australia, Brazil, India, Indonesia, Russia, South Africa, Thailand, G7 and G20.

consumption taxation.[4] Tax relief implemented during the pandemic to stabilize the economy (and subsequently extended to support the post-pandemic recovery) added to the revenue decline.

3. Stabilizing government debt while ensuring inclusive growth will require a revamp of fiscal policy, with a central role for tax reform. Gradual fiscal consolidation to stabilize debt in the medium term could be partly achieved by a reduction in infrastructure investment, mainly by off-budget entities. However, the concurrent need to expand the social protection system to achieve inclusive growth, support rebalancing, and meet the needs of an aging society underscores the importance of revenue mobilization in addition to investment cuts (please see the Staff Report). The expiration of pandemic tax relief over the coming years will partly contribute to this objective, but tax reforms are also required to fully finance social spending needs, while making the tax system more efficient, equitable, and conducive to economic rebalancing. This is particularly needed as LG revenue sources related to land sales are expected to remain subdued.

Text Figure 1. China: Tax Revenue in China and Comparators



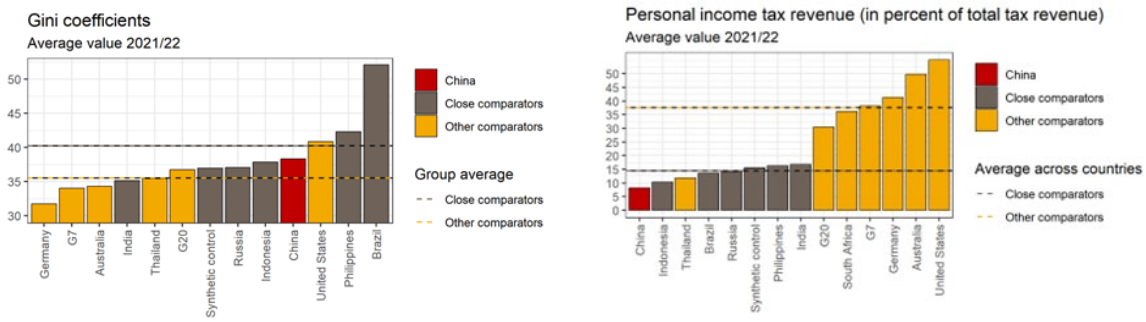
Sources: WEO database, GFS, IMF-staff computations.
Notes: Right panel depicts boxplots, where horizontal line indicates the median and the boxes the middle 50 percent of the distribution. The dots illustrate potential outliers, that is observations that lie above/below 1.5 times the interquartile range (which is represented by the box).

4. This SIP proposes a revenue mobilization strategy to achieve fiscal consolidation while contributing to a more sustainable and inclusive growth path. Based on international experience and drawing on the analysis of previous IMF technical assistance reports on China, the paper offers a strategy for revenue mobilization by laying out a menu of tax policy reforms that China could progressively implement over the coming years, together with estimates of their revenue potential (by level of government) and an assessment of accompanying benefits. The suggested reforms focus on several key areas:

[4] In general, consumption taxes include different measures, such as the VAT, excise taxes, or retail taxes. In China, the tax burden from excises remained constant in recent years. The decline has been related to a switch from a turnover tax to VAT and reductions in the VAT rate.

- **Increasing reliance on personal income taxation**. The PIT remains complex, collecting little revenue, SSCs are outsized relative to comparators, and the tax burden on capital income is comparatively low. A top marginal tax rate of 45 percent under the PIT contrasts with a flat rate of 20 percent on capital income, leading to a combined effective tax burden on labor and capital that is likely regressive across the income distribution. An upgraded PIT system with higher average rates combined with lower SSCs can reduce income inequality (Text figure 2, left panel), and by increasing the net-of-tax income of citizens with a greater propensity to consume, support rebalancing toward consumption-led growth. Raising capital taxation would further support these goals.

Text Figure 2. China and Comparators: Income inequality and Personal Income Tax



Sources: World Bank database, IMF staff calculations.

- **Reducing the tax-favored status of owner-occupied housing.** China's real estate sector is a central store of household savings and has, like in other countries, benefitted from a tax-favored treatment, contributing to the sector's size. Once the housing market converges to its new equilibrium and social protection is strengthened, the authorities should gradually reduce subsidies (such as tax deductibility of mortgage interest payments or the tax exemption on contributions to the housing provident fund) provided through the tax system. A nationwide real property tax would go a long way toward increasing the efficiency and fairness of the tax system.

- **Leveraging international tax reform.** Even though China's corporate income tax (CIT) is relatively efficient by international standards, tax incentives offered for certain companies and activities may distort competition while complicating administration. The Inclusive Framework's (IF) international tax reform provides a welcome opportunity to review the effectiveness of existing incentives and implement a domestic minimum tax.

- **Improving the efficiency of indirect taxation.** VAT revenue remains the most important source of tax revenue in China. The new draft VAT law released end-2022 includes important improvements that could move China's VAT closer to international best practice, but further reforms are necessary to reduce distortions and administrative costs. There is also scope for progress in excise taxation and carbon pricing.

5. A well-sequenced package based on the above reforms could raise sizeable revenue, make the tax system more efficient and equitable, and contribute to rebalancing (Text table 1). Short-term efforts should focus on raising capital taxation, reversing (untargeted) pandemic relief measures, and leveraging the ongoing international tax reform. Over the coming years, China could move to specific and higher excise tax rates; adjust the PIT schedule to raise average rates while reducing SSCs; introduce a nationwide property tax; reduce the number of VAT rates and exemptions; and increase revenue from carbon emission permits. Such package of reforms is estimated to raise the tax-to-GDP ratio by 5-6 percentage points over the next 5 years, with about half that amount accruing to (financially stressed) local governments. The reform measures would also increase economic efficiency, reduce inequality, improve the cyclical stabilization properties of the tax system, support private consumption, and have positive spillovers to health and climate outcomes.

Text Table 1. China: A Revenue Mobilization Strategy: Measures and Estimated Yields

Tax Item	Measure details	Impact on revenue (% GDP by year 5)	LG share (%)	Benefits	Sequencing
Personal Income Tax	lower PIT thresholds, increase PIT rates	2.7	40	equity, cyclical stabilization	5
Social Security Contributions	reduce social security contributions	-1.3	100		
Capital income tax	raise tax rate to 25%, reduce mortgage deductibility	0.3	40	equity, efficiency, rebalancing	1
Wealth Taxation	introduce property tax, estate and gift taxes	0.9	100		6
Corporate Tax	Streamline incentive regime, introduce minimum tax in line with Pillar 2, introduce excess profit tax	0.4	40	efficiency, cyclical stabilization	3
VAT	withdraw Covid measures	1	50	efficiency, simplicity, cyclical	2
	reduce number of rates and exemptions	0.4	50	stabilization	7
Excise Taxes	increase specific rates on tobacco, alcohol, and fuel	0.4	100	health	4
Carbon pricing	expand ETS pricing	0.6	TBD	decarbonization, health, rebalancing	8

Sources: IMF Staff estimates.
Notes: Revenue estimates are approximate and based on international comparisons. Sequencing rank is lower for measures that can be implemented sooner.

6. The rest of the paper discusses policy gaps and reform options across major taxes in greater depth. Specifically, Sections B to F focus on labor, capital income, property and wealth, corporate income, and indirect taxation, respectively.

B. Increasing the Effectiveness of Labor Income Taxation

7. China's PIT features a dual structure, with labor income subject to progressive schedules and capital taxed at a lower flat rate. Dual structures, which are common internationally,[5] balance economic efficiency—which under certain conditions calls for the non-taxation of capital income—with equity, and the recognition that some investment income has not been taxed at the individual level. Moreover, the taxation of capital income at a flat rate reduces

[5] Dual income taxation contrasts with comprehensive income taxation, which covers all sources of income—labor and capital—and subjects them jointly to tax at increasing marginal rates.

administrative costs by enabling withholding taxation, where third parties, such as financial institutions, pay tax on behalf of the income recipient.

8. While reforms in 2018 simplified the PIT system, it remains distortive, complex, and raises little revenue. Labor income continues to be taxed at a higher rate for employed than self-employed work, unduly incentivizing self-employment. The calculation method of taxable income from self-employment, using imputed costs and different methods across organizational forms, is also a source of distortions. More importantly, PIT revenue accounts for only 8.4 percent of total tax revenue in China, while that share is at 15 percent for China's synthetic control, and at 37.5 percent among other comparators (Text Figure 2, right panel).

9. The low revenue yield stems from an excessive basic deduction that eliminates any tax obligation for about 70 percent of the population.[6] While in no place, other than the Philippines, marginal tax rates increase as steeply as in China (progressive capacity) the large standard deduction of RMB 60,000 a year effectively removes PIT liability for about 70 percent of the population, reducing the aggregate effective tax rate to less than 5.5 percent, the lowest among comparators (Text figure 3, left upper panel).[7] As a result, China's PIT features a weaker redistributive capacity, measured as the difference in pre- and post-tax Gini coefficients, than most comparators except for Russia, which applies an almost flat tax on labor income (Text figure 3, right upper panel). Ineffective taxation of personal income contributes to China's mounting income inequality.

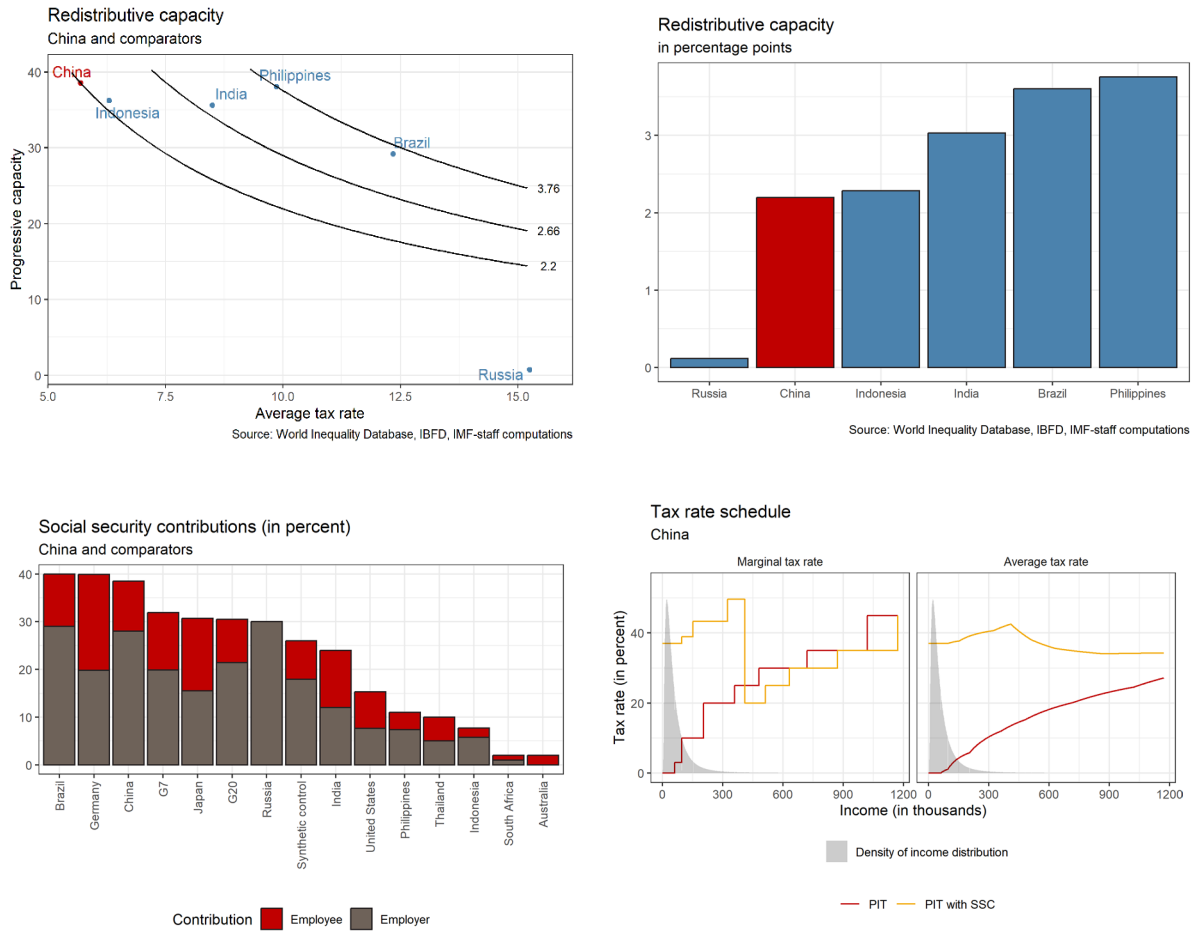
10. When accounting for the high SSCs, the total wedge between an employee's income and an employer's cost is essentially flat. China's top combined contribution from employers and employees amounts to around 38.5 percent of labor cost while G20 contribution rates are around 30 percent and a weighted average of Indian and Russian contribution rates—the synthetic control—is just 27 percent (Text figure 3, left lower panel).[8] Taking the example of Shanghai, for an employee earning RMB 65,000, the combined marginal government take of an additional yuan is almost 40 percent. However, as SSCs are capped at roughly 300 percent of a region's (or city's) average wage, the marginal government take is reduced to 22 percent for an employee earning RMB 450,000 (Text figure 3, right lower panel).

[6] Effective tax burdens on China's population are modeled by using income information from the World Inequality Database.

[7] Kakwani (1977) shows that the difference in pre- and post-tax Gini coefficients, a measure of redistributive capacity, can be broken down into a progressive element and an average tax rate. This implies that for any given tax progressivity, the larger the average tax rate, the more equal will be the post-tax income distribution.

[8] In China, some components of SSCs, such as for medical insurance or work-related injury, vary across regions. The analysis focuses on the maximum SSCs in China and comparators.

Text Figure 3. China: Features of Labor Income Taxation



Notes: Redistributive capacity – the difference between pre- and post-tax Gini coefficients – is computed by combining information on pre-tax income distributions (World Inequality Database) and countries' tax parameters.

Reform Options

11. By reducing SSCs and compensating with higher PIT, the authorities could increase net of tax incomes of the great majority of individuals.[9] Text figure 4 summarizes the current system and two reform scenarios that simultaneously change the PIT and SSC system, leading to increased post tax income of about 50 percent of the population:

- **Revenue neutral reform.** The revenue neutral reform sketched in Column 2 would increase net-income for the bottom 90 percent of the income distribution (Text figure 4, lower right panel). It would do so by reducing SSCs by 3 percentage points and increasing their cap by 25 percent. To

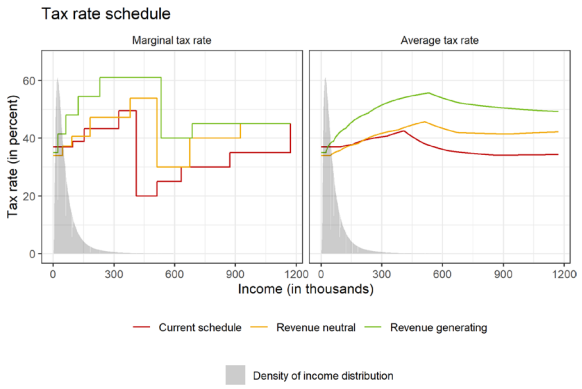
[9] China's social security system will face increasing pressure due to an aging society. The reduction in contributions to social insurance institutions should thus be compensated by direct budget transfers, partly financed by increased PIT collections, to keep the system sufficiently funded.

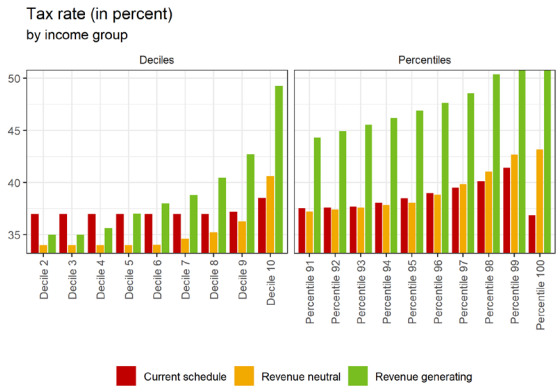
compensate for reduced SSCs, the reform would halve the standard deduction, increase the marginal tax rate applied in the first bracket to 5 percent and reduce all thresholds somewhat, including the top threshold from above RMB one million to 750,000.

- **Revenue raising reform.** A more ambitious reform would increase revenue by 1.4 percent of GDP by increasing the tax burden on the top 40 percent of the income distribution (sketched in column 3). This reform would cut SSCs to 35 percent, increase their cap by 30 percent, and reduce tax rate thresholds more aggressively.

Text Figure 4. China: Labor Tax Reform Options

	Current system	Revenue neutral	Revenue generating
First threshold (rate)	60,000 (3 percent)	30,000 (5 percent)	15,000 (10 percent)
Top threshold (rate)	1,020,000 (45 percent)	750,000 (45 percent)	500,000 (45 percent)
Increase cap for SSC by	-	25 percent	30 percent
SSC rate in percent	37	34	35
Redistributive capacity	2.2	3.2	5
PIT revenue in percent of GDP	1.2	2	3.9
Combined revenue (PIT/SSC) in percent of GDP	9.5	9.5	10.9





Notes: Table and figures present revenue and distributional effects of two reform scenarios. Computations based on information from the World Inequality Database.

12. A shift from SSCs to PIT would require compensatory policy adjustments. SSCs fully accrue to local governments, but only 40 percent of PIT collections do (Text table 1). The rebalancing toward PIT would thus imply a shift from local to central government revenues. Such effect could be offset by changing the revenue allocation of the PIT, introducing a nationwide real property tax that accrues at the local government level, or allowing provinces to impose additional payroll taxes within bands set by the central government.

13. Reforming PIT deductions could also improve equity and efficiency. Deductions are given for child education and care, major medical expenses, elderly care, mortgage interest and rent. Deductions reduce individuals' tax liabilities in proportion to the marginal tax rate they confront, thus providing a benefit that increases with income, and providing no relief to around 70 percent of the population, those with incomes below the standard deduction. The authorities should reverse the recent expansion of deductions and review if they can be scaled back or abolished. Those deductions on which a high social value is placed could be replaced by (refundable) tax credits, which would provide the same benefit to everyone regardless of income.

C. Improving Capital Income Taxation

14. China's taxation of capital income is low by international comparison and contrasts with the high, top marginal tax rate on labor income. In dual income tax systems, such as China's, progressive labor taxation is the centerpiece for curbing excessive wealth concentration. However, wealth and its returns are typically more unevenly distributed than labor income and often taxed more lightly. Adding a diverse and well-balanced mix of capital and wealth taxes thus plays an important role in achieving shared prosperity. Capital income is taxed at up to 20 percent in China, below rates in other major economies (Text table 2). Even for economies that tax capital income at similar levels, the gap between maximum labor and capital taxation is most pronounced in China.

15. Moreover, several exemptions further reduce the effective tax on capital income and introduce distortions across investment types. For instance, exemptions of interest from deposit and savings accounts with Chinese banks and from government and corporate bonds eliminate tax on a significant percentage of interest income of individuals.[10] Dividends and stock gains from listed companies are also exempt under certain conditions.

Text Table 2. China: Top tax Rates Applying on Labor Income and Selected Types of Capital Income

	Capital Income				Labor Income
	Interest Income	Dividends	Short-term Capital Gains	Rental Income	
China	20	20	20	20	45
Brazil	22.5	0	22.5	27.5	27.5
India	30	30	30	30	30
Indonesia	20	10	35	10	35
Russia	15	9	15	15	15
USA	37	37	37	37	37

Source: IMF staff compilation.
Notes: maximum tax rates applicable to residents.

[10] The exemption is only given to natural persons. Companies are liable to CIT on their interest income.

Reform Options

16. The authorities should start quantifying the costs and benefits of existing tax concessions for specific types of capital income to determine whether they are still necessary. Other countries publish regular Tax Expenditure Reports that detail exemptions, exclusions, special deductions, and credits showing deviations from general income tax principles and foregone revenue. Collecting such information would be a starting point in determining whether the special treatment should be maintained (see Beer and others, 2022).

17. Increasing the tax on capital income would curb tax planning opportunities and increase the effective tax rate on high-income individuals. With the return of most financial assets being subject to the capital income tax, this tax is a key tool for increasing the progressivity of the overall tax burden. An increased tax on capital income would also reduce the wedge between labor and capital returns, thus facilitating the taxation of small businesses, where the separation between capital and labor income is a dauntingly difficult task.

D. Improving Property and Wealth Taxation

18. While China has been piloting property taxation for many years, there is no comprehensive nationwide recurrent property tax. Instead, various transaction-based taxes, with rates depending on the location, the type of property and the value of the transaction, and a progressive capital gains tax—the Land Appreciation Tax—applies to property transfers.

19. The preferential tax treatment of owner-occupied housing likely fueled the property sector boom. The real estate sector benefits from various tax concessions for major taxes:

- **Mortgage interest deductibility**. Imputed rental income is not taxable while deductions for mortgage interest payments are available, resulting in a net subsidy that is increasing in the individual's top marginal tax rate.
- **Tax-exempt contributions to the housing provident fund.**[11] Mandatory contributions are deductible from the PIT. Moreover, the fund's investment income is exempt from capital income taxes, and no tax is levied on distributions from the fund, resulting in a marginal subsidy that ranges up to 45 percent (the top marginal income tax rate).
- **Limited taxation of capital gains.** Capital gains on owner-occupied homes are exempt from PIT if the property has been the only dwelling for the family for five years.

20. The lower tax burden on real estate held by individuals reduces the efficiency of capital allocation and financial market development. Rather than allocating savings to acquire property, individuals could also invest in the stock market or in government bonds. The effective tax

[11] The provident fund is an involuntary savings program for residential property purchases. Chinese employees and employers are required to contribute to housing funds monthly, and the funds can only be withdrawn to buy property in China.

burden on owner-occupied housing varies and depends on the holding period (through the burden imposed by capital gains taxes and deed taxes), the individual's income and the chosen financing structure. However, the average effective tax burden on alternative assets is likely to exceed the burden on housing assets in many cases, inflating aggregate demand for real estate above what would be observed in a neutral tax system.

Reform Options

21. A nationwide real property tax in combination with reduced income-based tax incentives would support more balanced investment behavior. Recurrent property taxes are efficient as the stock of land and buildings is relatively immobile.[12] Moreover, when complemented with a carefully chosen exempt threshold, property taxation is progressive and a stable revenue source, yielding around 0.7 percent of GDP in the Asia Pacific region and even more elsewhere (Text table 3). Increased property revenue could allow reducing the reliance on distortive transfer taxes. In combination with reforms of income-based tax concessions, a comprehensive property tax reform could increase the efficiency of capital allocation by reducing differences in effective tax rates across investment assets.

Text Table 3. China: Property Taxes as a Percentage of GDP in Different Regions

Region (# Countries)	In 2020
OECD	1.9
Africa	0.3
Asia-Pacific	0.7
Latin America	0.8

Sources: OECD Global Revenue Statistics Database (2022).

22. Property tax reform is politically sensitive, requiring gradualism and careful planning. Property taxes are highly visible and the link with benefits may be unclear to citizens. Moreover, to the extent that a property tax is capitalized in property prices, present owners will suffer a one-off loss in wealth through a change in the price level. Comprehensive property tax reform thus often confronts opposition. Successful implementation requires strong political will, detailed planning of administrative reform (including on valuation and record keeping), and a gradual implementation to restrain losses of current owners.

23. Estate taxation can curb excessive wealth inequality. Real property is a major store of value, but the wealth of top-income individuals is typically held in corporate stocks, financial securities, or unincorporated business equity. Inheritance (or estate) taxation can help reduce income inequality even if it typically yields no more than 0.2 percent of GDP. Tax-free thresholds that exempt small inheritances can reduce the compliance burden, both for taxpayers and the tax administration, and are equitable. Inheritance taxation requires even more planning than property taxation,[13] leaving this project for the medium term. Inheritance taxation would need to be coupled with a gift tax to restrict avoidance.

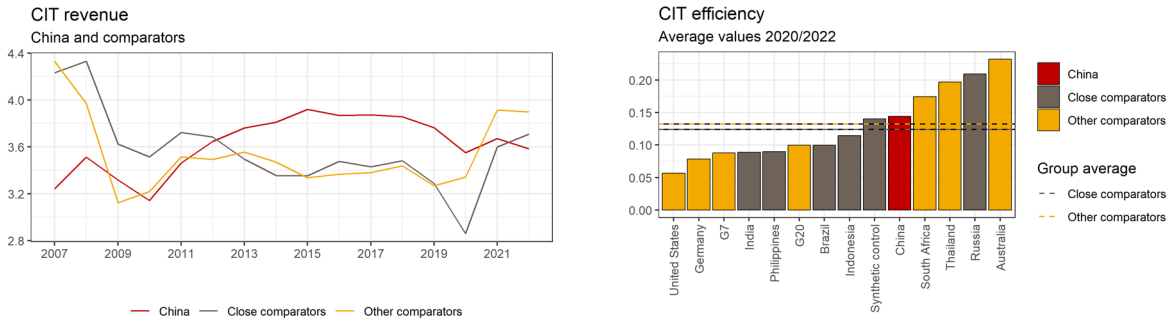
[12] This is particularly true if they are levied on land and if commercial property is not included in the base.

[13] Besides administrative planning, the introduction of inheritance taxation requires public consultations and comprehensive information campaigns to increase knowledge of and reduce resistance to the tax.

E. Leveraging the International Corporate Income Tax Reform

24. While China's CIT system remains relatively efficient, the revenue it raises has declined and is now below the averages of comparator groups. Before the pandemic, CIT revenue in China exceeded that of other countries, owing to a strong anti-abuse framework (including transfer pricing legislation and thin capitalization rules) and improvements in the design and governance of corporate tax incentives.[14] However, unlike in other countries—some of which increased statutory CIT rates since—revenue as a percent of GDP has not yet fully recovered to pre-pandemic levels.

Text Figure 5. China: CIT Revenue Performance



Source: WEO database, GFS, IMF-staff computations, Notes: CIT efficiency is the ratio of CIT revenue to GDP, divided by the statutory tax rate, thus indicating the size of the tax base relative to GDP.

25. The Inclusive Framework's (IF) ongoing international tax reform will support revenue collection. The 2-Pillar framework (Annex II) represents a departure from century-old norms. Besides reallocating taxing rights to market jurisdictions (Pillar 1), the framework will implement a global minimum tax (Pillar 2), thus easing pressure to offer tax concessions. Both Pillars are likely to have small positive direct effects on China's CIT revenue, potentially increasing revenue by up to 1 percent of current CIT collections:[15]

- **Pillar 1 could increase China's tax collections by around 0.4 percent of current CIT**. On the one hand, several Chinese-owned multinationals are in scope and thus subject to taxation in market countries, accounting for 8 percent of total global residual profit. On the other hand, China would benefit from new taxing rights, albeit with a small revenue gain, as the overall revenue impact of Pillar 1 is limited.

- **Pillar 2 could yield up to 0.5 percent of current CIT revenues**. As the headquarters of some large multinationals, China may be able to raise additional revenue from profits of these firms

[14] Major tax incentives offered today include a reduced headline rate of 15 percent and super deductions to support business investment, R&D, and regional development.

[15] Quantifications from Klemm and others (2021).

that are currently lightly taxed, depending on responses of companies and other countries. Given the statutory tax rate of 25 percent, a 15 percent global minimum rate would still preserve a positive tax differential in China relative to the rest of world, maintaining incentives for outward profit shifting.

26. The reform provides an opportune moment for a review of the incentive regime and the implementation of a domestic minimum tax in line with the IF approach. While the incentive regime was improved in the past, still existing tax concessions may drive the effective tax rate below 15 percent in various sectors. Several jurisdictions in the Asia-Pacific region have already committed to implementing Pillar 2 in the coming years.[16] To ensure profits in China are not taxed elsewhere, the authorities should evaluate available options, including the redesign of tax incentives and the implementation of a domestic minimum tax. Equalizing the statutory taxation of all firms at 25 percent and reducing the generosity of selective tax base narrowing measures would increase competitiveness, supporting potential growth, and yield revenue.

27. An excess profit tax could support revenue mobilization in a non-distortive manner. A permanent well-designed excess profit tax would allow taxing economic rents without the need to identify sectors benefitting from unusual profitability.[17] Excess profit taxes can be designed as an allowance for corporate equity, or more generally, as an allowance for corporate capital, thus reducing the tax bias inherent in most tax systems, including China's, that results from the tax-preferred treatment of debt financing. Hebous and others (2022) estimate the revenue potential of a non-distortive surcharge of 12.5 percent on China's corporate rents at more than 0.5 percent of GDP.

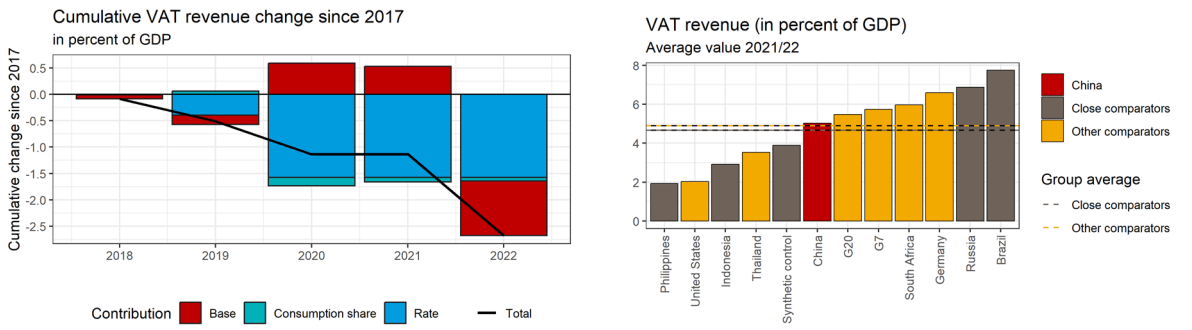
F. Improving Indirect Taxation

28. VAT remains the most important source of revenue in China. In 2022, VAT contributed close to 30 percent of China's total tax revenue—or about 4 percent of GDP—while the average contribution among comparators is only 25 percent. The strong reliance on consumption-based taxation persisted despite a series of revenue depressing policy changes (including rate reductions and initial payouts of excess input credits), and a slightly declining share of consumption in total GDP, which reduced VAT revenue by 2.5 percent of GDP since 2017 (Text figure 6, left panel). The standard rate of 13 percent is low in international comparison, supporting the transition to consumption-led growth.

[16] For instance, Japan, South Korea and (indicatively) Vietnam plan to apply the income inclusion rule starting in 2024. Singapore, Hong Kong SAR, Thailand and (indicatively) Malaysia have committed to implementing Pillar two by 2025.

[17] Several countries recently introduced one-off or windfall taxes on selected sectors.

Text Figure 6. China: VAT Revenue Analysis



Sources: CEIC, GFS, WEO, and IMF Staff calculations

29. The draft version of an updated VAT law, released by end-2022, includes several important improvements. Notably, the draft aims to enhance the adoption of the OECD's international VAT guidelines into the draft law, by adopting the place of consumption approach, and allowing refunds of excess input VAT credits. Moreover, it aims to convert the VAT pilot program—applicable to services previously subject to business tax—and VAT rules—applicable to the manufacturing and sale of goods—into a single substantive law.

30. However, several reform priorities that would improve the VAT's conduciveness to growth remain yet unaddressed. Several relief measures that have been introduced during the pandemic should be removed in the short term, which could raise about 1 percent of GDP.[18] Moreover, the treatment of the financial sector and residential property remains complex and should be reviewed. More broadly, the efficiency and revenue productivity of the VAT could be improved along two major design margins, yielding around 0.4 percent of GDP:[19]

- **Multiple rates**. The number of VAT rates has been reduced from 6 to 4, but these are still too many by international standards. Multiple VAT rates complicate the administration of the VAT, raise compliance issues, as the same product may be subject to different rates, depending on interpretation, and can lead to revenue losses through fraudulent VAT refund claims.

- **Exemptions**. China's VAT system remains fragmented by exemptions, including on goods and services in agriculture, health, culture, and education, reducing the efficiency of the tax. Many of these exemptions are not necessary. For instance, standard rules for VAT registration would

[18] VAT incentives were introduced in various sectors. While initially offered to a few sectors until December 2021, they were subsequently extended in scope and time (now running until end-2027). The incentives include tax credits, exemptions, deductions, and reduced rates.

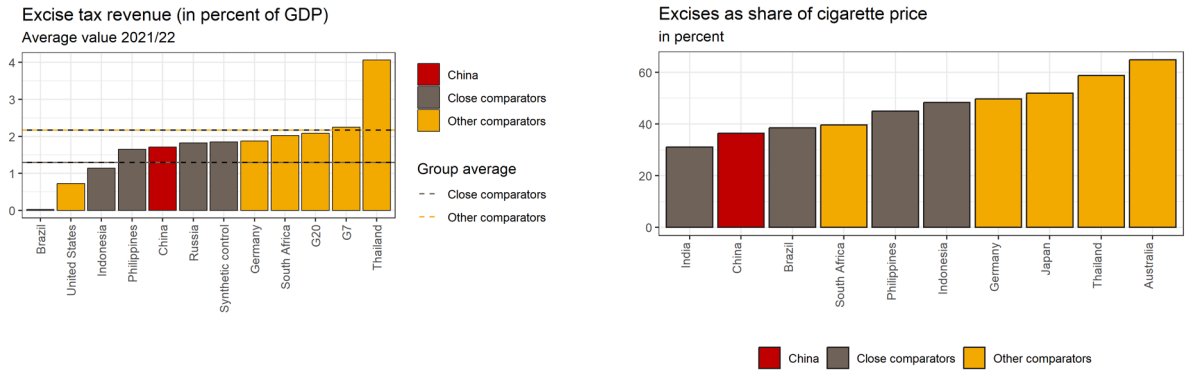
[19] With total household consumption accounting for around 38 percent of GDP, a growth friendly VAT would yield about 5 percent of GDP when consumption is taxed at 13 percent. Base broadening could close the gap to this revenue potential and yield about 0.5 percent of GDP, even when selected exemptions to protect the poorest members of society were retained.

already leave most farmers exempt and simplify VAT administration. Agriculture should thus be fully taxed while equity considerations could be dealt with through a limited number of exemptions applied to selected basic food items. Fewer exemptions reduce scope for tax avoidance and the extent of distortive tax cascading.[20]

31. Excise taxes can be effective and efficient revenue measures. Excise taxes apply to a small basket of consumption goods and are usually aimed at internalizing the cost of negative consumption externalities, improving health outcomes, or taxing luxury goods. Where they apply on goods with low price elasticities (such as alcohol, tobacco, or other addictive goods), excise taxes can generate substantial revenue. Moreover, some excises, such as on fuel, vehicles, or luxury products, can support the progressivity of the tax system. In China, excise taxes account for about 1.5 percent of GDP. While this revenue take exceeds close comparators, excise taxes raise more than 2 percent, on average, among other comparators (Text figure 7, left panel).

32. Increasing the specific tax on cigarettes would improve health outcomes and support fiscal consolidation. In China, excise taxes levied on the most-smoked cigarette brand account for just 36 percent of the retail sales price, while this ratio is above 40 percent among close comparators and above 52 percent among other comparators (Text figure 7, right panel). Increasing the specific tax on tobacco until the retail price doubles would yield around 0.2 percent of GDP,[21] and would help better target negative consumption externalities, thus reducing public health costs, increasing revenues, and saving lives.

Text Figure 7. China: Excise tax Revenue and their Impact on Cigarette Prices



Sources: CEIC, GFS, WEO, WHO and IMF Staff calculations.

[20] Non-refundable VAT on intermediate inputs increases the marginal cost of producing VAT exempt products, and thus the product's sales price. If that exempt product is subsequently used in the production of a taxable supply, VAT will apply on both the tax-exclusive value of the exempt intermediate input and on the non-refunded VAT (which increased the intermediate input's price), leading to tax cascading and distorting relative prices.

[21] Goodchild and Zheng (2018).

33. Wider use of carbon pricing would also raise revenue and contribute to climate change mitigation. The existing Emissions Trading System (ETS) for the most part grants free permits to emitting firms. Introducing partial auctioning of ETS permits and eventually transitioning towards a full cap and trade system with wider sectoral coverage would improve efficiency, curb carbon emissions, and raise fiscal revenue. China's potential for carbon revenue is about 0.6 percent of GDP annually by 2028 (IMF 2023b).

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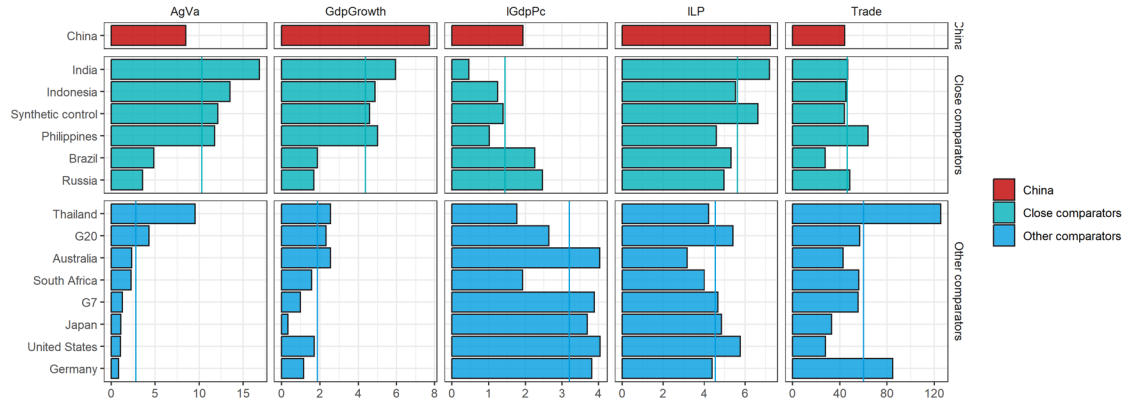
Annex I. China's Economic Tax Comparators

1. Potential tax revenue collections depend on several structural economic variables that differ across countries. For instance, agricultural activities are more difficult to tax than other activities, especially when the sector is composed of many small producers. The contribution of value added from the agricultural sector is thus negatively correlated with tax revenue collections globally (see Fenochietto and Pessino, 2013). Similarly, the level of a country's economic development – commonly measured using GDP per capita – is believed to positively correlate with a society's demand for public expenditure and tax revenue collections (Tanzi, 1987). Benchmarking China's tax revenue thus requires selecting a set of countries with similar economic fundamentals.

2. This SIP relies on the Mahalanobis distance to assess similarity between China and other countries included in the IMF's WEO database and to choose the set of comparators. The similarity measure captures five key dimensions: GDP per capita, GDP growth, trade openness (exports and imports as a share of GDP), agriculture value added contribution, and the logarithm of the population size, measured between 2007 and 2019. The five countries that resemble China closest in these dimensions are (in decreasing order) Indonesia, India, Philippines, Russia, and Brazil.

3. While no single country matches China's economic indicators on every dimension, a weighted average between countries can increases comparability. Specifically, applying the synthetic control approach (see e.g., Abadie 2021) reveals that a weighted average between India (67 percent) and Russia (33 percent) minimizes the Mahalanobis distance to China. For concreteness, this mix is included in this chapter's graphs as "Synthetic control" and included in the economic comparator group.

Annex I. Text Figure 1. China and Economic Tax Comparators



Source: IMF WEO database, and IMF staff calculations.
Note: AgVa is agriculture value added contribution, GdpGrowth is GDP growth, lGdpPc is the logarithm of GDP per capita, ILP is the logarithm of population size, Trade is trade openness (exports and imports as a share of GDP).

Annex II. The Inclusive Framework's 2 Pillars[1]

1. China is a member of the OECD-led Inclusive Framework (IF) on BEPS (Base Erosion and Profit Shifting). China has thus committed to implementing the four minimum standards that emerged among the outcomes of the G20-OECD BEPS project. In addition, China signed the 2-pillar framework.

2. Pillar 1 mainly covers a revised allocation of taxing rights over a share of profits toward market jurisdictions. Pillar 1 allocates 25 percent of MNE profits exceeding a 10 percent return on revenue to market jurisdictions ("Amount A"). It will likely cover slightly over 100 very large MNEs with turnover of at least €20 billion (to be lowered to €10 billion following a review after 7 years) and excludes the natural resource and financial sectors. As P1 applies in addition to—rather than instead of—the existing international tax system based on separate entity level taxation, it also includes rules to relieve double taxation (allocation of income and responsibility for eliminating double taxation will be achieved on a group jurisdictional basis).

3. Pillar 2 implements a global minimum tax on "excess profits". It applies to MNEs with global turnover exceeding €750 million and aims to ensure a 15 percent minimum effective tax on excess profits in each country in which an MNE operates. Excess profits are defined as those exceeding a substance-based income exclusion, which is defined as a return of 10 percent of payroll and 8 percent of tangible assets (foreseen to fall to 5 percent on both over 10 years)—and which is thus a different exclusion from the one granted under P1. The minimum tax is to be implemented through three interrelated tax rules:

- An "*income inclusion rule*" (IIR) subjects foreign-earned MNE profits to a top-up tax in their residence country if they are effectively taxed below the 15 percent minimum rate in any jurisdiction. Source jurisdictions can pre-empt the application of the IIR by implementing a qualified domestic minimum top-up tax (QDMTT), based on the same scope and rates as the IIR.
- An "undertaxed profits rule" (UTPR) allows source countries to apply a top-up tax (for example, by denying deductions) if no IIR or QDMTT applies. These rules are jointly known as the Global Anti-Base Erosion (GloBE) rules.
- A "subject to tax rule" (STTR), which is a treaty-based rule allowing source jurisdictions to impose limited source taxation (for example, withholding taxes, (WHTs)) on certain related-party payments subject to tax below a minimum rate of 9 percent.

[1] Based on IMF (2023a).

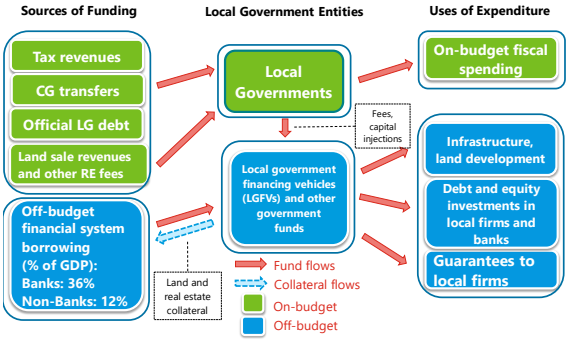
LOCAL GOVERNMENT FINANCES AFTER COVID AND THE REAL ESTATE SLUMP[1]

This paper analyzes the implications of the pandemic and real estate slump for fiscal and financial stability risks at the regional level, focusing on the financial interlinkages between local governments, the financial system, and the real sector. It then outlines policy recommendations to manage the large stock of local government debt and contain future debt accumulation, while preserving financial stability and public service provision.

A. Introduction

1. Local governments ("LGs") in China have long used land sale revenues and off-balance sheet borrowing (mainly via financing vehicles—"LGFVs") to help fund public spending (text chart). These practices arose in part to help close LGs' large structural budget deficits that emerged from fiscal reforms in the mid-1990s, and over time supported additional off-budget spending on infrastructure and other local economic and social policy objectives, providing significant tailwinds to economic activity. Extensive use of off-budget borrowing, however, resulted in large fiscal deficits (based on the IMF's broad definition of the general government, IMF 2014), while reliance on land-related revenues heightened LGs' exposure to real estate market risks.

Stylized Flow Chart of Local Government Financing Model



Source: IMF staff analysis.
Notes: LGFVs are considered part of the general governments based on GFSM principles but are legally classified as state-owned enterprises and not included in the budget. Borrowing to GDP ratios are as of 2022.

2. LGFVs have become significant sources of macro-financial risk, despite longstanding central government (CG) efforts to rein in their activities. LGFVs are legally considered state-owned corporations, typically controlled directly by LGs through majority ownership stakes. Despite ongoing CG efforts to audit and restrict LGFV borrowing since 2010, including by disallowing guarantees from local governments, a lack of formal reporting or governance requirements and close cooperation with LG-controlled banks have allowed LGFVs to accumulate heavy debt loads despite their weak cash flows. Their extensive financial linkages with regional governments, banks, and firms created significant potential for adverse and destabilizing macro-financial and macro-fiscal feedback loops (IMF 2022).

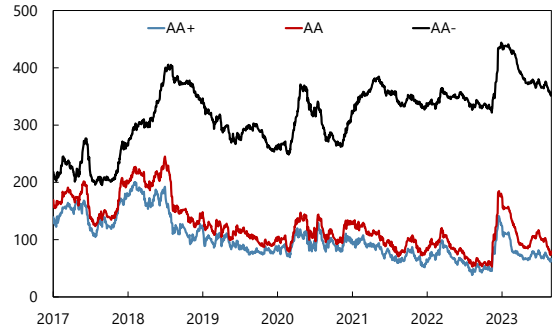
3. The ongoing real estate slump and pandemic have delivered a combined shock to LG finances, highlighting the risks of this model. LGs were at the forefront of the fight against the pandemic, ramping up health expenditure and supporting economic activity with tax relief. The real estate slump that began in mid-2021 has sharply eroded fiscal revenue from land sales and

[1] Prepared by Yingyuan Chen (MCM), Daniel Garcia-Macia (FAD), and Henry Hoyle (APD).

prompted some LGs to use LGFVs to prop up real estate markets via land purchases or funding for troubled housing projects. Both channels widened already large LG financing needs, adding to LGs' high on- and off-balance sheet debt levels. As land collateral valuations fall, many financially weaker LGs may face increasing difficulty obtaining market-based credit.

4. Rising financial strains among some LGFVs underscore the urgent need to comprehensively strengthen LG finances. LGFV defaults on commercial bills and other payables remain relatively rare but occurred significantly more frequently in 2023. Credit market spreads for smaller LGFVs and those with financially weaker parent LGs have widened significantly, while cash shortages have led to reports of local government arrears and disruptions to public services. To avoid worsening financial strains for LGs and LGFVs in weaker provinces, the central government authorities have responded by requiring banks to avoid cutting credit to weak LGFVs. In the Central Finance Work Conference in October 2023, the authorities signaled their intent to comprehensively address local government debt risks via a "long-term local debt risk resolution mechanism," and called for optimizing the balance of central and local government debt.

Credit Spreads of LGFV Bonds by Credit Rating
(Basis points, 3-year maturity)



Source: WIND.

5. An intersectoral balance sheet approach is used to shed light on the interlinkages between LG finances and the rest of the economy and inform policy recommendations. LGs' extensive ownership of LGFVs and other local SOEs—and financial backing for their high levels of debt and receivables—create significant interconnectedness that can accelerate the transmission of macro-financial shocks across sectors. Intersectoral balance sheet matrices clarify how these shocks are absorbed across different institutional sectors. This paper's key contribution is to construct estimated matrices of cross-sector debt and equity claims, based on publicly available financial statement data, and use them to simulate the impact of various shock and policy scenarios (using the method in Garcia-Macia 2021). The paper adds to previous work on China LG finances (Box 1.3 in IMF 2020, IMF 2022, Wingender 2018) by providing a more complete and integrated mapping of cross sectoral spillovers, analyzing the effects of recent large shocks (e.g., the real estate decline), and describing the links between financial exposures and public finances at the LG level.

6. The intersectoral analysis illustrates that comprehensive reforms are needed to address LG financing strains, as policy interventions are likely to spill over across sectors. Given large LGFV debt accumulation, unsustainable business models, and interlinkages with other sectors, LGFV debt restructuring is needed to restore fiscal sustainability, and different options are on the table. Bailouts of LGFVs by LGs could endanger debt sustainability of weaker provinces and lead to unintended fiscal tightening, while bailouts by the CG could generate moral hazard. Alternatively, as corporations that are legally distinct from LGs, LGFVs could be restructured using insolvency mechanisms. The resulting LGFV debt write-downs would still lead to losses for LGs and the CG, but would also shift a fraction of the burden to other sectors. It would cost less overall, as

sales of LGFV assets could be used to offset some of the losses and preserve fiscal space for upgrading social safety nets. Debt write-downs would need to occur in parallel with strengthened measures to ensure fiscal sustainability and financial stability, including temporary CG support, stronger insolvency frameworks, and a comprehensive strategy for restructuring weak banks. Broader fiscal reforms are essential to limit future debt-generating flows and close LG fiscal gaps, including tax reforms (see accompanying SIP "A Revenue Mobilization Strategy"), upgraded transfer arrangements, and strengthened transparency and monitoring.

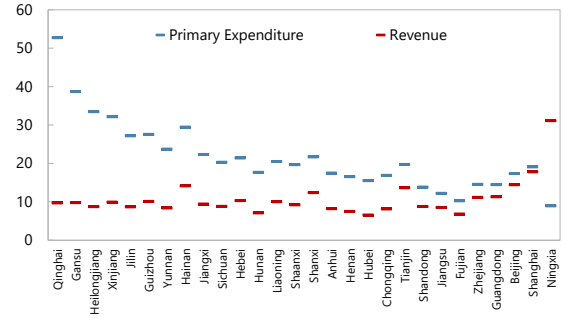
7. The rest of the paper is organized as follows. Section B analyzes the current state of LG finances, covering on- and off-budget entities; estimates financial linkages with other sectors and transmission of shocks; and describes the authorities' response to LG financing stresses. Section C presents recommendations to address the large stock of LG and LGFV debt, using the intersectoral balance sheet approach to simulate the effects of various policy options. Section D complements Section C with recommendations to strengthen fiscal frameworks and address future debt-generating flows.

B. The Weak State of LG Finances: Causes and Consequences

LG Finances in The COVID Era

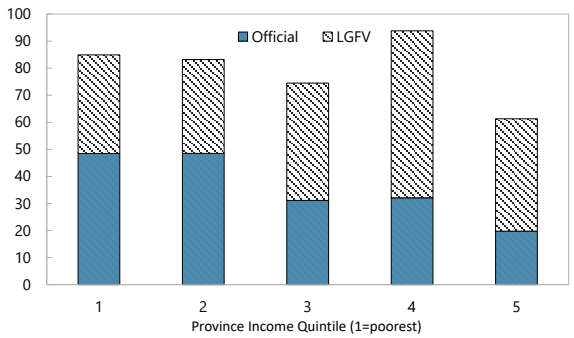
8. LGs entered the pandemic period with significant structural imbalances and weakening on-budget finances. Direct or official debt issuance by LGs was only permitted beginning in 2015, in part to allow LGs to meet their structural fiscal deficits without recourse to (off-budget) LGFV debt. This official debt, however, grew to 22 percent of GDP by end-2019, far exceeding growth in the on-budget revenues of LGs available for debt servicing. Meanwhile, LGFV debt also continued to climb steadily, increasing by 22 percentage points of GDP between 2015 and 2019. Poorer and smaller provinces have tended to have higher official debt relative to GDP, reflecting a swap of LGFV debts into official LG debt (following an audit of LGFVs in 2013) and larger structural budget deficits (text chart). Relatively wealthier provinces still have relatively high levels of debt relative to fiscal revenues.

Fiscal Gaps by Province, 2021
(In percent of province GDP)



Sources: CEIC Data Company Limited; and IMF staff calculations.
Notes: General budget primary expenditure and revenue. The general budget fiscal gaps are financed with CG transfers, net land sale revenue, and LG official borrowing. Excluding Tibet.

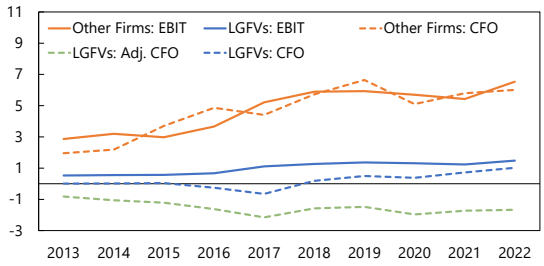
Local Debt by Province Income, 2022
(Percent of province GDP)



Sources: Capital IQ; CEIC Data Company Limited; and IMF staff calculations.

9. LGFVs also posed growing macro-financial stability risks by end-2019. Financial statement data show that LGFVs are systemic in size (with interest-bearing debt of about 50 percent of GDP) but have consistently negative aggregate operating cash flows adjusted for capitalized interest costs, implying limited capacity to deleverage (or even stabilize debt levels; see text chart). At the same time, the potential for regionally destabilizing spillovers from an LGFV default were clear. LGFVs are at the center of the nexus of financial linkages between local governments' balance sheets, financial institutions, and the real economy (text box). A default would also likely immediately lead to a sharp pullback in lending to SOEs and other financially weak borrowers that rely on implicit government support for credit access.

Chinese Nonfinancial Firms Earnings vs Operating Cash Flow Measures
(Trillions of RMB)

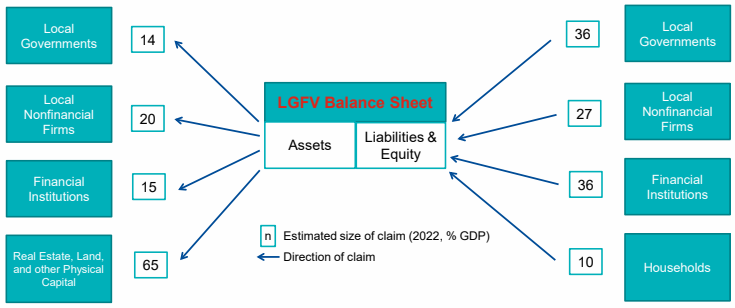


Sources: Capital IQ; WIND; Bloomberg; CEIC Data Company Limited; and IMF Staff Calculations.
Note: CFO = Cash Flow from Operations; EBIT = Earnings Before Interest and Taxes. Adj. CFO are adjusted to include capitalized interest expenditure.

LGFVs and Regional Interconnectedness

Bottom-up financial statement data show LGFVs hold significant claims on LGs and nonfinancial firms in the form of arrears and receivable exposures (panel chart), and own significant equity in local firms and banks. On the liability side, LGFVs have sizeable non-interest-bearing liabilities to local firms (largely account payables) and bond liabilities to households, who are exposed through their asset management product holdings. LGFVs also provide extensive guarantees for local firms, creating additional contingent exposures. These linkages are summarized in the chart below and shown on p.43 in more detail. In September 2023, the State Council urged local governments and state-owned enterprises to accelerate the repayment of inter-company debts owed to private enterprises, underscoring the build-up in government arrears and accounts payables.

Stylized Map of LGFV Financial Interlinkages
LGFVs are highly interconnected with local governments, financial system and local economy



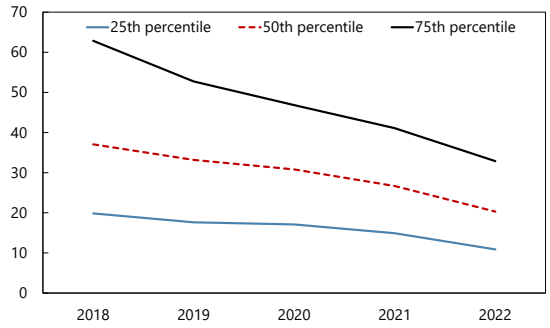
Sources: CEIC Data Company Limited; Capital IQ; WIND; and IMF staff calculations.

10. The pandemic and real estate slump magnified LGs' fiscal and financial challenges. Health expenditures (in the general budget of the general government) grew by 0.3 percentage points of GDP in 2022, while mobility restrictions and tax relief contributed to revenue declines of 2.5 percentage points of GDP between 2019 and 2022. These strains were exacerbated by a 23

percent decline in gross land transfer revenues and real estate related taxes in 2022, which accounted for nearly 40 percent of total local government revenues in 2020. Official and LGFV debt issuance was accelerated to help support growth, adding another 18 percentage points of GDP in total debt in the four years through 2022.

11. The property sector slump has also directly weakened the LGFV sector. The rapid slowdown in LG land sales has also weighed on LG land development activities, which is a key source of LGFVs' already limited income. Land and real estate also represent a significant portion of LGFV balance sheets, estimated conservatively at around 25 percent of total assets, and functions as a key source of collateral for borrowing.[2] Investors appear to be increasingly differentiating the credit risk of LGFVs based on the parent LGs' financial health, as LGFV spreads have risen more in provinces where they were already higher in 2019 (see text chart). Declines in LGFVs' holdings of cash relative to their total short-term liabilities—a common measure of their liquidity—fell further in 2022, as aggregate sector cash also fell for the first time in several years.

LGFV Liquidity: Cash to Short Term Liabilities Ratio
(In percent)



Sources: Capital IQ; and IMF staff calculations

12. A matrix of estimated intersectoral balance sheet linkages is constructed to further explore spillovers to LGs from the property sector slump. Public financial statements, official statistics, and other data are used to estimate the cross-sector debt and equity claims between government, households, nonfinancial corporations, financial institutions, and the rest of the world. The rows of the matrices show the claims of a given sector on every other sector, while the columns show each sectors' claim on a given sector (text chart). LGs and LGFVs are broken out separately in order to show the complicated linkages between these sectors.[3] Given data limitations, non-LGFV SOEs are considered within the nonfinancial corporate sector. Assumptions and data sources are documented in Annex I.

13. Several findings stand out from the estimated matrix of balance sheet linkages. With total intersectoral liabilities and equity of 111 percent of GDP, LGFVs are large relative to economic activity. LGFVs have significant interlinkages with other sectors on the asset side of their balance sheet, totaling 50 percent of GDP, which includes arrears from their own parent LGs (see text box). The matrix also provides a useful perspective on the net financial wealth of different sectors.

[2] Direct claims on physical assets such as land, real estate, and capital equipment are estimated to be 56 percent of total LGFV assets. While consistent breakdowns of asset holdings make direct data on land and real estate assets unavailable, financial statement data shows that machinery—defined as physical property that is not land, structures, or improvements to land or structures—only account for 4.5 percent of LGFV assets. As LGFVs' primary business is land and infrastructure development, this analysis assumes that roughly half of LGFVs' remaining physical assets are land or assets that derive their value from land.

[3] While local governments do not have rights or authorities that are independent of the central government, they are distinct as fiscal and legal entities.

Households by far hold the largest share of the total, with net financial assets of 187 percent of GDP. Net financial assets for the CG are 47 percent of GDP, while that of LGs is 42 percent of GDP.[4]

Text Table 1. China: Estimated Cross-Sectoral Debt and Equity Claims of Selected Sectors: 2022

(In percent of GDP)

		LG	LGFV	FI	HH	NFC	CG	RES	TOT
Debt Claims of …	Local Governments (LG)	na	0	2	0	0	0	0	2
Debt Claims of …	LG Financing Vehicles (LGFV)	14	na	12	0	12	0	0	38
Debt Claims of …	Financial Institutions (FI)	25	36	na	61	95	14	6	251
Debt Claims of …	Household Sector (HH)	2	10	119	na	11	0	0	143
Debt Claims of …	Nonfinancial Corporate Sector (NFC)	1	20	98	0	na	4	2	124
Debt Claims of …	Central Government (CG)	0	0	13	0	0	na	0	13
Debt Claims of …	Rest of World (ROW)	0	0	6	0	5	2	na	14
Debt Claims of …	All Sectors (TOT)	41	68	250	62	115	21	8	na

		LG	LGFV	FI	HH	NFC	CG	RES	TOT
Equity Claims of …	Local Governments (LG)	na	36	2	0	44	0	0	83
Equity Claims of …	LG Financing Vehicles (LGFV)	0	na	5	0	8	0	0	12
Equity Claims of …	Financial Institutions (FI)	0	0	na	0	20	0	0	20
Equity Claims of …	Household Sector (HH)	0	0	5	na	99	0	0	104
Equity Claims of …	Nonfinancial Corporate Sector (NFC)	0	7	2	0	na	0	0	8
Equity Claims of …	Central Government (CG)	0	0	11	0	44	na	0	55
Equity Claims of …	Rest of World (ROW)	0	0	0	0	9	0	na	9
Equity Claims of …	All Sectors (TOT)	0	43	31	0	224	0	0	na

Sources: Capital IQ, Bloomberg, CEIC Data Company Limited, IMF staff analysis.
Notes: For details on data sources and assumptions, see Annex I.

14. The intersectoral balance sheet approach underscores the different channels through which a land market slump would affect LG balance sheets. In a stylized land shock scenario where both real estate prices and activity are 20 percent lower during three years, LGs are affected by both a decline in LG land sale revenue, which lowers LG financial net worth by 3.3 percent of GDP, and a decline in the market value of LGFV real estate assets (Table 1).[5] The latter shock lowers the value of LGFV debt and equity liabilities by 0.4 and 5.1 percent of GDP, respectively, which

[4] These numbers differ somewhat from recent findings in Lam and Moreno-Badia, 2023 due to definitional and methodological differences. For instance, the exercise in this SIP focuses on the budgetary CG and LG perimeter, while Lam and Moreno-Badia focus on the augmented general government perimeter.

[5] See details in Annex I. The implied fall in land sale revenue of about 40 percent coincides with the one in the data from October 2021 to October 2023 (year-to-date). This exercise does not measure the direct impact of land price declines on property developers and other NFCs.

generates immediate losses for LGs, lenders, firms (through their account payable exposures), and households (column "first round" in Table 1). These losses then translate into multiple rounds of equity spillovers across sectors (column "equity absorption"). Ultimately, all the losses are absorbed by sectors that are not owned by others (column "ultimate loss absorprtion"), with LGs ending up absorbing almost all of the loss.

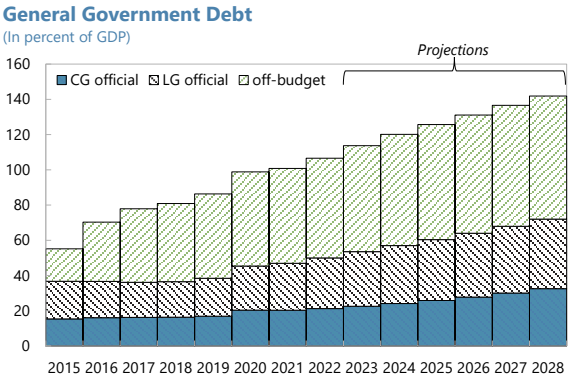
Text Table 2. China: Balance Sheet Losses by Sector after a Real Estate Shock
(In percent of GDP)

Sector	Direct Channels	Indirect Impacts		Ultimate Loss Absorption
		first round	equity absorption	
LG	3.29	5.12	0.12	8.54
LGFV	5.53	-	-	-
FI	-	0.22	-	-
NFC	-	0.12	-	-
HH	-	0.06	0.10	0.16
CG	-	-	0.11	0.11
ROW	-	0.00	0.01	0.01

Source: IMF Staff simulations.
Notes: Assuming no debt valuation impacts beyond LGFV debt, i.e., equity holders absorb all shocks. The ultimate loss absorption equals the sum of the first three columns for absorber sectors (and 0 for others).

The Outlook for LG Finances

15. LGs' financial imbalances can potentially lead to rising negative fiscal and financial stability spillovers. The loss of land sale revenue has resulted in larger budget deficits and increased borrowing. Continued large deficits will eventually result in debt servicing needs that will become increasingly onerous relative to incomes, crowding out primary spending and raising the risk of intensifying macro-financial spillovers and a disruptive adjustment. Such a scenario could trigger disorderly fiscal tightening in economically weaker provinces, reinforcing negative macro fiscal loops.



Sources: IMF World Economic Outlook July 2023 vintage; and IMF staff calculations.

16. Indeed, higher LG government debt is estimated to create fiscal drag at the province level. Panel data across provinces for 2019-22 is used to estimate fiscal reaction functions at the LG level (Annex II). The estimates show that each additional percentage point of official debt to GDP of an LG is associated with an increase by 0.3 percentage points in the general budget primary balance (before CG transfers) in the following period (Table 2), suggesting that LGs choose or are forced to tighten fiscal policy when debt is higher. Similar results are obtained for LGFVs (not shown): higher debt levels predict a slower pace of debt accumulation going forward. Other variables associated with fiscal tightening are higher official interest rates, as well as lower land sale revenue and higher real GDP growth (although the latter two are not statistically significant). Instead, rises in health expenditure (associated with Covid in the sample) lead to a more than proportional increase in the deficit, reflecting other channels of pandemic support and loss of revenue due to weaker economic activity. Notably, higher LGFV spreads are associated with fiscal loosening (through higher primary expenditure), perhaps as financially constrained LGFVs are less able to undertake public projects.

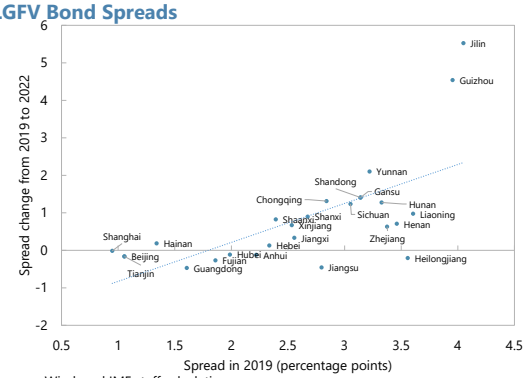
Text Table 3. China: LG Fiscal Reaction Function, 2019-22

Dep. Var	D.Budget Primary Bal.
D.Healh Exp.	-2.78***
	(-4.21)
D. Land Sales	-0.17
	(-1.45)
L.Offical Debt	0.30**
	-2.95
L. LGFV Debt	0.02
	-0.62
L.Offical Int. Rate	3.51
	-1.95
L.LGFV spread (AA)	-1.61***
	(-4.65)
RGDP growth	0.08
	-1.85
N	74
R_2	0.37

Sources: Capital IQ; CEIC Data Company Limited; WIND; and IMF Staff estimations.
Notes: The dependent variable is the general budget primary balance. Interest and growth rates are in percent. All other variables are relative to GDP. "D." denotes first differences and "L." first lags. OLS regression with province fixed effects. Standard errors clustered at province level. T-statistics in parentheses.

17. Higher LG debt also tends to weaken credit market access for LGFVs, bringing forward a trade-off between fiscal drag and financial instability. Provinces with higher official debt have historically seen slower LGFV debt growth and higher LGFV funding costs, reflecting lenders' focus on the financial and fiscal strength of the LG parent. Once LGs' weakening on-budget finances limit credit market access for subsidiary LGFVs, LGFVs may be forced to sharply reduce their large ongoing investment flows, exacerbating (off-budget) fiscal tightening. A sharper curtailment of credit access, as has been reported for certain cities in highly indebted provinces in the country's southwestern region, could force LGs to re-direct fiscal or SOE resources to LGFV debt service payments to avoid default, potentially worsening liquidity stress.

LGFV Bond Spreads



Sources: Wind; and IMF staff calculations.
Note: AA rating LGFV bond spreads.

The Authorities' Policy Response

18. The authorities have focused on containing LGFV debt and strictly controlling new issuance, balancing between alleviating LG financing pressures and limiting moral hazard. Details of the authorities' recently announced long-term local debt risk resolution framework are not yet public but are likely to build on recent efforts by the MoF and other agencies' to monitor and contain "hidden" debt. Key measures include guidelines to strictly limit growth in borrowing for overindebted regions and specific troubled LGFVs, and enhancing oversight and accountability at LGs by applying stronger controls on investment project approvals.[6] In October 2023, LGFV liabilities of roughly RMB 1.1 trillion were reported to be swapped for official LG debt in of heavily indebted provinces, a practice that has been used selectively since 2015. The authorities have also signaled a selective restructuring approach to avoid defaults of some distressed LGFVs by requiring banks (including LG- and CG-owned entities) to provide maturity extensions and lower borrowing rates. The central bank has also indicated that it may provide liquidity support for some LG debts using its own balance sheet. In some cases, policy banks or other CG-owned financial institutions have consolidated and refinanced LGFV debts in new asset management vehicles. The authorities also intend to accelerate the clearing of LG arrears to LGFVs and step up asset sales.

19. Efforts to address LGFV debt risks are urgently needed but must be integrated into a coherent strategy to ease LGs' growing fiscal vulnerabilities. Prompt measures are needed to reduce LGFVs' debt servicing burdens to avoid the risk of default and potential macro-financial stability. However, a broader policy package of fiscal and financial measures is required to ensure fiscal sustainability and macro-financial stability. The next two sections discuss policy options and recommended measures. Complementary measures would involve addressing the outstanding stock of off-budget debt, including by restructuring unsustainable LGFV debts while mitigating financial and real sector spillovers (Section C), as well as strengthening LG fiscal frameworks to improve data reporting and monitoring and limiting future debt-generating flows (Section D).

C. Addressing Unsustainable LG Debts: An Intersectoral Balance Sheet Perspective

20. Unsustainable off-budget (and potentially on-budget) LG debts should be restructured. The authorities should assess the sustainability of LGFV and LG debts on an entity-by-entity basis, incorporating conservative projections of future cash flows. Unsustainable debts should then be restructured as part of a CG-coordinated program of fiscal framework reforms and balance sheet restructuring. At the current stage, unsustainable LG debts are likely to be mostly confined to off-budget entities (mainly LGFVs). However, policy approaches to reduce the stock of LGFV debt differ in how they would redistribute the losses across sectors, including to the official LG, and their potential for financial contagion.

[6] The MoF definition of "hidden" debt is conceptually similar to the broader concept of general government in Article IV Staff Reports based on GFSM 2014.

21. The intersectoral balance sheet framework sheds light on the distribution of losses under different approaches. Whether debt claims are extinguished via losses for creditors (write-down) or via recapitalization (bailouts), the costs of reducing (or containing) LGFV debt are ultimately absorbed by households, the government sector (local or central), and foreigners, as these sectors are the ultimate owners of all other sectors. The section below considers different LGFV debt reduction scenarios using the intersectoral balance sheet matrices and discusses their implications for burden-sharing, macro-financial stability, and medium-term growth. The scenarios compare different options to reduce LGFV debt by a given amount (in net present value terms): bailouts by LGs, LG-owned SOEs, or the CG, debt write-downs, or debt reprofiling.

- **LG refinancing (or bailout) can temporarily ease financial stability risks but is likely to worsen LGs' imbalances.** This option is simulated as a one-time transfer of the LG sectors' (liquid) financial assets to the LGFV sector, funded by additional LG official debt. The cost is borne entirely by the LG sector. This approach reduces the immediate risk of debt default by troubled LGFVs and lengthens the debt maturity structure for the consolidated LG sector. It however undermines LG debt sustainability and erodes LG fiscal space, potentially requiring future cuts to social safety nets or public services, and does not materially improve the sectors' consolidated net worth.[7] The initial financial stability benefits are likely to be partially or fully offset if LGs' worsening structural imbalances raise borrowing costs or weaken credit market access for their subsidiary LGFVs. Moreover, an eventual debt restructuring would be made more complicated after LGFV debt is transferred to LGs, as LGFVs can be legally restructured through the corporate insolvency framework while LGs lack an insolvency framework.

- **The use of LG-owned SOEs and lenders to absorb LGFV debt is economically similar to LG bailouts in terms of burden-sharing.** This option is similar to the first but with the non-financial public corporate sector providing the transfer to LGFVs. This option initially spares the LG sector's balance sheet but weakens that of the SOE sector, presenting its own financial stability risks from a sharp increase in corporate leverage. The ultimate distribution of losses again falls to LGs via the value of their equity claims on SOEs.

- **Use of the CG balance sheet presents benefits but also creates significant moral hazard.** CG official debt is only about one-third of official LG debt, so a transfer would greatly ease LG liquidity problems. However, this solution is prone to moral hazard, and would likely lead to further LG debt accumulation down the line if LGFVs start to borrow again as they did after the swaps of LGFV debt into LG official debt post 2013.

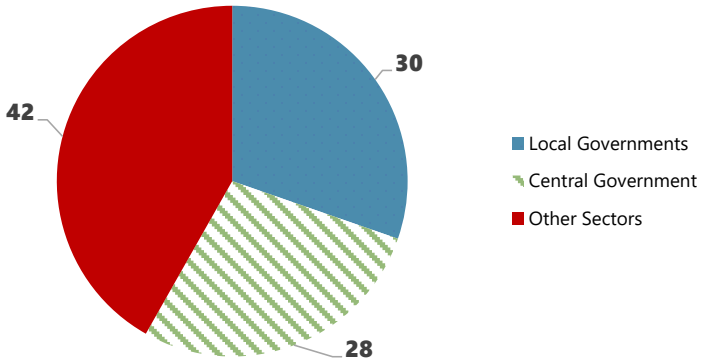
- **Reductions in the face value of LGFV debt via use of insolvency mechanisms would improve burden-sharing across sectors but create additional recapitalization needs (Table 3).** In this scenario, the same quantity of LGFV debt is assumed to be written down using insolvency mechanisms, not factoring in any offsetting asset sales (considered separately,

[7] The sole benefit to the consolidated LG sector's net worth would come from the reduction in interest costs (not considered in this exercise), as interest rates on LGs' official debt typically trade close to that of the CG, reflecting perceived CG backstops. These gains in interest costs may be offset if LGFV yields rise due to the weaker debt sustainability of the LG.

below). The market value of this debt is reduced proportionately for all claims holders, and then in subsequent rounds for those claim holders' equity owners. The official LG and CG sectors each absorb about 30 percent of the total losses, with the remaining 40 percent absorbed by other sectors.

- **Financial institutions' reprofiling of LGFV debt is economically similar to a write-down but does less to improve LG finances and increases banking system risks.** In this option, financial institutions absorb initial losses as the longer maturity profile and reduced interest payments of LGFV debt significantly increase its duration and hence reduce its market value. This reduces banks' economic capital, imposing a loss on the owners of bank equity, an outcome that spreads the burden across the household, CG, and LG sectors, as with a debt write-down. This option is, however, unlikely to restore LGFVs' long-term viability, as most lack the income to repay their debts even over longer amortization horizons, implying continued contingent liability risks for LGs. Assuming banks are not required to reflect losses in regulatory capital and rebuild capital buffers, the significant unrecognized erosion in loss-absorption buffers would reduce banking system resilience and could undermine investor confidence in it.

Distribution of Balance Sheet Losses by Sector after an LGFV Write-down
(In percent)



Source: IMF Staff simulations.
Notes: Numbers shown are percentages of losses from one unit of LGFV credit losses. The calculation scales linearly to the size of the write-down. Assuming losses for deposit institutions are distributed so that no individual institution ends up with negative equity. Other sectors include households and rest of world.

22. Debt reduction through insolvency would do most to repair LGFV balance sheets and increase market discipline. Economy-wide leverage (and that of the general government in particular) is reduced significantly as debt declines, even if the CG increases debt to fund a bank equity recapitalization program. Forcing bank shareholders and investors to absorb losses and add new capital will also reduce moral hazard and improve market discipline and governance in the financial sector, tightening the availability of credit for LGFVs in the future.

23. Insolvency-driven write-downs also better distribute losses across economic sectors. For LGs, the 28 percent share of LGFV credit losses would limit moral hazard relative to a CG bailout, while requiring less LG fiscal consolidation in the future and allowing for more social protection upgrades than an LG bailout. The CG, with still low debt and significant asset holdings, is well-placed to absorb a 30 percent share of LGFVs' losses. Other sectors would also be able to absorb the remaining 42 percent given that they hold approximately two-thirds of national net wealth, and the losses would be mostly in the value of equity holdings. Household sector losses would be overwhelmingly borne by the wealthiest households, who own a disproportionate share of non-deposit financial wealth according to a PBC survey.[8]

24. Write-downs are also more likely to reduce the overall cost of LGFV reduction through asset sales. Sales of sizeable (but in some cases illiquid) public assets of LGs (Lam and Moreno-Badia, 2023), including privatization of profitable SOEs, could help finance debt restructuring. Very few local governments have resorted to selling assets at large scale, however, even in distressed regions benefiting from CG financial support. This likely reflects the central authorities' limited powers to require such action in the absence of a formal restructuring mechanism. Corporate insolvency by contrast provides a direct and timely legal mechanism for facilitating creditors' maximizing recovery of their debts. Creditors' recovery of any of LGFVs' large stock of financial and nonfinancial claims would proportionately reduce the ultimate cost of write-downs for any given amount of debt reduction.

25. The use of corporate insolvency may need to be complemented with other formal restructuring mechanisms. Restructuring of existing off-budget debt should occur via the corporate insolvency framework, as such debt is legally classified as corporate. Application of the bankruptcy law may not be straightforward for many LGFVs given the quasi-fiscal nature of their activities and asset holdings. In these cases, a specialized CG-administered mechanism to restructure LGFVs could be considered, which would help avoid overburdening the legal system. To the extent some restructured off-budget debt is reclassified as official LG debt, or LGFV restructuring generates financial losses for the official LGs, some LG debt loads could also become unsustainable. Hence, it would be prudent for the CG to also set up an LG insolvency mechanism framework ex ante, which could involve CG receivership for the duration of the insolvency proceedings, and provide another legal mechanism to facilitate asset sales.

26. Debt write-downs would require CG monitoring of and support for LGs to ensure macro-fiscal stability and debt sustainability. LGs affected by the insolvency mechanism or undergoing large LGFV restructuring would need to adhere to a multiyear fiscal consolidation and debt servicing plan, subject to close monitoring by the CG, which could then form the basis for CG assistance. One-off targeted CG transfers should be deployed to ensure continuity of public services and avoid unintended sharp fiscal consolidation in the economically weakest LGs, as well as to support vulnerable households during the restructuring process. Broader fiscal reforms (discussed

[8] The wealthiest ten percent of households owns an estimated 60 percent of non-deposit financial assets.

below in Section D), including to raise LG revenues, will be necessary to maintain LG debt sustainability going forward.

27. Potentially large losses for banks and other financial stability spillovers will necessitate a comprehensive strategy for restructuring weak financial institutions. Determining the precise scale of LGFV debts in need of restructuring requires more granular data that is not public and thus beyond the scope of this paper. However, the scale could be large, given the overall size of LGFV debt (48 percent of GDP) and the persistent lack of operating cashflows across the sector. In the case of significant credit losses for banks, CG-coordinated efforts to inject capital and resolve weak banks would likely be needed. Steps to safeguard financial stability would also be needed as bank balance sheet losses could curtail credit to other sectors and come in the form of sharp declines in asset prices, for instance if market-based asset sales reveal overvaluation in land or real estate.

28. Hence, bank restructuring and resolution frameworks should be strengthened. The goal should be to facilitate orderly exit of weak banks without endangering financial stability, including through the establishments of a temporary financial resolution fund, as described in IMF 2021. Given significant interconnectedness between LGFVs and other entities, the authorities should coordinate restructuring efforts across sectors, including by prepositioning financial and administrative resources and triaging different entities as needed. Enhancing crisis preparedness and strengthening the operational capacity of the financial safety net will be critical to ensure that LGFV credit losses at banks and asset management vehicles do not impair financial system functioning. Further progress in ongoing asset management and credit market reforms will also be essential to ensure that retail investors are transparently informed of (and properly compensated for) the risks in their exposures to LGFV credit in bank wealth management and other investment products.

D. Strengthening LG Fiscal Frameworks and Preventing Debt Accumulation

29. Addressing the existing debt stock without further reforms would only (at best) postpone fiscal risks. To secure fiscal sustainability going forward, it is necessary to upgrade fiscal reporting and monitoring frameworks, and implement reforms to close LG fiscal gaps and reduce future debt-generating flows.

30. Fiscal reporting and monitoring should be upgraded, following GFSM standards. All entities controlled by the public sector that are not market producers should be classified and reported as part of the general government (IMF 2014). This could include a substantial share of LGFVs.[9] More transparency, including on LGs, SOEs, and stated-owned banks, in line with international public sector accounting standards (IPSAS), would enhance fiscal discipline at the LG level, and reassure investors and the public. Concrete steps to increase transparency would be to create a public registry of all public sector company debt issuance and transactions with LGs, as well as to require timely reporting of audited LG financial statements, including of cash flows. Better reporting would also allow for an upgrade of the LG fiscal risk monitoring system, which should be based on quantitative indicators of debt sustainability encompassing the broader (GFSM) perimeter

[9] Further data sharing by the authorities would be required to calculate such share.

of the general government and accounting for interlinkages with the financial system. The inclusion of LGFVs in official budgets should take place once the debt of such LGFVs has been restructured.

31. LG fiscal frameworks should be upgraded to reduce future debt-generating flows. Tax revenue reform would help to close LG fiscal gaps, as about half of additional revenue would accrue to LGs (see detailed measures and estimated yields in the accompanying SIP "A Revenue Mobilization Strategy for China"). Consideration could also be given to allocating a larger share of tax revenue to LGs, commensurate with their expenditure mandates, to reduce vertical imbalances (Wingender 2018). Regarding the CG transfer system, a reform increasing risk sharing among provinces and the CG (IMF 2020) would remove pressure for LGs to resort to non-standard financing channels and attenuate feedback loops in economically weaker provinces. Public financial management reforms should clarify LG expenditure mandates, integrate financial management and reporting systems, and phase out provinces' growth targets, which encourage excessive investment financing by growing indebtedness at the local level. Finally, in line with the recommendation on more transparent reporting, all future borrowing for projects of a fiscal nature should be included in LG budgets. International experience points to various options to control LG borrowing (Saxena 2022), including a) direct control by the CG (e.g., Peru, Spain, and Thailand), subnational fiscal rules (Brazil, India, and Philippines), or market discipline (Canada, South Africa, and the United States). In the long term, China could consider transitioning from the current mechanism of LG debt quotas to rules-based constraints, that are likely to be more supportive of market discipline.

32. Finally, financial policies can be aligned to support efforts to reduce debt-generating flows. Bank supervision and regulatory policies can be used to guide banks to limit their exposure to unsustainable LG-related debts. For instance, supervisors could identify credit exposures to LG-owned entities outside of the general government perimeter and require lenders to use higher risk weights, additional capital charges, or concentration limits, for those that lack income-based debt repayment capacity (e.g., based on a defined debt to earnings threshold).

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Annex I. Calculation of Loss Allocation

Method to Allocate Losses

The calculation of the distribution of losses across sectors follows Garcia-Macia (2021). This method uses the matrices of cross-sectoral asset holdings to calculate how a given change in the value of an asset is ultimately absorbed by various sectors.

The assumed initial shock to the value of asset *k* issued by sector *j* is shown in column "direct channels" in Table 1. Such shock has a first-round impact *d* on the sectors *i* holding the asset (column "first round") given by:

$$d_{ijk} = -\Delta p_{jk} a_{ijk} \text{ if } i \neq j,$$

where *d* is the loss for sector *i*, Δp is the change in asset k value, and a_i are the asset holdings of sector *i*.

However, financial shocks lead to further (potentially infinite) knock-on effects across sectors, as changes in the value of a sector's assets translate into changes in the value of its equity liabilities, in turn affecting the asset value of the sectors holding those liabilities, and so on. [1] To calculate the ultimate loss absorption by sector, the method distinguishes between sectors that are entirely owned by other sectors—LGFV, DI and NFC—and those that are ultimate shock absorbers—LG, CG, HH, and RoW. The former pass on all their financial losses to the latter via the network of equity cross holdings (see formulas in Garcia-Macia 2021), a channel shown in column "equity absorption". The total financial loss for ultimate shock absorbers (column "ultimate shock absorption") is thus the sum of their first-round impacts and the knock-on impacts from the sectors where they hold equity.

Land Sale Shock

The loss in LG net worth assumes that land sale expenditures have a 50 percent elasticity with respect to land sale revenue. The loss in value of LGFV debt is calculated with the elasticity of LGFV spreads to land sale revenues from province-level panel data (Annex II), equal to -21 percent, and assuming an average outstanding duration of LGFV debt of 3 years. The loss in the value of equity is obtained as the residual given the total loss in asset value.

Data for Matrices

Debt claims. Data sources and estimation for the debt claims matrix for each sector are described in the bullets below. Some financial claims are attributed to the asset management product (AMP) sector but for simplicity these are then apportioned based on the estimated sectoral ownership of such products (FIs = 31 percent; LGFVs = 10 percent; HHs = 45 percent; NFCs = 10 percent). Sectoral totals do not necessarily equal the debt figures published in the *Article IV Staff Report*'s Table 6 due

[1] An implicit assumption is that the valuation of debt liabilities remains constant. This assumption is relaxed for DIs in the bail in scenario (see below).

to the inclusion of non-debt liabilities (i.e., receivables and accounts payable) for some sectors. The data for the LG and CG sectors also corresponds to the budgetary definition, rather than IMF staff's preferred augmented general government definition of the perimeter of government.

- Local governments (LG):
    - *Liabilities:* official debt liabilities of LGs are distributed across sectors based on sectoral bond ownership data produced by China Central Depository & Clearing Co Ltd. data, accessed via CEIC. Additional credit liabilities are estimated from the accounts receivable of LGFVs (see below).
    - *Assets*. LGs' credit claims on DIs are estimated as half of total financial institutions' fiscal deposits, as reported by the PBC.
- Local government financing vehicle (LGFVs):
    - *Liabilities:* LGFV debt liabilities are estimated from aggregated balance sheet data of nearly 2200 LGFVs, obtained via S&P Capital IQ. Reported term loans owed by LGFVs are attributed to FIs. Senior bonds and notes are attributed 97 percent to domestic AMPs and 3 percent to non-residents. Other interest-bearing debt liabilities not counted as debt or bonds are apportioned to AMPs (75 percent) and FIs (25 percent). LGFVs' other payables are calculated as the total liabilities less interest-bearing liabilities, income tax payables, unearned revenues, and deferred tax liabilities, and are apportioned to NFCs (i.e., as arrears; 75 percent) and NBFIs (25 percent).
    - *Assets:* LGFVs' debt claims on NFCs are calculated as 20 of total receivables and half of Other Long-Term Assets. Debt claims on LGs are estimated as 80 percent of total receivables. Debt claims on FIs are reported holdings of cash and cash-equivalents.
- Financial Institutions:
    - *Liabilities:* Banks' non-bond debt liabilities are calculated from the PBC's Depository Institution Balance Sheet data series. Banks' bond liabilities are apportioned across sectors based on sectoral bond ownership data produced by China Depository & Clearing Co. Ltd and Shanghai Clearing House, accessed via CEIC.
    - *Assets:* Banks' non-bond credit assets are calculated from the PBC's Depository Institution Balance Sheet data series. Claims on NFC are the residual of "Claims on Non-Financial Institutions" and banks' holdings of LGFV debt. Additional claims on other sectors are added via FI claims on NBFIs.
- Households
    - *Liabilities:* Includes household loans as reported in the PBC's Depository Institution Sources and Uses of Funds data.
    - *Assets:* Includes household deposits as reported in the PBC's Depository Institution Sources and Uses of Funds data and HH's pro-rata share of the financial claims held by the AMP sector.

- Nonfinancial Corporates

  - *Liabilities:* Includes estimated receivables owed to LGFVs (described above); debt liabilities owed to the banking system are calculated as total nonfinancial corporate loans from the PBC's Depository Institution Sources and Uses of Funds data less LGFV loans. Claims on NFCs held by AMPs are distributed pro-rata to the LGFV, FI and HH sector. Liabilities to the rest of the world are derived from the external corporate debt figure presented in Table 6 of the IMF's Article IV Staff Report.
  - *Assets:* Includes nonfinancial enterprise deposits as reported in the PBC's Depository Institution Sources and Uses of Funds data. Claims on other sectors held by AMPs are apportioned to the NFC sector based on its pro-rata ownership of AMPs (estimated at 10 percent, as noted above). Claims on the rest of the world are based on the Bank for International Settlement's locational banking statistics data series on cross-border positions owed to non-bank counterparties resident in China.

- Central Government

  - *Liabilities:* official debt liabilities of the CG are distributed across sectors based on sectoral bond ownership data produced by China Central Depository & Clearing Co Ltd. data, accessed via CEIC.
  - *Assets:* The CG's credit claims on FIs are estimated as half of total financial institutions' fiscal deposits, as reported by the PBC.

- Rest of World

  - *Liabilities:* For financial institutions, based on foreign assets in PBC's Depository Institutions Sources and Uses of Funds data. For nonfinancial corporates, based on Bank for International Settlements-reported cross-border positions of banks to counterparties in China.
  - *Assets:* For financial institutions, based on foreign debt in PBC's Depository Institutions Sources and Uses of Funds data. Debt liabilities of the CG and LG are derived from sectoral bond ownership data produced by China Central Depository & Clearing Co. Ltd. Data, accessed via CEIC. For nonfinancial corporates, based on Bank for International Settlements-reported cross-border claims of banks to counterparties in China.

Equity matrices. Table rows show equity assets and columns show equity liabilities across sectors.

- Financial institutions:

  - *Liabilities:* CG, LG and other sector claims are estimated based on the latest disclosed shareholder information from listed financial institutions. Other sector claims are further disaggregated into FI, HH, NFC (including LGFV) and RES based on the latest shareholding composition of tradeable market capitalization from Shanghai stock exchanges. LGFV claims is assumed to be 30 percent of LGFV's long-term investment sourced from Capital IQ.

- LGFVs:
    - *Liabilities*: LGFV's reported minority interest equity is assumed to be held by the NFC sector. The remaining LGFV equity is attributed to the LG sector.
- NFC
    - *Liabilities:* CG, LG, RES and other sector claims are based on the asset composition of China industrial enterprise from National Bureau of Statistics. It is assumed that CG and LG hold equal share of state-owned enterprises, joint-stock enterprises are equally owned by government and private sector, 20 percent of foreign funded industrial enterprises is owned by RES, and industrial enterprises are owned by other sectors. Further disaggregation follows the same methodology as in claims on financial institutions.

Annex II. Estimation of LG Fiscal Reaction Function

Regression Specification

The fiscal reaction function predicts the typical reaction of the primary balance as a response to changes in other macro-fiscal variables. The regression specification is:

$$\Delta pb_{it} = \beta d_{it-1} + \gamma \boldsymbol{X_{it-1}} + \delta_i + \epsilon_{it}$$

where *i* indexes provinces and *t* years, *pb* denotes the general budget primary balance as a share of GDP, *d* official debt-to-GDP (the main regressor of interest), ***X*** is a vector of fiscal variables and other controls, δ are province fixed effects, and ϵ the error term.

Data

The analysis uses annual data on fiscal variables (both on-budget and LGFV) at the provincial level for 2019-2022.[1] Most variables are sourced from CEIC, while LGFV debt data are from Capital IQ aggregated with the same bottom-up methodology as in Article IV Staff Reports, but at the province level, and LGFV spreads are from WIND. Summary statistics for the dependent and independent variables included in the above regression are provided in Table 1.

Annex II. Text Table 1. China: Summary Statistics, 2019-2022

Variable	Units	Mean	Std. dev.	p25	p75	N
Primary Bal.	percent of GDP	-14.6	19.3	-18.5	-4.9	108
Healh Exp.	percent of GDP	2.3	1.2	1.5	2.7	111
Land Sales	percent of GDP	5.7	2.8	3.8	7.1	112
Offical Debt	percent of GDP	32.4	15.1	21.6	41.8	116
LGFV Debt	percent of GDP	44.3	26.4	23.4	59.2	116
Offical Int. Rate	percentage points	1.9	0.5	1.6	2.3	108
LGFV spread (AA)	percentage points	3.0	1.5	2.1	3.8	106
RGDP growth	percent	-0.9	4.3	-3.6	0.8	116

Sources: Capital IQ, CEIC, WIND, and Staff estimation.

[1] The sample period is constrained by the availability of LGFV spread data at the province level, which starts in May 2019. Values for spreads in 2019 are imputed from the average of the available months.