Infrastructure Investment Priorities for Rebalancing China's Economy

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By Richard YARROW

May 2022 brought sobering news for China's economy, with particularly dramatic numbers on capital investments. Investment spending represents an unusually large share of China's economy—over 40% of China's gross domestic product (GDP) versus 20% in the United States—in part thanks to a real estate sector which, some scholars suggest, underlies nearly a third of economic activity.[1] May's reports of a 47% fall in property sales and a 44% fall in new construction projects are ominous for the 2022 growth prospects of an economy heavily reliant on such investments.

However, those who say that China's age of construction is over should consider China's still-vast needs for certain kinds of infrastructure. Some capital investments can help rebalance China's economy away from investment spending in the long term, mitigate existing geographic imbalances, provide greater support for middle and working class households (such as in a "common prosperity" framework), and move the economy towards the goal of consumer-powered "internal circulation".

In savings and investments, China's economy is an outlier. For two decades, investment spending and exports have contributed a share of China's GDP that is globally exceptional. By official counts, household consumption in the last 20 years has hovered around 35% to 40% of China's GDP, compared with over 50% shares in much of the West or over 60% in the United States and Britain. Countries with similarly low shares of household consumption in their economies tend to be small and oriented to natural resource extraction: take Qatar (currently 26% of GDP from household consumption, with 2.6 million people in 2015) or Kuwait (41%

[1] Kenneth Rogoff and Yuanchen Yang, "Peak China Housing?" *VoxChina*, 16 September 2020, http://www.voxchina.org/show-3-196.html (last accessed 28 June 2022).

and 3.8 million people), where sovereign wealth funds oversee the copious proceeds of oil revenues on behalf of modest-sized populations.

TABLE 1 COUNTRIES WITH SUSTAINED HOUSEHOLD/PRIVATE CONSUMPTION SHARES OF GDP BELOW 40%, 2005-2015 RANGE, SORTED BY POPULATION

	Private Cons. %	Gross Fixed Capital Formation %	Est. Population 2015 (m)
P R China	**34-40**	**40-47**	**1,380**
Iraq	31-56	9-22	36
Saudi Arabia	26-40	20-34	32
UAE	32-60	19-32	9
Singapore	36-40	22-30	6
Norway	38-44	23-28	5
Ireland	33-48	17-32	5
Oman	28-36	20-36	4
Kuwait	24-42	13-25	4
Qatar	13-22	27-46	3
Botswana	38-52	25-42	2
Gabon	27-38	21-35	2
Bahrain	32-46	22-35	1
Luxembourg	33-38	16-22	0.6
Brunei	13-24	10-40	0.5
For comparison:			
United States	67-69	18-24	321

Source: Figures from the World Bank. Excludes countries such as Suriname, Turkmenistan and Libya which lack data for several years in this range.

China's household consumption rates appear exceptional historically as well. Even during the peak of World War II-era rationing and industrial mobilisation, the United States and Britain did not experience private consumption rates below 45%. Only in one year, at the peak of mobilisation in 1944, did wartime Japan see official household consumption rates fall below a 40% share of the economy, at a level that was still above China's rates from 2008 to 2012. One may justifiably express scepticism about wartime economic data collection and the precise comparability of 1940s and 2010s definitions of investment spending. Yet even if taken only as a rough heuristic, this seems like an astonishing difference.

Too much reliance on exports and investment spending brings risks and costs. Continually committing substantial resources to construction, while normal consumers have little money to spend, is likely to lead to wasteful investment projects. Depending on exports means relying on the gains in purchasing power or relative access in China's main export markets—in particular, the United States. At some point, China will feel growing pressures to pivot to relying on an active "internal" consumer economy to generate demand that can propel new private investments and new growth.

Ultimately, in order to grow as a thriving consumer economy, China will need to expand the resources available to average households. This could be achieved through reallocating existing resources from spending on investments and support for export industries, towards household income and consumption. Reallocating existing resources, such as through welfare spending or the consumption vouchers issued in a few cities during the pandemic, is the fastest and most direct way to increase households' purchasing power.

Aside from political reasons for prioritising exports and key industries above household consumption, there are some compelling macroeconomic reasons against a swift reallocation of resources. First, China's workforce structure is heavily oriented towards capital investments (see Table 2) and sudden changes in investment spending could harmfully disrupt labour markets at a time when the pandemic has already made employment less stable. Second, while China has largely avoided the inflation problems seen in recent months in Europe and the United States, China is not immune to inflation risks. China depends on large imports of food and energy products, the prices of which are shaped by overseas inflation and which greatly impact the livelihoods of the poor. Premier Li Keqiang said in his address during May's economic stabilisation conference that the West's inflation conundrum "is not unrelated to last year's stimulus combined with quantitative easing from two years ago. We did not do that". However, sudden increases in consumer spending power could still unleash greater price pressures in China.

TABLE 2 DIRECT EMPLOYMENT IN CONSTRUCTION IN CHINA

	2008	2021
Number of migrant workers (millions)	225.4	292.5
Approximate number of migrant workers employed in construction (millions)	31.1	55.6
Approximate share relative to total urban employment	9.7%	11.9%
Number of employees in construction in urban non-private units (millions)	10.7	21.5 (2020)
Share of total number of employees in urban non-private units	8.8%	12.6%

Source: Figures calculated based on data from the National Bureau of Statistics and Ministry of Human Resources and Social Security (accessed through CEIC), and from *China Statistical Yearbook 2021*.

Thus, an alternative to large direct transfers to households may be to try rebalancing the economy through capital investments that are more closely geared to supporting household well-being and households' future purchasing power and consumption. Such an approach could facilitate a gradual decline in China's unusual reliance on investment spending and related industries, and a path towards an economy more focused on the prosperity and luxuries of domestic households. In late May, China's State Council suggested a partial step in this direction by declaring 33 measures to stabilise the economy. The measures included support for energy and affordable housing investments by local authorities and national-level water management investments—but also substantial support for firms in construction, industrial logistics and export-oriented manufacturing, "traditional" centres for China's investment-dominated growth model. Of the State Council's 33 measures, at least 20 appear to refer directly to supporting industrial capacity or physical infrastructure.[2]

Many of China's past major capital investments—in factories, shipbuilding and port facilities, for instance—have most closely and directly benefitted industrial exporters.[3] Yet there remain

[2] "Package of Policy Measures to Stabilize the Economy", State Council, 24 May 2022, http://www.gov.cn/zhengce/content/2022-05/31/content_5693159.htm (last accessed 28 June 2022).

[3] For a recent study on this topic, see Gerard DiPippo, Ilaria Mazzocco and Scott Kennedy, "Red Ink: Estimating Chinese Industrial Policy Spending in Comparative Perspective", Centre for Strategic and International Studies, May 2022, https://www.csis.org/analysis/red-ink-estimating-chinese-industrial-policy-spending-comparative-perspective (last accessed 28 June 2022).

many underappreciated potential investments that can quickly benefit middle and working-class households. By improving quality of life and creating efficiencies for most citizens, especially among rural and working class urban families, such investments could ultimately help unleash greater consumer spending, sustain new service activities and ensure that China's workforce grows more productive even as it ages. This way, policymakers might craft a slow, steady path towards reducing the economy's dependence on investments and exports.

Water-related infrastructure is a case in point. Industries in China—parallelling American and European industries in earlier times—have seen profit margins benefit from light regulations on water pollution and water use (relatedly, see enforcement category in Table 4). Policies favourable to new industries can greatly aid a country that is industrialising. However, China today is extensively industrialised—as the world's largest manufacturer, but one with a muted domestic retail base and a constrained number of overseas customers to serve. Favouring manufacturers above China's potential domestic consumers therefore carries less of the justification that it once had.

TABLE 3 WATER AND SANITATION-RELATED FIXED ASSET INVESTMENT (in billion RMB)

	2010	2015	2019
Industrial waste water treatment	13.0	11.8	7.0
Urban sanitation facilities	42.4	47.2	68.5
Urban drains and sewer facilities	117.3	124.9	192.9

Source: Figures from *China Statistical Yearbook on Environment 2021*, Table 9-1.

TABLE 4 SPENDING ON WATER RESOURCES IN NATIONAL (CENTRAL AND LOCAL) GENERAL PUBLIC BUDGETS (in billion RMB and approximate per cent of total general public budget expenditures)

	2012	2015	2017	2020
Water pollution mitigation	40.8 (0.3%)	53.5 (0.3%)	82.7 (0.4%)	118.7 (0.5%)
Desalination	0.005 (<<0.1%)	0.006 (<<0.1%)	0.007 (<<0.1%)	0.4 (<<0.1%)
Water conservation management	327.1 (2.6%)	480.8 (2.7%)	442.5 (2.2%)	454.3 (1.8%)
Of which: water conservancy project construction	117.7 (0.9%)	197.4 (1.1%)	188.5 (0.9%)	179.2 (0.7%)
Water conservancy law enforcement	0.7 (<<0.1%)	0.9 (<<0.1%)	1.1 (<<0.1%)	1.0 (<<0.1%)
Water quality monitoring	0.3 (<<0.1%)	0.8 (<<0.1%)	0.7 (<<0.1%)	0.9 (<<0.1%)
River, lake and reservoir improvements	*Not listed*	*Not listed*	11.7 (~0.1%)	12.9 (~0.1%)
Rural drinking water access	31.1 (0.2%)	36.8 (0.2%)	12.1 (~0.1%)	15.3 (~0.1%)

Source: Figures calculated from National General Public Budget Expenditure charts for selected years, PRC Ministry of Finance.

China needs more, better and newer water infrastructure, to sustain existing industries and, more importantly, improve conditions for households. Households have borne many of the costs of industries' heavy and polluting uses of water, such as through worse health or reduced access to clean water for civilian uses. Meanwhile, climate change presents increasing threats to China's remaining freshwater supplies. Yet in 2020, China's fixed asset investments in water, environmental and public facilities management grew by only 0.2%, while the reported fixed asset investment in water conservancy in particular was only slightly above its 2017 value.[4] Vast new investments and tightened regulations on water resources could mitigate these problems, ensuring cleaner waterways and cleaner, cheaper water for civilian uses. China's leaders have been right to call attention to these needs in recent announcements and speeches, including during May's economic stabilisation conference. A next step will be to ensure that local authorities have the financial resources, expertise and motivation to implement this new policy direction.

While better managing existing water resources, the government can focus more on guaranteeing the quality of urban water supplies. In 2018, China's Ministry of Water Resources studied a sample of centralised drinking water sources and found that 16.5% of them could not pass basic quality standards.[5] China is one of a steadily shrinking number of countries in Asia where most urban residents lack access to high-quality tap water. In the 1960s-90s, South Korea's government built a network of water purification plants that brought decades of cheap potable tap water to city residents. Seoul now benefits from some of the cheapest clean urban tap water in the world, with Seoul residents paying less for water than what residents of New York or London pay.[6] With reallocated spending and the benefit of new technologies, China could achieve similar milestones and in less time.

Every country arguably underinvests in zero-carbon energy. This remains true for China, where widespread electrical shortages in fall 2021 were a harsh reminder of the vitality of careful energy investments for every other side of the economy. China's leaders have pledged to reach a peak in the country's carbon emissions by 2030 and achieve "net zero" emissions by 2060, goals which may require an average of over RMB 3 trillion in investments a year for 30 years.[7] Although this goal is ambitious, greater funding could be allocated earlier in the 30-year period, helping to shift China's overall investment focus and keep pace with or outpace energy transitions taking place in the West.

In 2021, renewable and nuclear energy (including biofuels) comprised about 33% of China's electricity production, 45% of maximum installed electrical generating capacity (for instance, under ideal solar and wind conditions), and about 10-20% of overall energy consumption (the latter including industrial, heating, and other household energy uses outside of the electric grid).

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4 The latter is calculated by the author based on water conservancy subcategory fixed asset investment (FAI) growth rates reported in 2019, 2020 and 2021 statistical yearbooks. The value of FAI in the larger category of water, environmental and public facilities management was RMB 8.2 trillion out of a national total FAI of RMB 64.1 trillion for 2017. See *China Statistical Yearbook 2018*, Table 10-6.

5 Shi Xiaoming, "The Safety of Drinking Water in China: Current Status and Future Prospects", *China CDC Weekly*, 7 March 2020, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8430420/ (last accessed 28 June 2022).

6 "Seoul Tap Water, Arisu", Seoul Metropolitan Government, https://www.metropolis.org/sites/default/files/seoul_tap_water_arisu_english.pdf (last accessed 28 June 2022).

7 For instance, see Zhang Ke, "He Jiankun: To Achieve Carbon Neutrality, There Are Several Directions to Increase Efforts", *Yicai*, 29 September 2020, https://www.yicai.com/news/100788326.html (last accessed 28 June 2022).

Nuclear and renewables form a larger share of China's total installed capacity than in the United States, where the figure is about 35%, but produce a smaller share of China's overall actual electricity, versus about 40% of electricity in the United States. In China, like in the United States, plenty of additional wind and solar projects could be launched, with long-term benefits to civilians and industries alike.[8]

China still greatly needs construction supporting more 'mundane' public services. COVID-19 has emphasised the world's need for better health infrastructure. In China, regional disparities in medical resources remain significant. In 2019, National Health Commission data indicated that healthcare spending was around RMB 4,000 per person in Beijing, while in rural parts of Guizhou or Yunnan, spending was below RMB 1,000 per person per year. The gap extends to buildings and equipment. In 2020, Beijing, with a population of 22 million, had roughly as many specialised hospitals as Heilongjiang, Chongqing, Fujian, Jiangxi, or Guangxi, each with a population of 30 to 50 million (see Table 5 for select medical specialties). Likewise, Beijing claims more community health service centres than 19 other Chinese provinces or regions have.

Expansions in the community health system over the last decade have closed some of the gaps. Figures on per capita healthcare spending or numbers of medical facilities do not perfectly capture the nature of regional health disparities: China maintains an impressive and staggeringly extensive network of village and township health clinics, which harken to the famous "barefoot doctors" of the Mao era. Nevertheless, these clinics typically lack the equipment, level of expertise, public trust and treatment capabilities of large urban medical centres, a divide that is harder to discern in existing data.

TABLE 5 NUMBER OF SPECIALISED HOSPITALS IN SELECT REGIONS, 2019 (for cardiovascular: number of licensed full physicians, total number of trained medical personnel)

Region	Population (millions)	Cardiovascular	Ophthalmology	Stomatology	OBGYN
Beijing	22	2 (780, 3,097)	14	35	19
Hunan	66	4 (152, 481)	55	49	38
Jiangxi	45	*Not Available*	16	15	12
Zhejiang	64	*NA*	56	*NA*	*NA*
Henan	99	9 (*NA*, 3,804)	41	17	37
Guangxi (2017)	49	1 (156, 483)	13	11	13

Source: Figures from *China Statistical Yearbook 2021*, Table 2-5; *Beijing Statistical Yearbook 2020*, Table 21-4; *Hunan Statistical Yearbook 2020*, Table 18-8; *Jiangxi Statistical Yearbook 2020*, Table 20-6; *Henan Statistical Yearbook 2020*, Table 23-3; *Zhejiang Statistical Yearbook 2020*, Table 15-16; and *Guangxi Health and Family Planning Yearbook 2018*, p. 371.

China also has potential to improve education infrastructure. While many provinces officially report having no dilapidated senior secondary schools, the standards for school building quality could no doubt improve. Even in wealthy coastal cities, many teachers and students hold classes in ageing facilities with limited ventilation and temperature control. In many counties and lower-tier cities, students attend crowded classes and facilities. In 2020, Beijing had a mean

[8] For further discussion, see Richard Yarrow and Chen Gang, "Climate Investment in China and the United States: A Comparison of Political, Monetary, and Market Technology Drivers", *EAI Background Brief*, forthcoming. Installed generating capacity refers to the ability to produce electricity at any given time under "ideal" conditions. As solar and wind power generating facilities are often unable to produce at their maximum possible level due to environmental conditions, the installed capacity of renewable facilities is generally much lower than their actual output.

of 499 high school students for each senior secondary school facility. Meanwhile, town and county-level senior secondary schools in Henan averaged over 2,700 high school students per school.* In 2020, Beijing schools averaged 29 students per class for students in their final year of high school. In Henan, the average graduating senior comes to a class with 53 peers, a condition that has sometimes led to tragedies.[9]

TABLE 6 SELECTED DATA ON HIGH SCHOOL STUDENTS AND SENIOR SECONDARY SCHOOLS, 2020

	Average high school students per school*	Average final-year high school students per class
Nationwide	**1,752**	**49**
Beijing	499	29
Zhejiang, *overall*	1,301	41
Zhejiang, *county/town-level*	1,268	41
Zhejiang, *rural*	865	40
Jiangsu, *overall*	1,975	46
Jiangsu, *county/town-level*	2,075	47
Jiangsu, *rural*	1,307	44
Henan, *overall*	2,431	54
Henan, *county/town-level*	2,788	55
Henan, *rural*	1,385	51
Guangxi, *overall*	2,308	58
Guangxi, *county/town-level*	2,482	60
Guangxi, *rural*	960	53

* Note: China's education statistics often do not distinguish between senior secondary schools that are strictly high schools and senior secondary schools that include primary and junior secondary students. This does not change the meaning of the number of final-year students per class, but it does affect the meaning of the average number of high school students per school. In Beijing, a relatively larger share of schools teaching high school students also teach younger students, affecting comparisons between Beijing schools and schools in other regions.
Source: Figures calculated by the author based on *Educational Statistics Yearbook of China, 2020*.

Existing housing facilities could be updated and better utilised. Many older buildings are poorly suited for people with disabilities or for the elderly. Construction and renovations geared to them would help foster a fairer society prepared for demographic shifts and a workforce with greater productivity from people previously at socioeconomic margins. Existing well-equipped facilities tend to be in wealthier areas. Although Beijing has a considerable number of elderly residents, the municipality hosts more beds in elderly care institutions than 15 other regions of China do.

The average Chinese city-dweller has around 40 square metres of home space. Depending on one's metric, this is perhaps 10-20% less than what the average person in New York City has. At elite Tsinghua and Peking universities, many students share a few square metres with three to five roommates. At other universities and boarding high schools, students might share a bedroom with nine roommates.

Crowded housing is not an inevitable fact of urban life. Manhattan today has far more skyscrapers but almost 30% fewer people than it had in 1910, when the population squeezed into far tighter housing. Large Chinese cities have many opportunities to upgrade existing

[9] On a case of overcrowding in primary schools, see Kevin Schoenmakers, "Deadly Stampede at Henan Primary School", *Sixth Tone*, 22 March 2017, https://www.sixthtone.com/news/2094/deadly-stampede-henan-primary-school (last accessed 28 June 2022).

housing or convert underutilised buildings for larger apartments. Doing so could lift people's quality of life and give people more space to motivate greater consumer activity. The need and potential are greatest in providing better housing for tens of millions of migrant and working-class families, which are the likeliest to spend their additional purchasing power and thereby help fuel a consumer economy.

It is always possible to build too much of a good thing. Urban and economic planners should be careful not to create schools and hospitals at scales and in locations where they can never be properly used. However, amid the recent stresses from lockdowns, China has opportunities to revive construction and equitably rebalance the economy at the same time. To rebalance, China must limit spending in "traditional" categories of investment, such as heavy industries and manufacturing, as well as real estate and transportation infrastructure. Instead, China can prioritise investments that focus on supporting broad public services, directly lifting household living standards, and creating infrastructure from which the poor and middle classes most of all can quickly benefit.

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Note: A shorter analysis on these topics was published in the South China Morning Post on 7 June 2022.

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