

I. Introduction

China and Africa have forged strong economic ties over the last two decades, especially after China's accession to the WTO in 2001.¹ Although political ties between China and several African nations date back to the Mao Zedong era (Shinn, 2019), economic interactions have only surged after China's growth takeoff. Against this backdrop, this paper examines the key aspects of this economic relationship, focusing on trade, lending, and foreign direct investment.

The first part of this paper outlines key findings regarding the evolving economic relationship between Africa and China. Firstly, China has emerged as Africa's largest individual country trading partner, with African countries mainly exporting raw commodities and primary goods while importing Chinese manufactured products. However, the trade pattern exhibits a higher concentration in exports to China than in imports, leading to higher exposure for certain African countries. Secondly, China's role as a major credit provider in the region is significant, but the debt African governments owe to China remains a small fraction of their total public debt. Recent data has shown a significant scaling back in Chinese lending activities. Finally, while China has been a notable source of foreign direct investment in Africa, it still accounts for a small proportion of the total FDI stock.

In recent years, several factors, including US-China trade tensions, changing patterns in China's capital outflows, shifts in its political priorities, and rising debt vulnerabilities in Africa, have gradually altered this longstanding relationship. China's economic growth, particularly affected by a slowdown in its real estate sector and demographic changes due to an aging population, has decelerated since the early 2010s. These developments, compounded by the COVID-19 pandemic's aftermath, are poised to reshape trade and growth dynamics between China and African nations.

Therefore, the second part of the paper assesses the impact of China's economic slowdown on African economies, focusing on changes in Chinese lending and investment patterns. Key findings include reduced Chinese lending to African countries due to the COVID-19 pandemic and heightened risk aversion amid debt sustainability concerns. Likewise, China's foreign investment strategy in the continent is shifting towards green and digital infrastructure, involving more local collaboration in project selection. The analysis shows that African oil and resource exporters are most vulnerable to a Chinese economic slowdown, facing deteriorating terms of trade as China's economy rebalances away from investment towards consumption, thus reducing the demand for commodities.

The paper starts by documenting the channels of economic engagement between China and African countries, including bilateral trade, Chinese loans and investments in African countries, and other linkages such as construction projects and Chinese workers in Africa. We then assess recent developments and the outlook of China-Africa economic relations, considering both short-term conjunctural shifts and long-term structural factors. Finally, we conclude with a discussion of policies that could help African countries navigate the evolving landscape of economic engagements with China.

¹ In this paper, we refer to Africa as the group of 54 countries in the continent. Sub-Saharan Africa refers to the group of 45 countries that are under the purview of the IMF's African Department. A list is provided in the appendix of the [Regional Economic Outlook for Sub-Saharan Africa, October 2023](#) (IMF 2023).

II. The Makings of a Strong Economic Partnership

The economic relationship between Africa and China is complex and multifaceted. Understanding this relationship is made more challenging by the relative scarcity of reliable and comprehensive data on trade and investment with low-income countries, including those in Africa. Drawing on a variety of data sources, the next few sections aim to provide an overview of significant patterns in the historical economic engagement between China and Africa. This includes an examination of trade dynamics, lending activities, and foreign direct investment.

A. Trade: Where it All Began

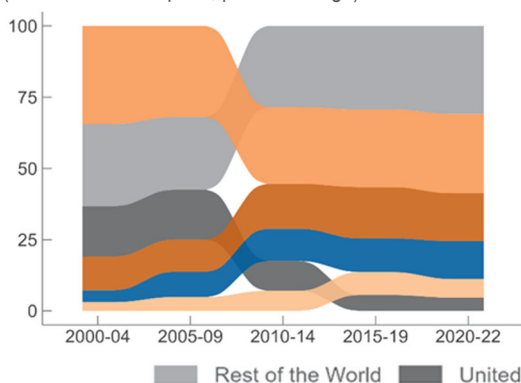
The most important channel of economic engagement between China and Africa is trade. China is Africa's largest individual country trading partner (Figure 1), rivaling the combined flows of the entire Euro Area block. Between 2020 and 2022, about 13 percent of the region's total goods exports have found their way to China, a stark contrast to the 1990s—before China's accession to the WTO in 2001—when western countries dominated as the primary destinations of the continent's exports. Since then, China's robust economic growth and substantial demand for raw materials have propelled African goods exports, witnessing a more than fourfold increase in nominal US dollar terms between 2000 and 2022.² Conversely, African imports from China have surged in value twentyfold between 2000 and 2019, and averaged 16 percent of the total between 2020 and 2022.

Despite intermittent declines during global crises—the Global Financial Crisis in 2009, and the commodity downturn in 2015—trade has played an important role in boosting regional incomes, primarily through increased export revenues.

Figure 1. Africa: International Trade Partners, 2000–22

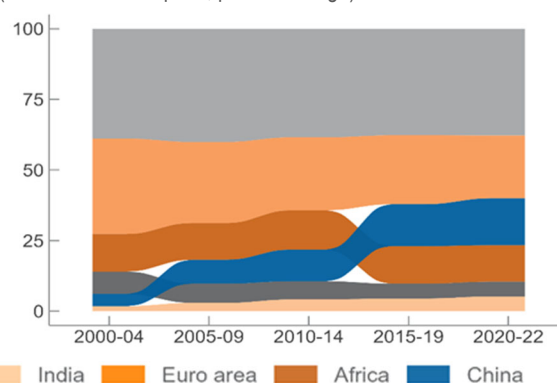
1. Exports of Goods

(Percent of total exports, period average)



2. Imports of Goods

(Percent of total imports, period average)



Sources: IMF, Direction of Trade Statistics database; and IMF staff calculations.

Note: The chart depicts five-year averages of the share of exports from and imports to sub-Saharan Africa for the top five destinations and origins, with the remainder combined in a residual category. Regions are listed from the largest (top) to the smallest (bottom). Euro area's definition excludes Croatia.

² According to WEO data, total goods exports increased by about 60 percent in this period in volume terms. The large difference stems not only from the cumulative inflation since 2000 but also from the positive evolution of terms of trade for the region's exports.

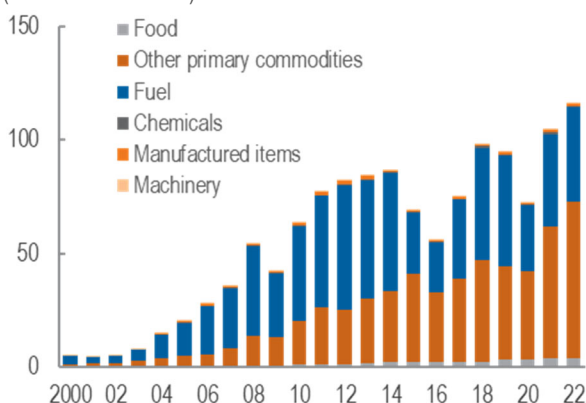
Africa, however, does not play as big of a role as a trading partner to China, although its importance has been increasing in the last two decades. In 2022, Africa received 4.6 percent of China's total exports and, after peaking in 2012, China's imports from Africa represented about 4.3 percent of its total imports in the same year. Other Asian countries, as well as Euro Area countries and the US, play more relevant roles as China's bilateral trading partners.

A distinctive feature of China and Africa's trade relationship is the composition of exports and imports, illustrated in Figure 2 using UN Comtrade data. Africa predominantly exports natural resources, especially crude oil, and other fossil fuels as well as raw unprocessed minerals and other intermediate goods to China. In contrast, imports from China are primarily manufactured goods and machinery, and items that are generally further along in the global value chain. Moreover, UN COMTRADE data shows that Africa consistently runs a bilateral trade deficit with China. In all, this persistent trend is a result of the relative abundance of natural resources posing challenges for economic diversification in African countries.

Figure 2. Africa: Composition of Trade with China, 2000–22

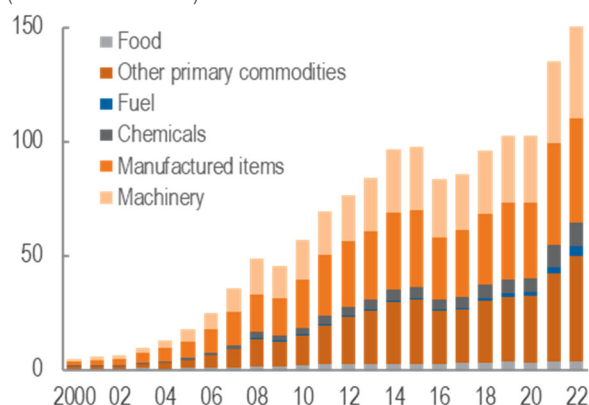
1. Exports of Goods

(Billions of US dollars)



2. Imports of Goods

(Billions of US dollars)



Source: UN, Comtrade database.

Figure 3 portrays the countries in Africa ranked by the share of China in both imports and exports. As it can be gleaned from Figure 3.1, China's share of imports of African countries is relatively homogeneous across countries, with the top 3, including Ghana, Guinea, Nigeria, standing at just over 30 percent compared to slightly less than 20 percent on average for countries outside of the top 10. When looking at the share of exports going to China, portrayed in Figure 3.2, we see a strikingly different pattern emerge. Indeed, the top 5 countries by exposure to China in this metric, including South Sudan, Democratic Republic of the Congo, Angola, Eritrea, and the Republic of the Congo, all have shares above 50 percent, with countries outside the top 10 exporting, on average, less than 15 percent to China. This fact has important implications, both because countries that have been exporting intensively to China may be more exposed to a deceleration in Chinese economic activity, but also because the relatively large demand for raw materials during China's unprecedented growth spell in the last two decades may have created incentives not to diversify some of economies that benefited the most from its spectacular rise.

Figure 3. African Trade Concentration with China, 2018–22**1. Imports from China**

(Percent of total imports)

(Share of GDP) **2. Exports to China**

(Percent of total exports)

(Share of GDP) 

Source: IMF, Direction of Trade Statistics database.

Note: Maps depict Chinese trade flows as a share of total trade flows with the world. Darker shades imply higher shares. The boundaries and colors shown on the maps do not imply, on the part of the International Monetary Fund, any judgment on the legal status of any territory or any endorsement or acceptance of such boundaries.

B. Loans and Debt: It's Complicated

This section delves into the lending dynamics between China and African countries, highlighting China's growing role as a key creditor in the region. However, the data indicates that the debt owed to China is relatively minor within the broader spectrum of African debt. Notably, there has been a recent downtrend in China's lending. The analysis also sheds light on the framework of China's institutional lending, particularly emphasizing state-owned enterprises' significant role in offering loans to foreign governments.

Methodological considerations

The second main channel of engagement between Africa and China is lending. Quantifying this aspect of the relationship is challenging, given that Chinese lending agencies do not typically reveal their loan amounts or terms publicly. It has been reported that confidentiality clauses have been included in some debt contracts confidentiality (Gelpern and others 2022). Furthermore, China is not a member of the Paris Club of government lenders, which tries to co-ordinate debt forgiveness among its members and systematically discloses the terms surrounding the debt. In this context, it is difficult to assess the full extent of China's lending to African countries. Despite these challenges, China's loan programs in Africa have attracted considerable media attention, especially in the context of debt distress situations for specific countries. Discrepancies in reports on the size and growth of African debt to China can be attributed to two main issues.

First, available data often comprises debt *commitments*, which reflects *promised* lending arrangements. The main benefit of focusing on commitments is their relative ease of compilation from various sources. This approach is exemplified by Horn and others (2019), who show that up to 50 percent of Chinese foreign lending may not be captured by "gold standard" sources like the World Bank International Debt Statistics. However, commitments might not lead to actual disbursements, or they may take longer than initially projected. The discrepancy between commitments and disbursements can be significant, as illustrated in Figure 4.

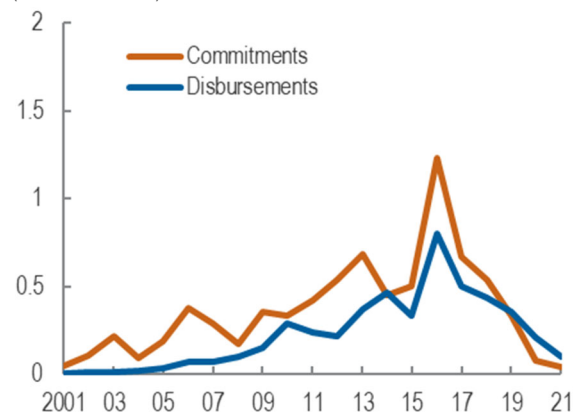
Second, data coverage and the choice of statistical concepts significantly affect the reported magnitudes. Our main data source for disbursements is the International Debt Statistics database, maintained by the World Bank. This dataset is assembled based on External Debt Reporting System (DRS) data submissions from country authorities directly to the World Bank, which then aggregates these data according to multiple criteria. These include the type of creditor (bilateral, multilateral, commercial etc.), the specific counterparty (i.e., country, MDB or international organization), classification of creditor between official or commercial, and of course the degree of involvement of the public sector from the debtor side (general government debt, public and publicly guaranteed debt, which among the central government, central bank, or other government agencies owes the debt, etc.). However, not all countries submit data to the WB through the DRS, and it has been documented that, at times, loans extended by Chinese agencies and commercial banks will be formally recorded as owed by private entities, even when there is a parallel arrangement whereby the ultimate responsibility for repayment lies with the debtor Government (Brautigam and others 2020). These kinds of arrangements complicate, at times, an accurate estimation of the existing stock of debt obligations.

External lending trends

Despite these data limitations, key facts emerge regarding the trajectory of China's lending to African countries. First and foremost, China has gradually emerged as the largest bilateral official creditor of African governments in the last two decades, serving as a significant source of infrastructure, mining, and energy financing for the continent (Figures 5 and 6). While concessional loans, as defined in the DRS, initially formed a substantial portion of China's loans to Africa, their share has decreased to less than 10 percent by the end of 2020 (Figure 7). The region's total external interest payments attributable to China's official bilateral loans is 10 percent as of 2019 (Figure 8).³

In the last 5 years, however, Chinese official total loan disbursements to African countries have fallen, representing in 2021 about one-eighth of their peak value of 1.2 percent of the region's GDP in 2016. Total loan commitments also contracted dramatically from their peak in 2016.

Figure 4. Africa: Inward Chinese Lending, 2000–21
(Percent of GDP)



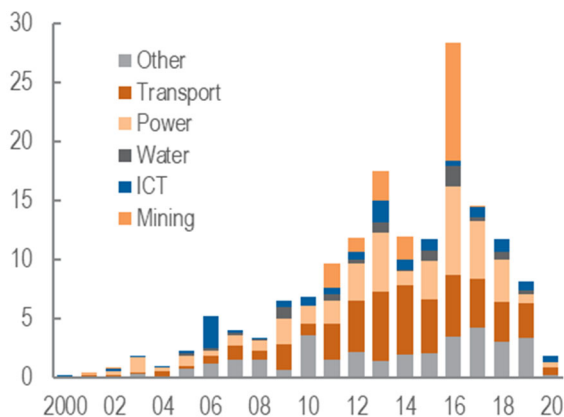
Sources: Boston University, Chinese Loans to Africa database for commitments; World Bank, International Debt Statistics database for disbursements; and IMF, World Economic Outlook database for GDP.

Note: Aggregate GDP for Africa excludes South Sudan.

³ We focus on 2019 data because in 2020, as discussed in later sections of the paper, a significant portion of interest payments on bilateral debt was frozen in the context of the Debt Service Suspension Initiative (DSSI), spearheaded by the World Bank and the International Monetary Fund.

Figure 5. Africa: Loan Commitments from China 2000–20

(Billions of US dollars)

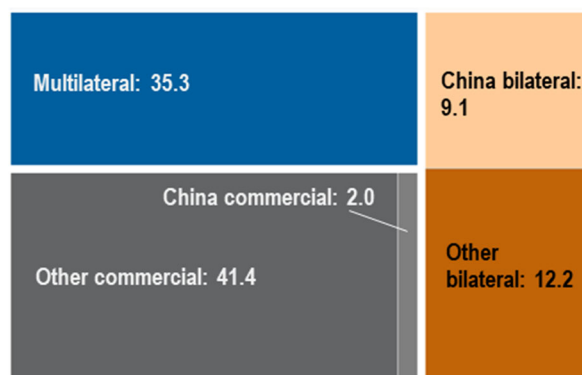


Source: Boston University, Chinese Loans to Africa Database.

Note: Other includes agriculture, business, budget, education, defense, food, government, health, trade, and unallocated.

Figure 6. Africa: External Debt, end of 2021

(Percent of total external debt)

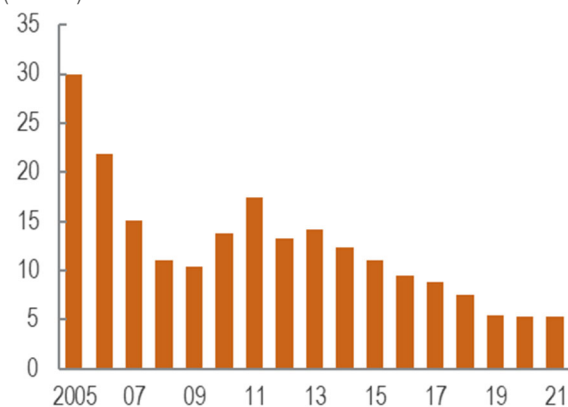


Sources: World Bank, International Debt Statistics; IMF, World Economic Outlook database; and IMF staff calculations.

Note: Multilateral includes regional development banks. China Development Bank is included in China bilateral debt but not in China commercial debt.

Figure 7. Africa: Share of General Government External Debt Owed to China Extended on Concessional Terms, 2005–21

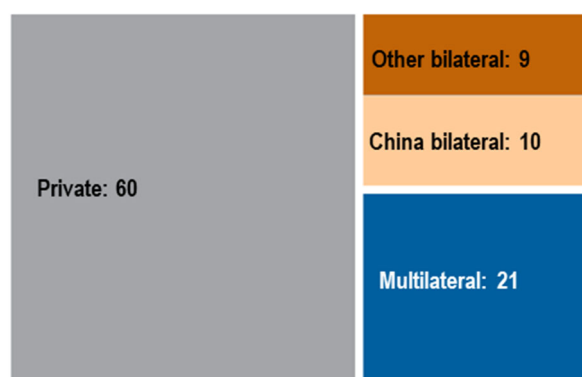
(Percent)



Sources: World Bank, International Debt Statistics database; and IMF staff calculations.

Figure 8. Africa: Share of Interest Payments on General Government External Debt, by Creditor Type, 2019

(Percent)

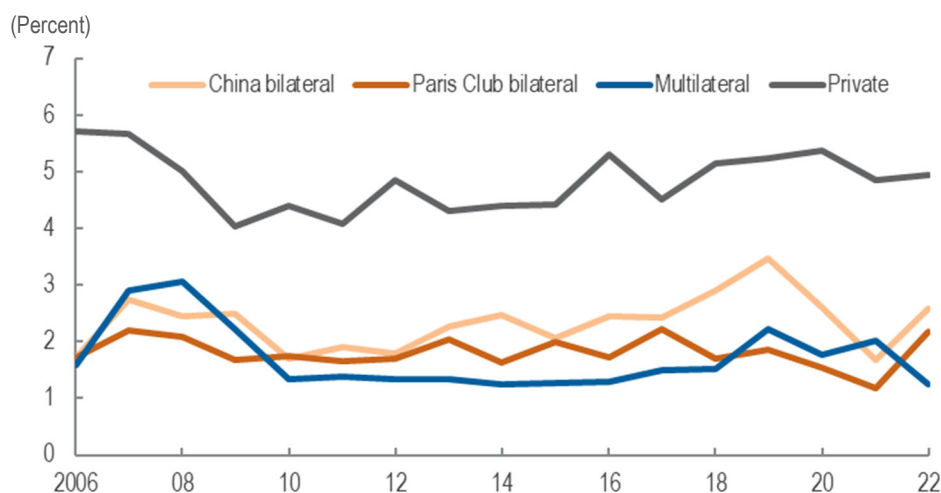


Sources: World Bank, International Debt Statistics database; and IMF staff calculations.

Note: Interest payments are actual amounts of interest paid by the borrower in currency, goods, or services in the year specified (World Bank 2000).

Examining the debt service cost of Chinese loans compared to other external creditor types reveals a middle-of-the-road positioning. China's loans fall between low-cost, concessional loans from MDBs and traditional Paris Club lenders, and the more expensive loans from commercial entities like Eurobonds and syndicated loans (Figure 9). Concessional loans from MDBs and traditional Paris Club lenders have stringent safeguards, making qualification more challenging, but they offer affordable interest rates and grace periods. On the other hand, loans from commercial entities, such as Eurobonds and syndicated loans, come with higher debt service costs. Chinese loans, as per IDS data, offer terms that lie somewhere in between. While featuring a more streamlined qualification process that might elevate the risk of debt distress, they also offer a relatively higher return for China.

Figure 9. Africa: Implicit Interest Rate on General Government External Debt, by Creditor Type, 2006–22



Sources: World Bank, International Debt Statistics database; and IMF staff calculations.

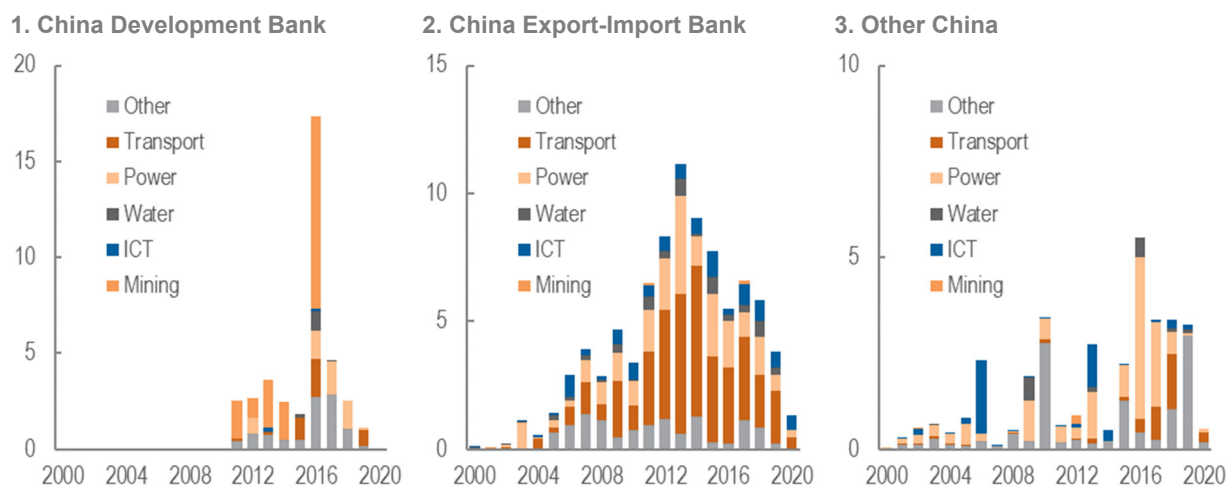
Note: Interest payments are actual amounts of interest paid by the borrower in currency, goods, or services in the year specified (World Bank 2000). Implicit interest rate is calculated as ratio of interest payments over existing stock of debt for each creditor type. This concept may differ from the interest rate agreed upon because of many factors, including grace periods, repayment schedules, missed interest payments, or arrears.

A Closer Look at China's Lending Agencies

According to Acker and others (2020) China's two largest overseas lenders are the Export–Import Bank of China (also known as Exim Bank) and the China Development Bank, with Exim Bank holding the bulk of outstanding loans to African countries (Figure 10). Exim Bank provides three main types of loans. *Export seller's credits* are loans extended to Chinese companies or 'export sellers' seeking funds to boost their business abroad, while *export buyer's credits* are loans provided to buyers of exported Chinese goods and services. Both types are negotiated at commercial rates based on prevailing rates in international capital markets.

Figure 10. Africa: Loan Commitments from China, 2000–20

(Billions of US dollars)



Source: Boston University, Chinese Loans to Africa Database.

Note: Other includes agriculture, business, budget, education, defense, food, government, health, trade, and unallocated. The large loan commitment granted by CDB in 2016 corresponds to the well-documented [loan to Angola's Government to recapitalize Sonangol](#).

Exim Bank also operates a third category known as *preferential loans*—preferential export buyer's credits, and concessional foreign aid loans. Both loan instruments have interest rates that are subsidized by annual appropriations from the Chinese budget and are exclusively provided to other developing-country governments or their state-owned firms. Exim Bank also has a 20 percent share in the China-Africa Fund for Industrial Cooperation (CAFIC), which was announced in December 2015 by President Xi Jinping and officially launched the following January with an initial cash injection of \$10 billion, with the State Administration of Foreign Exchange (SAFE) owning the remaining 80 percent share (Li 2020). In recent years, this fund has been merged with the China-LAC Industrial Cooperation Fund which focuses on investments into Latin America as part of a big revamp to form a joint investment vehicle for the Belt and Road Initiative (see the next Section for more details).

Like Exim Bank, China Development Bank (CDB) is a state-owned policy arm of the Chinese government. CDB's main mission is the development of China, with a focus on domestic projects related to public infrastructure, highways, and electric power. Unlike Exim Bank, CDB is more commercialized and domestically oriented, with most of its lending directed towards supporting domestic projects. It is the second largest bond issuer in China after the Ministry of Finance, accounting for about one quarter of China's bond market (Global Infrastructure Hub 2019, Annex D). Both Exim Bank and CDB have been reported to rely on collateralized lending, and specifically through a model referred to as "resource-secured infrastructure finance," which essentially relies on future receivables to secure the loan. While about a quarter of 2020 loan commitments were secured in this way, this model is different from the practice of using existing assets as collateral (Brautigam and others 2020).

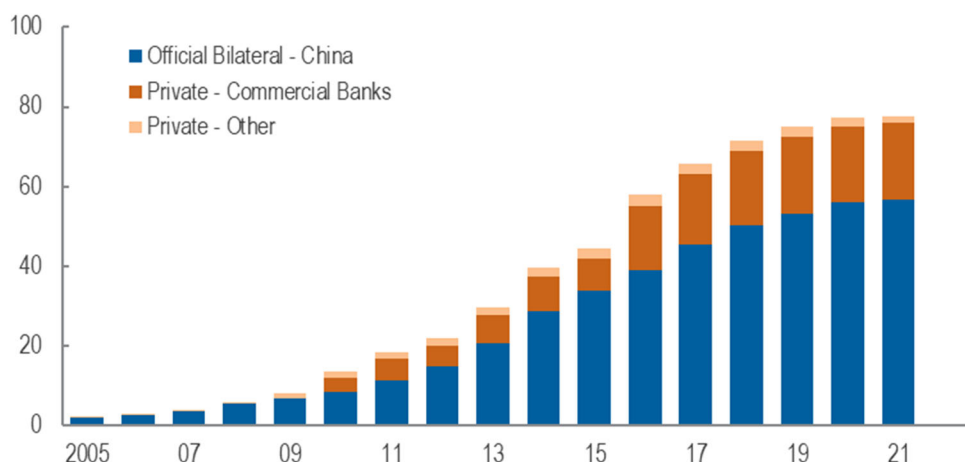
While China Exim bank and CDB are the major agencies tasked to fund development loans, in 2006, Chinese President Hu Jintao announced the formation of China-Africa Development Fund (CAD Fund) during the Forum on China-Africa Cooperation (FOCAC) as an initiative to strengthen China-Africa cooperation. The CAD Fund

became operational in 2007 with an initial capital amount of \$10 billion. The China-Africa Development Fund (CAD-Fund), a wholly owned private-equity subsidiary of the CDB, focuses on Africa, investing in projects through equity, quasi-equity (e.g., preferred shares, convertible bonds), or funds. Although it evaluates many of its projects independently, the CDB may recommend some of its loan projects to the CAD-Fund for equity financing (Centre for Chinese Studies 2013). This fund also encourages and supports Chinese enterprises which have set up operations in Africa or plan to invest in Africa, especially those that facilitate infrastructure construction, as well as enhance the social and economic development of African countries (Centre for Chinese Studies 2013).

Lastly, commercial banks in China also hold an increasingly significant share of the debt stock of African countries (Figure 11). However, as per IDS definitions (World Bank 2000), commercial banks that are creditors for the purposes of public debt reporting will be considered such regardless of whether they are privately or publicly owned.⁴ Therefore, in the case of China, this share is mostly attributable to China Exim bank and to CDB, and it may also include several other SOEs and commercial banks with close ties to the Chinese government.

Figure 11. Africa: Outstanding Debt Owed to Chinese Entities by Creditor Type, 2005–21

(Billions of US dollars)



Sources: World Bank, International Debt Statistics database; and IMF staff calculations.

The Currency Composition of Chinese Lending to Africa and Currency Swap Agreements

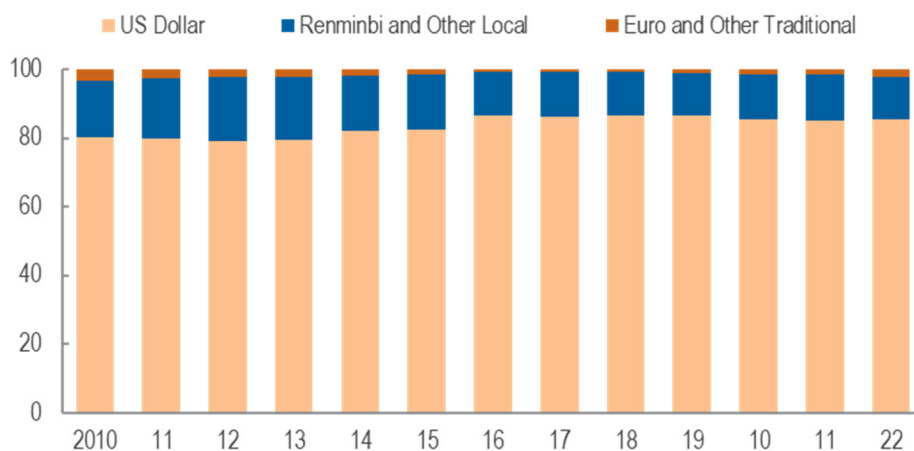
The currency composition of Chinese lending has become a notable aspect in recent year, particularly in relation to bilateral swap line agreements that have been signed by the People's Bank of China over the last decade. Beyond multilateral debt owed to the International Monetary Fund and to the World Bank, which is denominated in SDRs, most of the external worldwide debt recorded in the IDS data is denominated in US dollars and Euros, which together account for about 70 percent of the total. While the World Bank's IDS

⁴ The World Bank's [DRS Manual](#), p. 9, defines Commercial Banks for public debt reporting as "include[ing] all commercial banks, whether or not publicly owned, as well as other financial institutions, such as finance companies, merchant banks, insurance companies, and the like. Note the asymmetry in definitions with regards to commercial banks: as debtors, publicly owned commercial banks are in the public sector; as creditors all commercial banks are classified as private, whether publicly or privately owned."

database details the share of Public and Publicly-Guaranteed (PPG) debt denominated in US dollars, Euros, and a few other currencies, it does not specifically isolate Renminbi-denominated debt, grouping it instead with other currencies.⁵

Figure 12 presents the currency decomposition of total PPG debt owed by African DRS-reporting countries to China. This analysis divides the debt into three currency groups: the US dollar, the Euro and other traditional Advanced Economies' currencies, and the Renminbi along with other local currencies, the latter being combined in a residual category in IDS. The data reveals that most African external debt owed to China is denominated in US dollars, with no clear pattern indicating a decrease, aside from normal fluctuations likely due to exchange rate movements.

Figure 12. Currency Decomposition of Public and Publicly Guaranteed Debt in Africa, 2010–22
(Percent of total)



Sources: World Bank, International Debt Statistics database; and IMF staff calculations.

Note: Euro and Other Traditional currencies comprise the Euro, Yen, Pound Sterling, Swiss Franc, and Multiple-Currency loans, while the Renminbi and Other Local comprise all remaining currencies not included elsewhere in the totals. No SDR-denominated debt is owed to China.

Horn and others (2023) report that between 2008 and 2021, the People's Bank of China signed 40 bilateral swap agreements with major central banks worldwide. Generally, these agreements are designed for swift currency swaps between two central banks, primarily to provide liquidity support to commercial banks needing foreign currency in challenging market conditions. Swap lines are increasingly used worldwide as a crucial tool to stabilize capital markets and facilitate trade.

However, Horn and others (2023) note that the PBOC's swap line agreements, especially when systematically rolled over an extended period, may complicate the calculation of the foreign exchange reserves in countries facing BOP crises. They suggest these swaps might serve as an alternative way for China to support debtor countries to which it has significant exposure. It is important to note that in Africa, only Egypt and Nigeria have been documented in tapping and rolling over bilateral swap lines.

⁵ To be specific, the World Bank's IDS public-facing data portal shows the shares of PPG debt denominated in US dollars, Euros, UK Pound Sterling, Swiss Franc, Japanese Yen, Special Drawing Rights, and two residual categories, namely "Multiple Currencies," for debt which explicitly is due in more than one currency, and "Other," which captures the (offshore) Renminbi as well as all other currencies not explicitly mentioned in other categories.

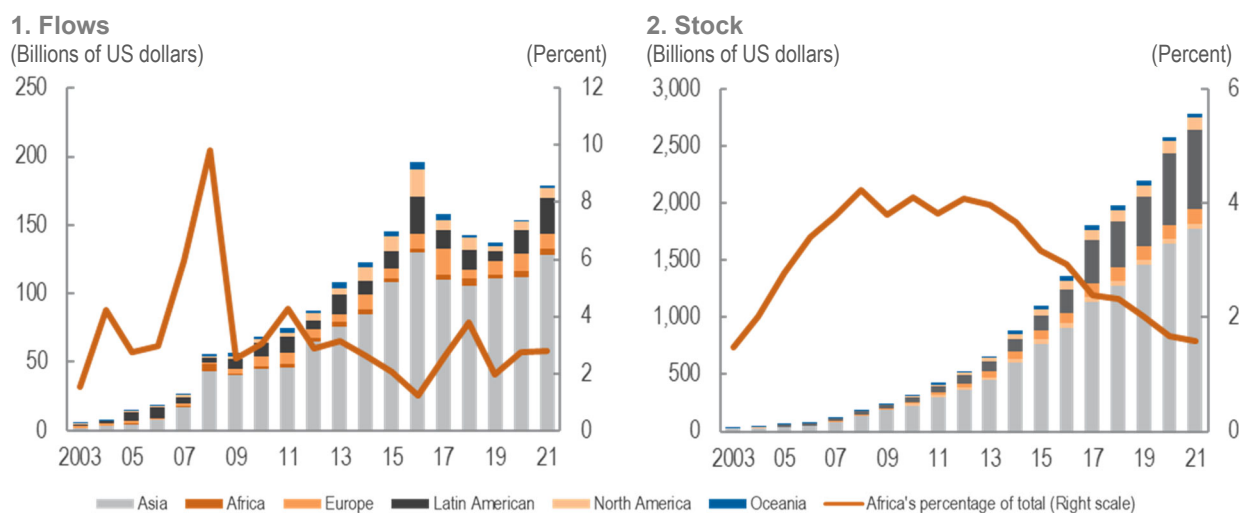
C. Investment Linkages

This section examines foreign direct investment (FDI) in Africa, focusing on both Chinese contributions and the African perspective. The analysis reveals that while Chinese FDI flows have constituted a significant portion of total recent inflows to Africa, they remain relatively small compared to the total FDI stock from more traditional investors. Conversely, Africa's share in China's total outward FDI is modest in both flow and stock terms. The Belt and Road Initiative—, launched in 2013, is discussed as a key framework for China's foreign economic activities, especially in terms of FDI.

Foreign Direct Investment: It's Small, but Also Big

Over the years, China has become a major overseas investor, with outward direct investment (ODI) flows peaking at about \$200 billion in 2016 and reaching approximately \$180 billion in 2021, as reported by the National Bureau of Statistics of China. From 2014 to 2021, Chinese cumulative ODI nearly tripled in value, growing from almost \$900 billion to about \$2.8 trillion. Despite this substantial growth, Africa's share as a destination remains relatively small, constituting less than 3 percent of China's overall ODI flows and less than 2 percent of its overall ODI stock as of 2021, with the latter on a steady decline from a high of 4 percent in 2012 (Figure 13). The key destinations for Chinese ODI are overwhelmingly located in Asia and in Latin America, which together account for almost all the ODI stock as of 2021. The data, however, might not be complete, as almost half of China's ODI flows to Hong Kong, but this is likely not the ultimate destination for most of these investments.

Figure 13. China: Outward Direct Investment, 2000–20

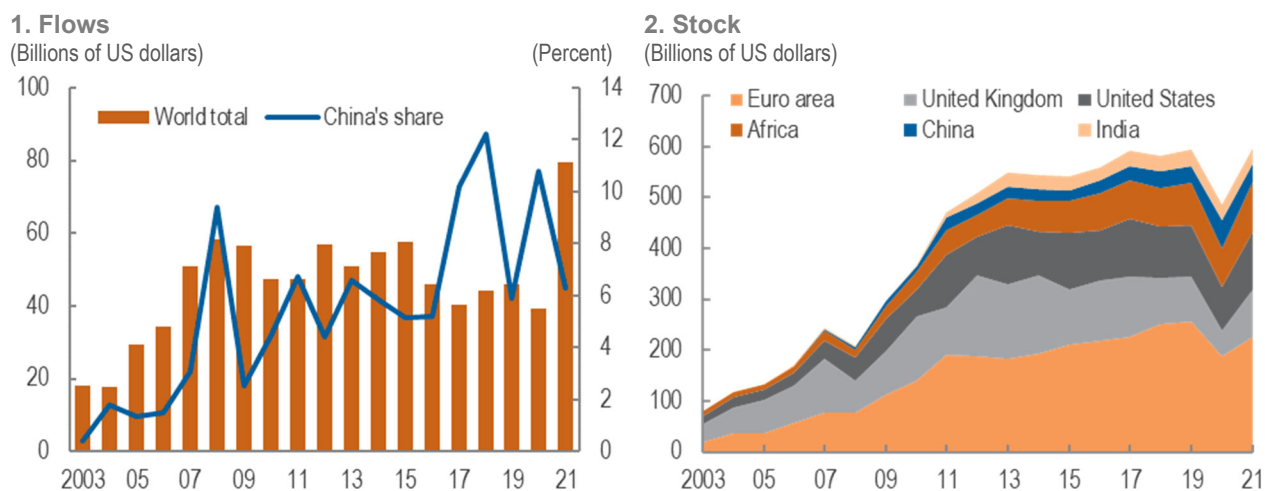


Sources: The National Bureau of Statistics of China, UNCTADstat, and IMF staff calculations.

From Africa's perspective, foreign direct investment (FDI) *flows* from China have been playing an increasingly important role over the years (Figure 14.1). The rise of China's FDI flows was impressive, hovering between 6-12 percent of the total annual FDI inflows in recent years, and amounting to approximately \$4.8 billion in 2021. However, when compared with the size of investments from other parts of the world, the *stock* of Chinese investments as a share of the region's total FDI is still relatively small—at about 3.6 percent in 2021 (Figure 14.2). The latter increased almost tenfold between 2004 and 2018, albeit from a very low base.

This relatively small magnitude might be surprising given the large media attention surrounding Chinese investments to Africa. Even if these numbers might not reflect the full extent of Chinese investments and miss parts that come through round-about channels, a doubling of the Chinese ODI stock to Africa would still be a relatively small share of the total existing stock of FDIs.

Figure 14. Africa: Inward Direct Investment, 2003–21



Sources: The National Bureau of Statistics of China, UNCTADstat, and IMF staff calculations.

Chinese ODI to Africa can be construed as relatively big compared to its investments in advanced economies. In general, FDI tends to flow more to advanced economies than to developing countries. As of 2021, the United States received more than eight times the amount of direct investment from the world compared to the amount that Africa received. Yet, China's stock of investment to the United States is only about two times bigger than its investments to Africa in 2021. Hence, China's relative interest in Africa is large, even if it plays a small role in terms of attracting overall investment (Chen and others 2016).

Chinese ODI in Africa is concentrated in specific sectors, including construction, mining, and manufacturing (Figure 15.1). These official statistics based on value of the stock of investments are often dominated by large investments made by Chinese state-owned companies. The geographic concentration is notable, with investments focused on a limited number of countries, particularly those rich in natural resources (Figure 15.2). Primary products and oil-exporting countries in Africa are major recipients of Chinese FDI, with a significant share of investments going to a handful of countries. This concentration has persisted, with diversification to other countries plateauing after 2015 (Figure 15.3). Like in the case of trade and lending, concentration of FDIs in a few key countries may constitute a source of vulnerability should Chinese investors decide to divest.

Figure 15. Africa: Chinese Inward Direct Investment by Sector, Country Export Type, and Concentration

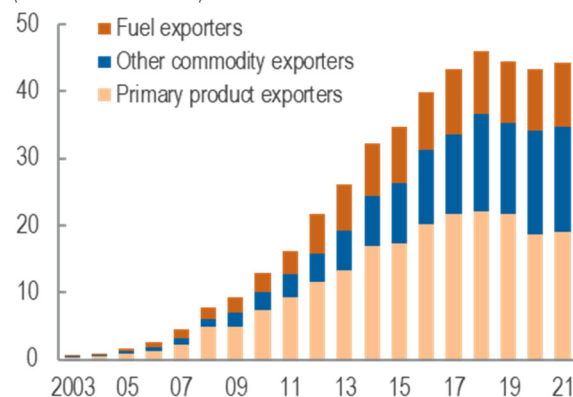
1. Sector, 2013–21

(Billions of US dollars)



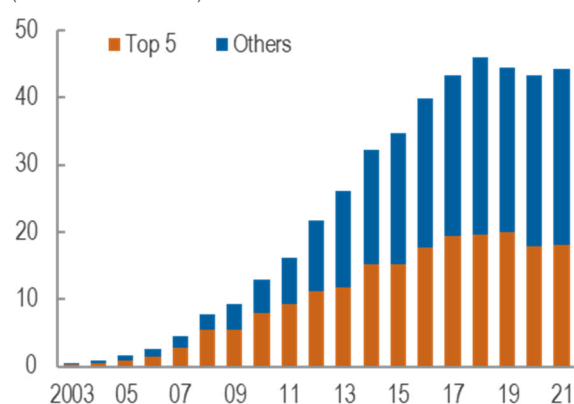
2. Country Export Type, 2003–21

(Billions of US dollars)



3. Concentration, 2003–21

(Billions of US dollars)



Sources: The Johns Hopkins University SAIS China Africa Research Initiative; China Statistical Yearbook: "Oversea Direct Investment by Countries or Regions".

The Belt and Road Initiative

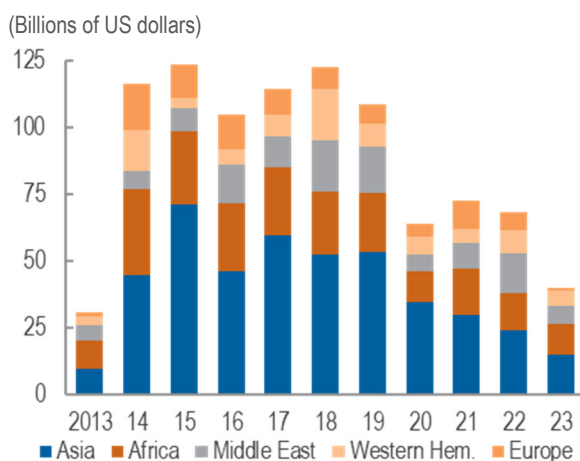
The Belt and Road Initiative (BRI), launched by China in 2013, is a collection of global development and infrastructure investments aimed at enhancing connectivity and fostering economic cooperation.⁶ Since its inception, most of the foreign direct investment originating from China has been under the umbrella of the BRI. Initially aimed at improving linkages between East Asia and Europe, the BRI encompasses projects such as railways, major road networks, and maritime infrastructure. As of 2023, over 150 countries and 30 international organizations have signed cooperation agreements with China under the BRI, with a cumulative engagement surpassing \$1 trillion (Nedopil 2023).

While the initial focus was on the Eurasian continent, BRI investments have been significantly extended to Africa and South America (Figure 16). In Africa, key sectors financed through the BRI include transportation,

⁶ This section takes stock of BRI-related engagements given the wide-ranging nature of this initiative as an organizing framework for Chinese foreign economic policy. In practice, this results in some overlap with the results presented in previous sections.

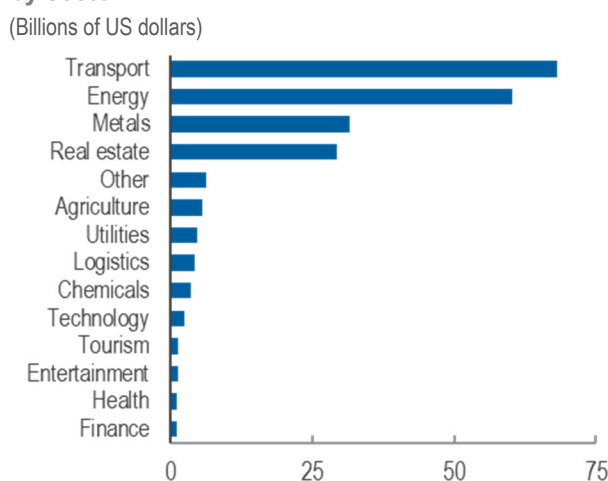
energy, and mining infrastructure, aligning with the sectoral composition of Chinese loan commitments to African countries (Figure 17). This underscores the BRI's role as a prominent framework for Chinese engagements in development finance in the region. Notably, the retrenchment in BRI-related engagement since 2020 has affected all regions, indicating that the slowdown in Chinese investment is not necessarily specific to Africa. This observation is supported, for example, in a recent report by Myers and Ray (2023), which examines BRI-related engagements between China and Latin American and Caribbean countries.

Figure 16. BRI Engagement East by Region, 2013–23



Sources: American Enterprise Institute, China Global Investment Tracker; and IMF staff calculations.

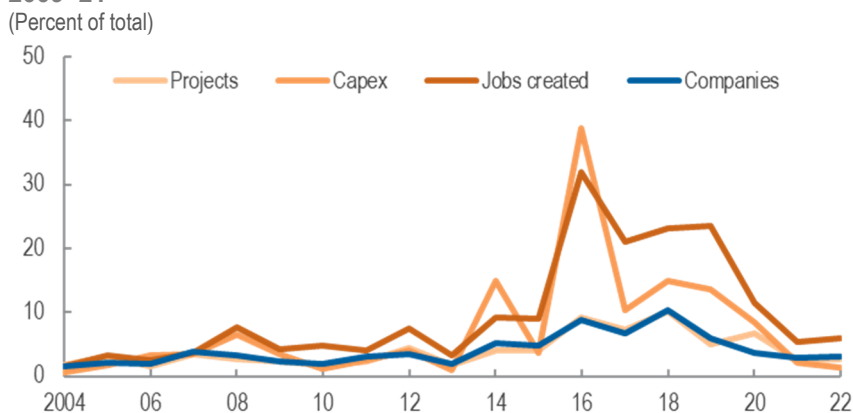
Figure 17. Africa: Total BRI Engagement in Africa, by sector



Sources: American Enterprise Institute, China Global Investment Tracker; and IMF staff calculations.

The BRI offers African countries opportunities to address infrastructure bottlenecks, evident in the Chinese share of projects, job creation, and the involvement of companies in foreign direct investments (see Figure 18). However, some aspects of the initiative remain opaque, particularly details on specific projects and their terms. Most BRI loans are in dollars, provided on commercial terms more generous than those from private investors but costlier than funds from western donors or multilateral development banks.

Figure 18. Africa: Chinese Share of Announced Greenfield Foreign Direct Investment Projects, 2009–21



Sources: fDi Markets; and IMF staff calculations.

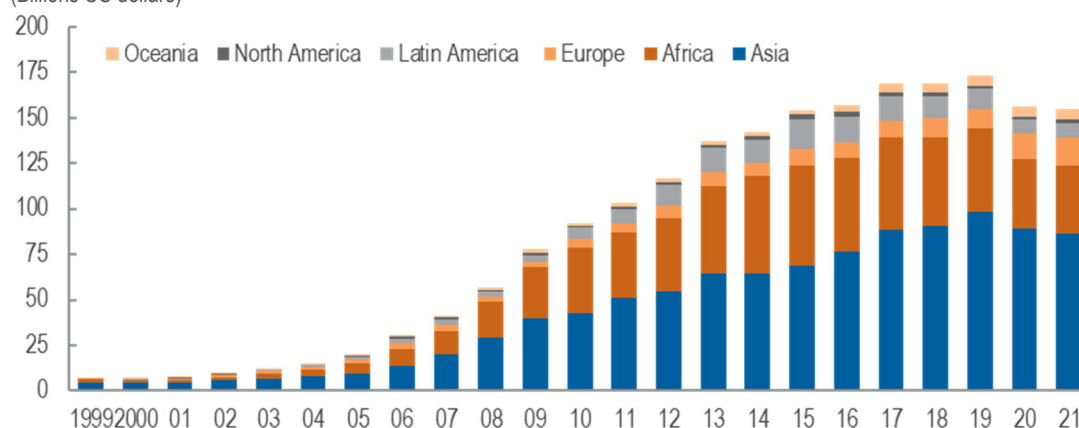
Chinese investment projects, while less bureaucratically demanding than those financed by multilateral development banks, present trade-offs for African authorities seeking swift infrastructure deployment. A 2019 study emphasized the potential benefits of reducing transport costs through improved infrastructure but highlighted that policy impediments, such as import tariffs, investment restrictions, customs delays, bureaucracy, and corruption, often increase trade costs significantly (World Bank 2019). The key message, then, is that improving the investment climate is a necessary complement to investing in infrastructure. These findings will put a premium on careful project selection to ensure maximum impact.

Labor Flows Associated with Chinese FDI in Africa

Increased Chinese investment in Africa facilitated the significant expansion of Chinese construction companies on the continent. The gross annual revenues of Chinese companies engaged in engineering and construction projects in Africa have steadily risen until their peak in 2015, with the latest number totaling about \$37 billion in 2021, a 3 percent reduction from a year prior (Figure 19). The top 5 countries in 2021 are Nigeria, Algeria, Kenya, Angola, and the Democratic Republic of the Congo, accounting together for about 40 percent of all Chinese companies' gross annual revenues from 2021 construction projects in Africa. Nigeria alone accounts for about 11 percent. Notably, the gross annual revenues of Chinese construction projects have risen in other Asian countries while seemingly plateauing or declining in Africa during the pre-COVID period, a trend that persisted and intensified amid the pandemic.

Figure 19. Gross Annual Revenues of Chinese Companies' Construction Projects by Region, 1998–2021

(Billions US dollars)



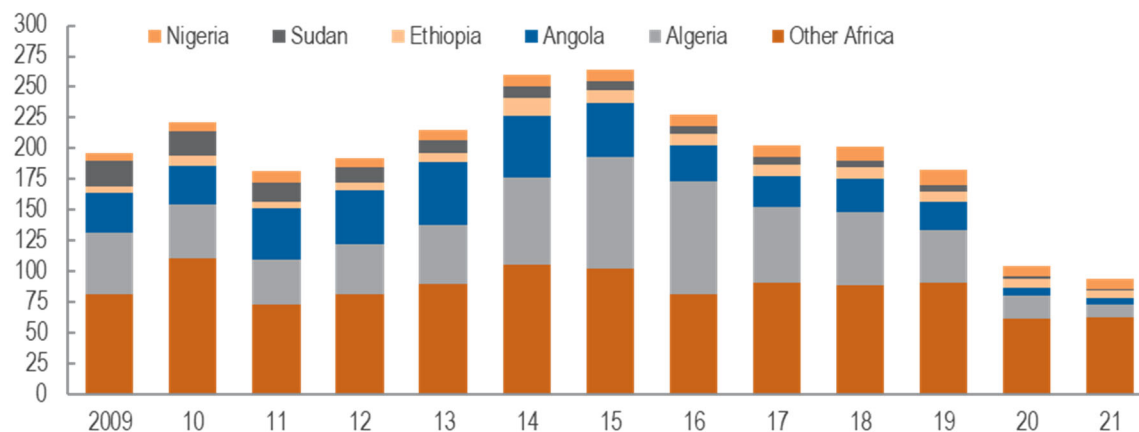
Sources: The Johns Hopkins University SAIS China Africa Research Initiative; The National Bureau of Statistics of China.

The presence of Chinese companies in Africa goes hand in hand with the presence of Chinese immigrant workers in Africa. Indeed, there is a positive correlation between the number of Chinese workers and the gross revenues of Chinese companies in Africa, especially before the pandemic. Like the trend in gross annual revenues of Chinese companies' construction projects in Africa, the number of Chinese workers in Africa has also declined since 2015, reaching less than 200 thousand by the end of 2019. The data on Chinese workers include those that were sent to work on Chinese companies' construction contracts in Africa ("workers on contracted projects") and Chinese workers sent to work for local companies in Africa ("workers doing labor services"). They are reported by Chinese contractors and do not include informal migrants such as private traders, investors, and shopkeepers, and likely underestimate the total presence of Chinese migrants in Africa.

In 2019, the top 5 countries with Chinese workers were Algeria, Angola, Nigeria, Zambia, and Kenya, which together accounted for 52 percent of all Chinese workers in Africa. Algeria alone accounted for almost a quarter of the total (Figure 20).

Figure 20. Africa: Number of Chinese Workers, 2009–21

(Number of workers, thousands)



Sources: The Johns Hopkins University SAIS China Africa Research Initiative; The National Bureau of Statistics of China.

Based on official data, the COVID-19 pandemic has severely reduced the presence of Chinese workers in Africa amidst a reduction of overall Chinese economic activity on the continent, but possibly also because of public health reasons and travel restrictions. At the end of 2021, the official number of Chinese workers in Africa stood at about 93 thousand, a 64 percent reduction from the 2015 peak. Algeria and Angola both stand out in this metric, with an almost 90 percent reduction in the number of registered Chinese workers in 2021 compared to 2015.

One hypothesis that has been raised is that the influx of Chinese workers in Africa could impede job and training opportunities for locals (Dollar, 2016). Research on the effect of Chinese projects in Africa has shown that these may be associated to positive employment effects (Guo and others 2022) and increased employment stability as workers transition from the primary to the secondary or tertiary sectors (Zhang and others 2023). In terms of training and upskilling, we note the recent emergence of the so-called Luban Workshop, a Chinese-backed vocational training program initiated in 2016 under the BRI highlight this change in trend. These workshops, spanning more than 30 locations in 25 countries largely in Asia, the Middle East and Africa—focus on educating local students in servicing Chinese electric-vehicle engines, operating commercial drones, and assembling robots according to Mahtani and Irwandi (2023). They contribute to educational advancement by constructing schools, introducing technology, and organizing trips to Chinese vocational schools for local educators. Tens of thousands of young people have graduated from them, with Beijing having announced in April 2023 the formation of a special committee to help plan and construct new workshops. On balance, it may be argued that while the reduction in the presence of Chinese workers in African countries has been declining both because of the reduction of Chinese projects and due to the direct impact of the COVID-19 pandemic, there are also signs that Chinese companies engage in meaningful training activities to employ locals in construction projects.

D. Foreign Aid

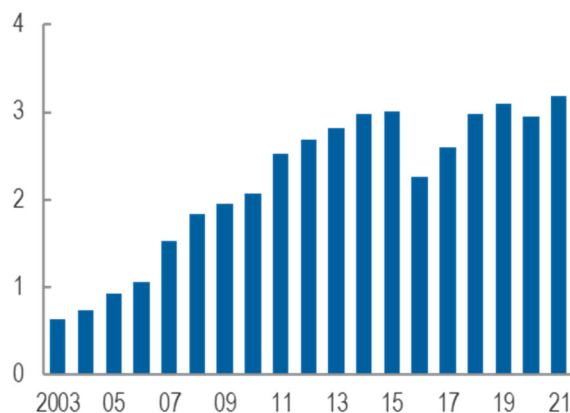
China's *global* foreign aid is relatively small compared to that of other nations of comparable economic size, but it is rising (Figure 21). For comparison, US aid in fiscal year 2021 totaled approximately \$28 billion, compared to about \$3 billion for China. To put these numbers in context, however, it is important to note that China is still an emerging market and its per capita income, at roughly 9,000 US Dollars in nominal terms, is only about a quarter of the OECD average according to World Bank data. In turn, this consideration affects the way China approaches aid. According to The State Council Information Office of the People's Republic of China (2014), aid includes grants (aid gratis), interest-free loans, and concessional loans.

Unfortunately, it is not clear how much of China's global aid flows to Africa. During the 2018 FOCAC, China pledged \$15 billion in aid amount to African countries out of the total \$60 billion commitment (Shepherd and Blanchard 2018). However, data on actual disbursements out of that total envelope are not publicly available.

The bulk of Chinese financing to Africa falls under the category of development finance rather than aid. According to Dreher and others (2017), China provides relatively little aid in the strictest sense of the term, that is, development projects with a grant element of 25 percent or higher. A large proportion of the financial support that China provides to other countries comes in the form of export credits, and market rate or close-to-market rate loans. Western donors and lenders, on the other hand, generally provide development finance on highly concessional terms and have less aggressive export credit programs.

China is also not a member of the OECD Development Assistance Committee (DAC), and it classifies itself as a South-South cooperation development partner or provider rather than a "donor." As aid and loans have increased in volume and significance in recent years, China has recognized the importance of aid (Sun 2019). In 2018, it formally established its first independent foreign aid agency, known as China International Development Cooperation Administration (CIDCA). It was designed to manage China's rising development cooperation in a more intentional and streamlined manner and was a response to the increasingly complex and fragmented landscape of Chinese development cooperation. So far, CIDCA's budget still appears small in comparison to China's overall foreign aid spending, which could be a sign of slow progress in consolidating China's aid efforts (Sun 2019). Yet, the establishment of the foreign aid agency signals an emphasis on strategic planning, interagency coordination, monitoring and evaluation, and, therefore, reflects efforts and progress in modernizing China's foreign aid, its pursuit of better practice, as well as engagement with traditional donors.

Figure 21. China: Foreign Aid Expenditure, 2003–21
(Billions of US dollars)



Sources: The Johns Hopkins University SAIS China Africa Research Initiative; The Ministry of Finance of China.

III. Recent Developments and China's Growth Slowdown

A. Lending: Evolving Priorities and Risk Appetite

Chinese loan commitments to African countries peaked around 2016, with disbursements following a similar pattern. Since then, however, and notably already before the COVID-19 pandemic, lending activities have significantly subsided (Figure 5). The reasons of this retrenchment are manifold. However, it is notable that the earlier surge in loan arrangements slowed down after the commodity price collapse of 2015, coinciding with the rise in debt sustainability and solvency concerns for some of the hardest-hit African countries. The slowdown in Chinese lending is also not isolated to Africa. Ray and Myers (2023) document a precipitous decline in Chinese loan commitments to Latin American and Caribbean countries between 2015 and 2020. They cited as reasons China's efforts to align outward engagement with domestic growth objectives, which has led to a focus on specific, often high-tech, sectors.

The pandemic further intensified the strain on many African economies, which were hit hard by the collapse in international trade and the need to address demanding public health challenges. In light of increased debt sustainability concerns for low and lower middle income countries, the World Bank and the International Monetary Fund urged G20 countries to establish the Debt Service Suspension Initiative (DSSI) at the onset of the pandemic (IMF 2021; World Bank 2022). Out of the 73 countries that were eligible for a temporary suspension of debt-service payments owed to their official bilateral creditors, 38 are in Africa and, out of those, 32 participated in the initiative. The DSSI helped countries concentrate their resources on fighting the pandemic and safeguarding the lives and livelihoods of millions of the most vulnerable people. According to the World Bank, the initiative delivered potential savings of about \$12.9 billion to 48 participating countries in 2021 (World Bank 2022). Moreover, in anticipation of the need for deeper debt restructurings in some cases, the G20 agreed on a Common Framework for Debt Treatments beyond the DSSI, which should help facilitate debt restructuring on a case-by-case basis and burden sharing across creditors (Group of Twenty, 2020).

For many African countries, the multi-year shocks culminated in a funding squeeze after Russia's invasion of Ukraine and the tightening in global monetary policy conditions. The decline in Chinese lending, coupled with reduced support from traditional financing sources, has made it challenging for African countries to refinance public debt and meet repayment obligations. Indeed, external borrowing costs have soared to new highs in many African countries, with the ratio of public interest payments to revenue (excluding grants) more than doubling over a decade, at 10 percent for the median African economy, and at three times the level prevailing in advanced economies (IMF 2023).

China has been a key player in recent debt restructuring and negotiations, unlike in negotiations leading to the Heavily Indebted Poor Countries Initiative, during which Chinese lending to low-income countries was minimal. China also contributed to the DSSI, providing 63 percent of suspensions in 2020 and 2021, though owning just 30 percent of the claims (Brautigam and others, 2023). However, debt restructuring for some countries (including under the Group of Twenty Common Framework) has been slow and challenging because of several factors, such as many different debt instruments and a more diverse creditor base, which requires adaptation and coordination. China's involvement in the debt restructuring process is further complicated by its varying

entities participating in the creditor negotiations. For instance, whereas China Exim Bank is part of the Official Creditor Committee (OCC) in the case of Ghana, the CDB is classified as a private creditor in the case of Zambia.

Chinese authorities have started addressing debt sustainability concerns by strengthening risk assessment frameworks and adopting formal debt sustainability frameworks. For example, Exim bank has strengthened its risk assessment framework. A formal debt sustainability framework has also been adopted, which could contribute to explain the relative slowdown in lending activity in recent years as risks are better evaluated.

Looking at the entire period since the commodity price decline of 2015, it is apparent that, notwithstanding the difficulties associated with the COVID pandemic and the resulting wave of sovereign debt sustainability concerns in many African countries, appetite for lending to these countries has been on a declining trend for some time. This trend is unlikely to change in the near future given China's sluggish domestic growth and the decreased risk appetite, especially in light of the complexity of the existing debt restructuring cases.

B. Investment: Shrinking Financing Envelope and Evolving Framework

Recent data, spanning the pre- and post-COVID-19 periods, highlights a notable decline in China's financial commitments to foreign direct investments (FDI) directed towards Africa. The shift was evident at the 2018 Forum on China–Africa Cooperation (FOCAC), where China's historical pattern of doubling or tripling previous FOCAC pledges experienced a break (Shepherd and Blanchard 2018). While this trend was unlikely to continue indefinitely, China's nominal financing pledge of \$60 billion at the 2018 Beijing Summit remained flat compared to the pledge three years prior, and actually decreased in terms of the contribution of the Chinese government, considering that Chinese private companies were encouraged to contribute \$10 billion in investment projects out of the total package (Brautigam 2018).

The 2021 FOCAC marked an even more significant departure, when China announced for the first time a reduction in the *nominal envelope* of its financial commitments to Africa, from \$60 billion to \$40 billion over a three-year period, with half of the decrease attributed to a fall in infrastructure lending. The composition of the commitments showed a shift away from direct infrastructure financing towards more trade credit. While it is not clear how binding the total FOCAC commitments are likely to be in practice, the decline is mirrored in the sharp declines in Chinese companies' African construction gross revenues and presence of Chinese workers on the field as discussed in the previous section. More recently, the 2023 China-Africa Economic and Trade Expo saw a 50 percent drop in signed projects compared to 2019 (Africanews 2023), despite high-profile attendance. These developments are not, by themselves, definitive evidence of a permanent retrenchment of Chinese activity in the region. However, they may indicate that Chinese authorities have decided to recalibrate their strategy and reduce their direct involvement in favor of greater reliance on local governments for practical decision-making. For example, African banks have recently been given more leeway to select projects to be carried out in the context of the FOCAC commitments.

At the third BRI Forum, held in October 2023, the Chinese president, Mr. Xi, called for “high quality and well-targeted projects, promoting a multidimensional (land, sea, air) Belt and Road connectivity network, ‘small and smart’ livelihood projects, green development, digital economy, and technopolitical innovation,” which may signal a move away from large infrastructure projects to green energy and high-tech investments. This shift aligns with China's pledge to halt new overseas coal-fired power stations and joint initiative involving several African countries—Comoros, Ethiopia, the Gambia, Kenya, and São Tomé and Príncipe—to cooperate to

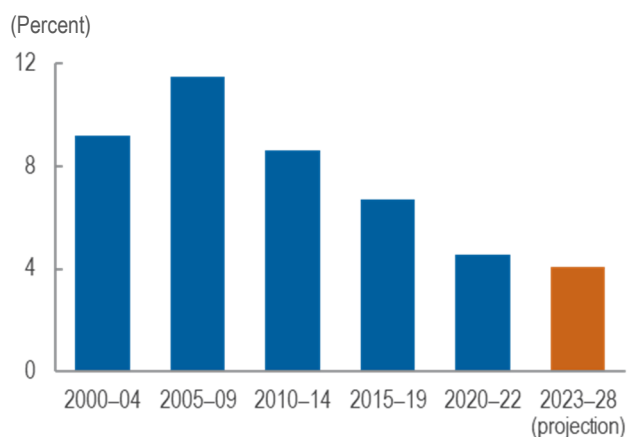
improve digital infrastructure such as telecommunications, satellite navigation, and cloud data centers. China also launched a Global AI Governance Initiative to contain potential risks of emerging AI technologies, while harnessing their potential. Taken together, these statements of intent from Chinese authorities signal a potential evolution of the BRI, away from the more traditional focus on transport, energy, and mining, and towards new potential sources of growth.

Despite these shifts, the long-term trajectory of Chinese FDI in Africa will ultimately hinge on China's broader growth path. With China's aging population and its quest to move up to higher-value-added supply chains and diversification into high-tech and green sectors, Africa's youthful population and expanding markets offer potential. On their own, however, these factors are not enough to continue to attract FDI to the region. Indeed, significant roadblocks emerge in the form of poor infrastructure, institutions, and productivity, combined with insufficiently developed human and physical capital.

C. China's Conjunctural and Structural Growth Slowdown

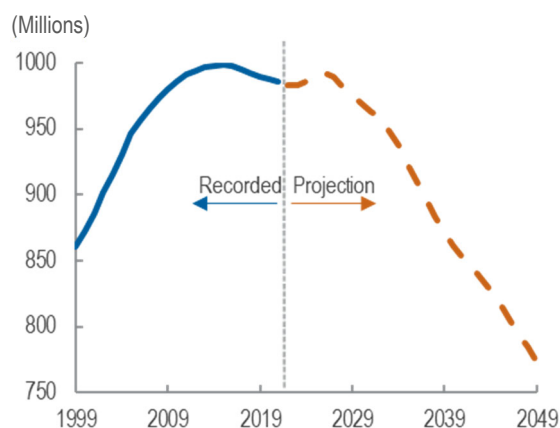
China has experienced a deceleration in economic growth since the early 2010s, a trend expected to persist into the medium term (Figure 22). This is due to a confluence of factors—curbing of its real estate sector, demographic trends from an aging population, and, more recently, volatility in the external environment including trade tensions, geoeconomic fragmentation, and the COVID-19 pandemic (IMF 2024). Whereas China's annual growth rate averaged around 10 percent in the 2000s, it grew by less than 8 percent per year on average in the 2010s. Since the COVID-19 pandemic, China's growth has declined even further, and the latest IMF projections show average annual growth below 4 percent for 2023–2028, with notable trends pointing to a reduction in investment. Demographic pressures are now starker than ever for China (IMF, 2024). In 2022, the country saw its population decline for the first time in decades, and it is projected to face a dramatic reduction in working-age population before the middle of the century (Figure 23). Beyond its direct impact on long-run growth, a shrinking working-age population will have to support a growing elderly population, similar to what has been observed in some advanced economies.

Figure 22. China: Average Annual Growth Rates, 2000–28



Source: IMF, World Economic Outlook database.

Figure 23. China: Working Age Population, 2000–50



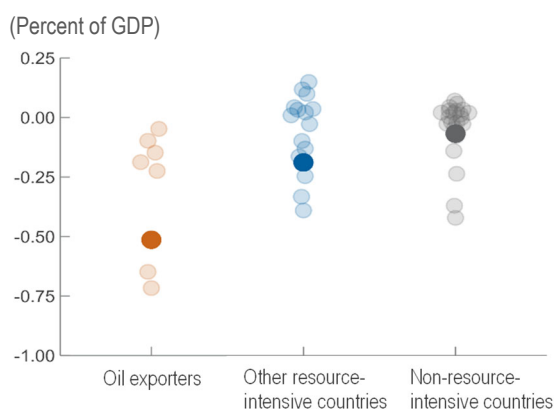
Source: UN, World Population Prospects, 2023.

Next, we examine China's relationship with Africa, which reveals that shifts were underway before the pandemic. Indeed, China's reduced demand for commodities significantly impacted African countries heavily reliant on fuel and commodity exports. The fuel component of total African exports to China fell dramatically after 2015 and contracted further during the pandemic, reflecting global oil price dynamics (Figure 2).

As economic activity faced an unprecedented fall in 2020 and 2021, trade, lending, and investment from China to Africa experienced a retrenchment. The key question now is whether the ongoing recovery will prompt renewed engagement from China in Africa. Given the deep economic ties, a potential slowdown in China's growth in the medium to long term will likely affect economic activity negatively in sub-Saharan Africa. These negative spillovers would primarily emerge from trade links, encompassing both a deceleration in export volumes and commodity price declines.

To delve into the potential impact, the main results from complementary approaches in evaluating the impact of a Chinese deceleration on the economy of *sub-Saharan Africa* are presented.⁷ First, the analysis from Abdel-Latif and El Gamal (forthcoming)—also featured in the [first analytical note](#) of the [October 2023 Regional Economic Outlook for sub-Saharan Africa](#)—shows that a 1 percentage point decline in China's real GDP growth rate leads to about 0.25 percentage points decline in sub-Saharan Africa's total GDP growth within a year (Figure 24).⁸ When considering the effect on oil-exporting countries, the growth shortfall rises to more than 0.5 percentage points on average. For other resource-intensive countries, the growth loss averages 0.2 percentage points.⁹ Therefore, countries that export relatively more to China are more likely to be more susceptible to negative effects resulting from a slowdown in China.

Figure 24. Sub-Saharan Africa: GDP Response to China's Growth Slowdown



Source: Abdel-Latif and El-Gamal, forthcoming.

Note: Lighter shade dots denote individual countries. Darker shades represent group GDP-weighted averages. Country groupings are detailed Annex I.

In the second approach, a scenario analysis is conducted similar to one of the downside scenarios of Chapter 1 of the [World Economic Outlook, October 2023](#) using the IMF AFRMOD model, an open-economy general equilibrium model specifically tailored for sub-Saharan Africa.¹⁰ The shock envisions a contraction in the real estate sector in China and assumes no swift policy actions to restructure property developers. This, in turn, leads to weaker consumption because of subdued confidence. The scenario also assumes no meaningful

⁷ The analytical work mentioned here was carried out for the Regional Economic Outlook developed by the African Department, which comprises 45 sub-Saharan African countries. Northern African countries are under the purview of the Middle East and Central Asia Department and are not included in this analysis.

⁸ The empirical model consists of a large 70-block GVAR model with real GDP growth and inflation as key domestic endogenous variables, and the US interest rate and oil prices as global variables. Each country's endogenous variables depend on their lagged values, as it is standard for autoregressive models, but also on the lagged value of a trade-weighted aggregate of all other countries' endogenous variables, and global variables. The model includes 43 SSA countries for which data is available, as well as several, mostly advanced, economies. The key shock of interest is a negative GDP shock to the Chinese economy, which then propagates to all other countries.

⁹ The regional or group average of the response of GDP growth to the shock to Chinese GDP growth was calculated using the share of each country's cumulative GDP between 2018 and 2022 as weighting factor.

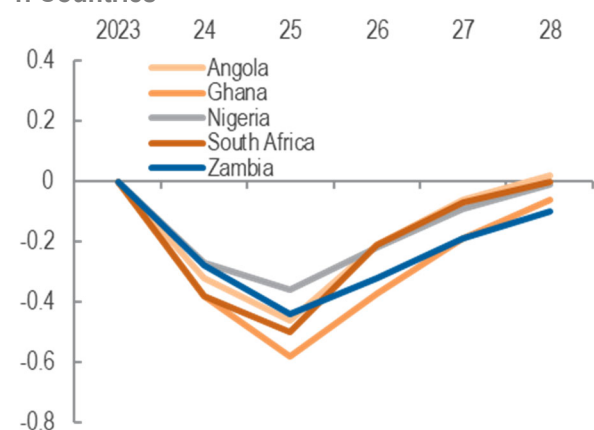
¹⁰ Annex I provides more information on the model and on the definitions of the regions included therein.

countercyclical policy support on the fiscal side. The impact of this shock on China's growth, projected over six years from 2023 to 2028, is portrayed in Figure 25. Notably, the impact of the shock is felt throughout the region, with a more pronounced impact on Fragile and Low-Income countries, as well as Oil Exporters (Angola and Other SSA Oil Exporters). One of the key advantages of using a model-based approach is that this allows for better understanding of the evolving impact over time. Notably, some groups of countries, in particular Eastern Africa, Fragile countries, and WAEMU countries not included in other regions fare relatively better towards the end of the projection horizon, with GDP surpassing the steady state before converging in the long run.

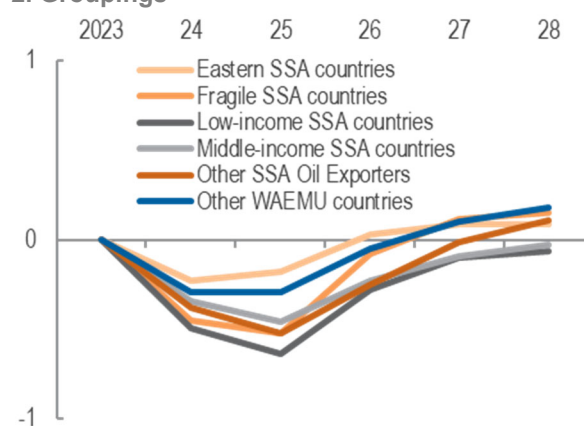
Figure 25. Sub-Saharan Africa: GDP Response to China's Growth Slowdown in AFRMOD, 2003–28

(Deviation from steady state, percent)

1. Countries



2. Groupings



Source: IMF, *World Economic Outlook*, October 2023.

Note: The figure portrays the percent deviation of GDP from the steady state growth path in the absence of the shock to the Chinese economy. Country groups are detailed in Annex I. WAEMU = West African Economic and Monetary Union, SSA = sub-Saharan Africa.

Other analyses of spillover effects from China's growth to Africa and to the rest of the world economy have highlighted complementary aspects to those outlined above (Hakobyan and others 2023, Furceri and others 2017, Cashin and others 2016, Lakatos and others 2017). While the focus in individual studies is sometimes placed on specific issues, such as fiscal or monetary policy in China, the channels highlighted are usually very similar and encompass primarily trade and the impact of China's economy on global commodity prices. A common finding is that spillovers from China will primarily impact African countries that are more heavily reliant on commodities exports, including both oil and fuels, and minerals. Crucially, however, the extent of the spillover effects depends on the way in which authorities in China use economic policy to respond to shocks. For example, Hakobyan and others (2023) focus on the differential impact of a slowdown in Chinese economic activity, showing that the impact on African economies ultimately largely depends on whether the response of fiscal and monetary policy is accommodative or not. In addition, the paper shows that a rebalancing scenario, that is, a situation in which public infrastructure investment is permanently reduced in favor of transfers to households, and thus, private consumption, will generally have muted impacts on African economies as the import content of consumer goods in China is relatively higher than the import content of investment goods—providing offsetting effects on net imports.

IV. Conclusion

The economic relationship between Africa and China is undergoing a significant shift. Post-2001, with China's WTO entry and investment-heavy growth model, its demand for raw materials, especially from Africa, surged, impacting global commodity prices and trade volumes. However, changes are afoot in China's growth model, now veering towards less resource-intensive practices due to factors like an aging population and a deceleration in the real estate sector. This change is expected to temper China's demand for fossil fuels, diverging from the peak of its economic boom.

This shift poses notable implications for Africa, particularly for oil-exporting and resource-intensive countries. Yet, it also opens avenues for new collaboration as China recalibrates its economic trajectory. China's shrinking working-age population, resulting in tighter labor markets and higher domestic wages, could prompt Chinese firms to seek alternative markets, with Africa's abundant labor force becoming increasingly attractive. Proper economic and social policies in Africa can strategically position the continent within this evolving landscape. This study draws tentative conclusions and recommendations on China's engagement with Africa in trade, investment, and lending.

- **Trade dynamics:** China has become Africa's largest trading partner, reshaping the continent's export landscape. African exports to China, mainly natural resources, have increased significantly. However, with China's waning appetite for raw materials, African nations must adapt, emphasizing diversification and sustainable trade strategies, including those involving regional trade integration, such as the African Continental Free Trade Area (AfCFTA), to boost competitiveness.
- **Lending:** China plays a big role in the region, but, collectively, other multilateral and official creditors often play an even more important role in lending to Africa. The recent funding squeeze has adversely affected many African countries, leading to debt distress or high risk of debt distress. While China's participation in the DSSI is a positive step, it remains a small first step as interest accrues, and debt burdens rise. Further progress on the specifics of debt restructuring plans, including private creditors, is crucial for a sustained recovery of African economies.
- **Foreign direct investment:** China's role in African FDI has been modest but holds potential, especially as China seeks to diversify its investments. Africa's young population and competitive labor market make it an appealing destination for foreign capital and technology. Attracting investment requires African countries to enhance their investment climates.

Going forward, *China's economic slowdown* presents both challenges and opportunities for Africa. Adapting to this new reality requires resilience and structural reforms in Africa. These include diversifying the economy, increasing regional trade, and enhancing competitiveness. Building financial buffers and strengthening policy frameworks will reduce vulnerabilities. For Africa to offset China's reduced economic presence, it's essential to focus on sustainable growth through economic diversification, leveraging the green energy transition, and enhancing local processing capabilities. Implementing reforms in mining laws, financial management, private sector growth, and human capital development, combined with infrastructure improvements, will broaden Africa's economic horizons.

Annex I. Details of GVAR and AFRMOD Models

A. AFRMOD

The IMF G20 Model is a version of [the Flexible System of Global Models – FSGM \(Andrie and others 2015\)](#). This model is particularly suitable for running short- to medium-term scenario analyses in an internally consistent way in general equilibrium. Its rich setup, in terms of both sectors and of interlinkages between countries allows for rich dynamics and for the analysis of the joint response of key parts of the world economy to shocks of interest.

AFRMOD, which is the version used for the analysis carried out in this paper, is a specific version of the FSGM framework tailored to sub-Saharan Africa, in the sense that it specifically focuses on a few regions and countries in Africa. The complete definition of the groups is provided in Annex Table 1 below. It consists of 13 individual countries, of which 5 are relatively large SSA economies and 8 advanced economies, together with 8 country groups, of which 6 consist of SSA countries and 2 of other important groups of mostly AEs and EMs.

Annex Table 1: Country Groupings in the AFRMOD Model

Type	Group name	ISO3 codes
Individual	N/A	USA, CHN, FRA, DEU, IND, ITA, JPN, GBR, AGO, GHA, NGA, ZAF, ZMB
SSA Group	Eastern Africa	KEN, RWA, TZA, UGA
SSA Group	Fragile Africa	BFA, BDI, CIV, CAF, COM, ERI, GIN, GNB, STP, SLE, TGO, LBR, ZWE
SSA Group	Low Income Africa	ETH, GMB, MDG, MWI, MOZ
SSA Group	Middle Income Africa	BWA, CPV, LSO, MUS, NAM, SEN, SYC, SWZ
SSA Group	Sub-Saharan Africa Oil Exporters	CMR, COD, TCD, COG, GNQ, GAB, SSD
SSA Group	West African Economic and Monetary Union, WAEMU	BEN, MLI, NER
Non-SSA Group	Other Advanced Economies	AUS, CAN, DNK, HKG, ISL, ISR, KOR, NZL, NOR, SGP, SWE, CHE, TWN
Non-SSA Group	Other Oil Exporters	DZA, BHR, BRN, ECU, IRN, KAZ, KWT, OMN, QAT, RUS, SAU, TTO, ARE, VEN, YEM

B. GVAR Model (Abdel-Latif and El-Gamal 2023)

As detailed in Abdel-Latif and El-Gamal (2023), the 44 SSA countries included in the study are distributed as follows in the groups listed in Figure 24.

Annex Table 2: Country Groupings in the GVAR Model

Group name	ISO3 codes
Oil Exporter	AGO, CMR, TCD, COG, GNQ, GAB, NGA
Other Resource-Intensive	BWA, BFO, CAR, DRC, ERI, GHA, GIN, LBR, MLI, NAM, NER, SLE, ZAF, TZA, ZMB, ZWE
Non-resource Intensive	BEN, BDI, CPV, COM, CIV, SWZ, ETH, GMB, GNB, KEN, LSO, MDG, MWI, MUS, MOZ, RWA, STP, SEN, SYC, TGO, UGA

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